INTERFACES BETWEEN CRAFT KNOWLEDGE AND DESIGN: NEW OPPORTUNITIES FOR SOCIAL INNOVATION AND SUSTAINABLE PRACTICE
About this publication

The papers in this volume represent the results of the third Making Futures international research conference held in September 2013 on the magnificently sited Mount Edgcumbe estate, Cornwall UK.

Making Futures explores craft as a ‘change agent’ in 21st century society, the beguilingly simple reasoning behind its title implying that if we are to have any hope of making a better future for ourselves we must also fundamentally rethink and reshape the future of our material culture. Convinced of the transformative potential of small-scale making at both personal and communal levels, Making Futures brings artists, makers, designers and curators into dialogue with one another around the nature and sustainability of practice, indexing the resurgent interest in craft, design-to-make, and neo-artisanal forms of micro-manufacture, while also exploring how these might constitute elements within a wider ‘return’ to small-scale making in a post-global future.

This, the third edition of Making Futures, brought together 72 double-blind peer-reviewed delegate-presentations from over 18 countries. By far the overwhelming majority, 62, appear in this volume, along with submissions from keynotes and workshop leaders. The programme itself was composed of three research workshops, ‘Craftwork as Problem Solving’, ‘Transformative Practices through Textiles’ and ‘Crafting with Digital Technologies’, and four thematic sessions, ‘sustainability and social activism’, ‘post-Fordist perspectives on consumerism’, ‘craft in local-global contexts’, and ‘craft education’. Each delegate paper is published under the theme its abstract was originally selected for, ensuring that this post-conference publication maps onto the structure of the original event. The workshop and thematic sessions were interspersed with international keynote interventions, four of which are included in this volume: Adélia Borges on cultural identity and the conjunction of design and craftsmanship in the Latin American context; the Director of the Crafts Council, Rosy Greenlees, on the latest research into the UK crafts landscape; Professor Jaideep Prabhu of the University of Cambridge on the frugal style of innovation known as ‘Jugaad’; and from Tomas Díez Ladera from the Institute for Advanced Architecture of Catalonia and Director of Fab Lab Barcelona on digital fabrication. The volume includes an introductory essay by Malcolm Ferris, the Making Futures curator.

To ensure the widest possible dissemination Making Futures is published as a free, open-access academic resource for all not-for-profit users interested in its themes.
Making Futures

The Return of Craft in a Post-Global Sustainably Aware Society¹

Yes, I believe that there is a multiple people, a people of mutants, a people of potentialities that appears and disappears...... ...I think that we're in a period of productivity, proliferation, creation, utterly fabulous revolutions from the viewpoint of this emergence of a people. That's molecular revolution: it isn't a slogan or a program, it's something that I feel, that I live...²

The quote from Felix Guattari, so typical of his animated thought, is a wonderfully open and exuberant cri-de-coeur that we could adopt to express the transformative 'return' to small-scale making that we envisage for a post-global future³. Perhaps more 'molecular evolution' than revolution, this is a future that has been under construction for some while now, and which Making Futures, across its three editions to date (2009, 2011 and 2013), has sought to give prominence to. It therefore gives me great pleasure to introduce this third volume of the proceedings of the international Making Futures conference, which took place in September 2013 at the magnificently sited Mount Edgcumbe estate. This third edition was probably the most ambitious in the series to date, consisting of a full programme of three research workshops and four thematic sessions, interspersed with six international keynote interventions. Always more than just a conference, Making Futures 2013 also featured three concurrent exhibitions: a major show by the furniture maker Gareth Neal, titled People, Process, Place at Plymouth College of Art Gallery; Lifecycles of Material Worlds, featuring four artists at Plymouth City Museum & Art Gallery; and an exhibition of digitally-fabricated work by the Falmouth research group Autonomic, at the Mount Edgcumbe venue⁴. In terms of delegate participation, the response to the three calls for papers and practice-led presentations far exceeded what had been anticipated, meaning that for the first time, delegate numbers had to be restricted. Moreover, the response was truly global, with abstracts received from over eighteen countries from all regions of the world. The result was a double-blind, peer-reviewed selection of seventy-two delegate-presentations of which, I am pleased to note, by far the overwhelming majority, sixty-two, appear in this volume, along with submissions from our keynotes and research workshop leaders.

Thinking Making/Making Thinking

The hallmark of Making Futures has been its effort to explore an expanded notion of craft – and to imbricate it in wider ecological, social and cultural patterns, to develop encounters with philosophical thought, sociology and anthropology, politics, technology, economic and innovation theory, with students of consumer trends and behaviours, and with thinking around educational experience. Convinced of craft’s transformative potential at both personal and communal levels, Making Futures conceives of craft as a ‘project’ open to the future, and capable of taking up and refiguring the fragmented temporal and spatial experiences of contemporary life into coherent moments of progressive living - generating possibilities, creating futures...⁵ Making Futures might therefore be considered, in part, a utopian project. Utopian in this instance is not used pejoratively, but rather to reference the constructive use of our imaginations in figuring better outcomes - a type of making through thinking in which the skill is to ensure that the future explored bears sufficient causative relation to actual existing material possibilities so as to render it plausible, and therefore (at least potentially) attainable.

This is not, however, to reduce craft to an abstract (albeit all-important) figure of thought, for when all is said and done, Making Futures always seeks to return to that point where the complexity of the individual creative process escapes formalist explanation, bringing artists, craftspeople and designer-makers into dialogue with one another around the nature and sustainability of practice, in and of itself. But it is to dispose oneself to explore the many ways in which the crafted object can embody our relations to the world and to each other – to reveal the affects and connections that can shift us, and the object itself, outside of commodification. There is, of course, a significant history here that
Amongst Western nations. We have returned to the economy lauded as one of the fastest growing. Yet if the global financial crisis or Great Recession is now officially over and the wake-up call. Yet it seems, rather, as if we simply switched the alarm to mute in order to continue our dreaming. In the UK, for example, we are currently engaged in a somewhat less than convincing attempt to lose ourselves in ‘back-to-business’ normality; the Great Recession is now officially over and the economy touted as one of the fastest growing amongst Western nations. We have returned to the growth lane and the economy is once more gathering momentum... Yet to where and to what purpose? Not, it would seem, towards more equitable or environmentally sound arrangements. Indeed, the collective sense of misgiving over the associated crises of the economy and ecology is palpable, and it is against this background that there has recently been a revived interest in thinking about post-growth economies.

A collective alarm call

In this regard the global financial crisis sh uld perhaps have been interpreted as a collective wake-up call. Yet it seems, rather, as if we simply switched the alarm to mute in order to continue our dreaming. In the UK, for example, we are currently engaged in a somewhat less than convincing attempt to lose ourselves in ‘back-to-business’ normality; the Great Recession is now officially over and the economy lauded as one of the fastest growing amongst Western nations. We have returned to the growth lane and the economy is once more gathering momentum... Yet to where and to what purpose? Not, it would seem, towards more equitable or environmentally sound arrangements. Indeed, the collective sense of misgiving over the associated crises of the economy and ecology is palpable, and it is against this background that there has recently been a revived interest in thinking about post-growth economies.

This disquiet also explains the phenomenon of why a sober work of economic history (yes, that work) has recently erupted into public consciousness. Piketty’s Capital in the Twenty-First Century acts like a lightning rod for all our anxieties. It not only validates what we have long known, that society is becoming more unequal, but it shows that the trajectory we have been on since the late 1970s points towards concentrations of wealth and corresponding levels of inequality that Morris and his peers would be conversant with. In Piketty’s long form interpretation the post ‘89 global capital expansion (Globalisation), let alone the current UK recovery, read as relative ‘blips’ that do not correct the overall trend. As Donncha Kavanagh from the University College Dublin School of Business puts it in an ironic nod to those calling for a post-growth economic strategy, “most of us have already lived most of our lives in a ‘post-growth’ economy”.

Piketty’s analysis might seem to relegate the transformative molecular evolution that we are interested in exploring to just another vainglorious dream in that long history of craft utopianism mentioned above. We should, however, pause to reflect that Piketty himself is unequivocal in his view that although the data points in a certain direction, there is no law, economic or otherwise, that says this outcome is inevitable. In short, the problem exists on social, cultural and political planes. We have the possibility to act to address it. This idea resonates with our Quattarian inspired task of giving voice to “...a people of potentialities...” for to enter into a project called Making Futures is surely to dispose oneself towards some potentially bold thinking about the possibilities for making and its contexts. In short, that the ‘futurology’ of material culture that it calls for obliges us to ‘make through thinking’, and ‘think through making’, more hopeful outcomes.

Making Futures III – Interfaces Between Craft Knowledge and Design

The component elements of this future for small-scale making were implicit in the programming of the September 2013 Making Futures conference. Under the rubric ‘Interfaces Between Craft Knowledge and Design: New Opportunities for Social Innovation and Sustainable Practice’ the conference brought together research workshops on ‘Craftwork as Problem-Solving’. ‘Transformative Practices through Textiles’ and ‘Crafting with Digital Technologies’.

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These were augmented by parallel conference sessions on ‘sustainability and social activism’, on ‘post-Fordist perspectives on consumerism’, on ‘craft in local-global contexts’, and on ‘craft education’. All were underpinned by Keynote addresses that further sought to delineate the contours of the new emerging circumstances – from Adélia Borges on cultural identity and the conjunction of design and craftsmanship in the Latin American context; the furniture designer-maker, Gareth Neal, on experiments in sustainable making and living; the Director of the Crafts Council, Rosy Greenlees, on the latest research into the UK crafts landscape; Professor Jaideep Prabhu of the University of Cambridge on the frugal style of innovation known as ‘jugad’; and from Tomas Díez Ladera from the Institute for Advanced Architecture of Catalonia and Director of Fab Lab Barcelona on digital fabrication. While no single session or individual keynote presumed to endorse a single global vision of the future of making, taken cumulatively (and augmented by other sources) I think we can extrapolate the contours of a new emerging future for makers. Let us now try to outline this in broad and bold strokes.

**The Craft Return**

This new future for making will be characterised by a significant shift to localised micro-manufacturing – a shift that will embrace existing craft practices, but which in some cases is also likely to alter existing ideas of craft as practitioners adopt adaptive combinations that mix traditional methods of production with digital technologies that facilitate aspects of the design and make process. These localised practices will be enhanced by exchanges with wider global communities of production and consumption. This future will also further blur the distinction between amateur and professional and between consumer and producer that’s already under way, and possibly, further into the future, between private and public as households become the locus of some forms of production. Perhaps we will even see the emergence of new cottage industries, or domestic ‘putting out’ systems.

*Making Futures III* showed how aspects of this shift are already being explored in the world of small-scale making, in ways that are helping to widen opportunities for makers, as well as to indicate more sustainable and socially-transformative paths to the future. In fact, in describing this emerging landscape we should refer to “worlds” of small-scale making, because in effect, we are referencing an ecosystem, or relational field, consisting of a multitude of creative making instances, or vectors, simultaneously independent and interconnected that populate an extended space which takes in the unique (predominantly hand-made) productions typically associated with the studio art and crafts tradition, designer-maker batch producers, and the types of neo-artisanal manufacturing initiatives emerging around the *maker movement*. As they arc through this space, these vectors pass through both professional and amateur manifestations of makers, and embrace both individual and communitarian initiatives.

All the points within this continuum have experienced development as constituents of the craft resurgence of the last fifteen years or so. However, as noted in previous journal introductions, this resurgence in craft can be said to have begun as a non-specialist revival that initially sidestepped the professionalised studio crafts – a story of grass roots DIY, feminist ‘craftivists’, voluntary material simplicity advocates, and allied campaigners for local recycling and make and mend; all buoyed by broader alternative initiatives like the transition movement, urban farming, local markets and craft fairs, and reaching out to new audiences through internet websites, blogs, Facebook interest groups, and YouTube. Conversely, these promoters of contemporary craft activism have their counterparts in the more technologically-inclined *maker movement* with its characteristic emphasis on hacking and making physical constructions that often (but not always) include electronic adaptations. These local maker groups are typically connected to wider ‘open source’ communities that exchange knowledge around hacking procedures and design and construction processes, including digital subtractive (such as CNC cutters) and additive 3-D printing techniques. It might be assumed that the handcraft producers and the more technologically inclined makers have little in common. Clearly, there can be significant differences in the materials and techniques employed, and above all perhaps, in the value attributed to direct hand manipulation. Yet both share in what Roberto Unger calls *the idea of the transformative vocation*, a spirit of independent making and creative problem-solving outside of mainstream commodity culture. Moreover, both chiefly operate at (small) scales that enable the creator to retain an intimate relationship with media and materials – even when this material is being formed by a 3-D printing machine, rather than shaped through hand-wielded tools.
A Western Juugad

This connection between both the handcraft and technology-centred sets of making suggests an exciting and potentially important opening for experimentation and new development, especially perhaps, along the boundaries where the amateur blends into professional practitioner levels, taking on a more design-led modus-operandi linked to neo-artisinal forms of low volume manufacturing. The projects emerging from these borderline areas will often exemplify the inventive tacit and imaginative obstacle resolving strategies that our Craftwork as Problem Solving workshop sought to explore. When embedded within local communities and cultures, this form of problem-solving is also sometimes characteristic of the flexible, frugal innovation that our keynote speaker, Jaideep Prabhu, (and his co-authors) labelled ‘Jugaad’ - Hindi for cost-effective “make-do” solutions associated with so-called developing nations. As Jaideep showed, these solutions can often be extremely elegant functionally as well as formally. Moreover, because they typically emerge in response to practical problems and issues encountered at local levels, they occasionally have the ability to translate across global-cultural divides to address similar requirements elsewhere. As he notes, these can constitute potentially colossal ‘base of the pyramid’ transnational markets which existing corporate product innovation and enterprise models are all but ignoring, partly because their product Research and Development (R&D) is simply not geared towards the low-tech, low-cost costs needs of these users. In contrast, small-scale makers are already proactively exploring these possibilities.

Confirmation of how a Western Juugad might materialise a form of future small-scale making comes particularly (but not exclusively) from digital fabrication, including additive manufacturing, as explored in our ‘Crafting with Digital Technologies’ workshop. There is, of course, enormous hype surrounding these technologies and a clear danger that they become mythologised as some instant techno-fix or all of society’s ills. Latouche, for example, in his environmental critique of capitalism, Farewell to Growth, asserts that technology does not in itself challenge the logic of development. Overall, he may well be correct, but perhaps he doesn’t give enough credence to the disruptive potential of technologies to at least propose (or enable) alternative ways to think about (and therefore to materialise) the future. For example, when linked to the Internet, digital production systems - particularly 3-D printing - do nevertheless propose a fundamental challenge to existing arrangements.

Additive 3-D print systems largely dispense with complicated tooling, require relatively low capital outlay, and allow both professionals and amateurs to fabricate in individual or very low volumes on a ‘print-on-demand’ basis at little extra cost. In this way they can dramatically reduce the minimum efficient scale at which manufacturing can become viable and, in turn, empower individuals and groups to become independent producers, to retain control of production, and to rapidly address local cultural needs and idiosyncratic values through their work. Internet repositories of design files become an important element in this 3-D printing universe, allowing for a distributed print system. Open-source design files can further reduce costs while permitting the customisation of pre-designed specialist parts.

Certainly, the technologies themselves are becoming cheaper and improving in technical competence. Originally limited to making prototypes, by 2011 around 20% of 3-D printer output was estimated to be final product, with the figure predicted to rise to 50% by 2020. More recently, the research firm Gartner reported that global shipments of 3-D printers rose by 49% in 2013, and predicts a further rise to 75% this year. Current approaches tend to employ natural or synthetic polymers and ceramic slips, including, sometimes, custom-made recipes. In high-end professional applications, metals such as stainless steel, titanium, gold and silver are often used. Professional users often report that the additive process significantly reduces materials use, and can lead to less waste. In principle maker movement enthusiasts enjoy similar efficiencies. In practice, of course, much of the ‘stuff’ available on popular maker knowledge sharing and selling web platforms might be deemed by some as little more than gimmicks destined to (rapidly) become landfill. However, we might also pause to remember that people often learn by producing seemingly nondescript work. All of which is perhaps especially OK if it’s recyclable nondescript work, an issue that points towards the need for effective waste capture and recycling infrastructures; a crucial topic, but too substantial a subject to address in this introduction.

Globalisation Inverted - the Return to the Locale

As these micro-manufacturing systems filter down to local design, make and mend, the space where DIY handcraft producers and technology hackers overlap will be especially active in ways that will, hopefully, extend the possibilities for individuals and communities to become more locally productive.
and resilient - perhaps using 3-D desktop printers for some forms of relatively small-scale creations, and Fab Lab style workshops or local business park fabrication shops for larger and more complex constructions. Marked by their flexibility and adaptability, these localised micro-projects and micro-enterprises will be at the forefront of a broader trend that corporate capital is now struggling to come to terms with - the shift from global value chains towards more localised, smaller-scale distributed manufacturing.

This notion of a return to the locale is supported by a particularly interesting Royal Society of Arts report, ‘Making at Home, Owning Abroad: a strategic outlook for the UK’s mid-sized manufacturers’. Essentially a trend guide for mid-scale manufacturing, it predicts that over the next ten to fifteen years fewer products will be made at high volume in truly global production networks, but rather that the production and sourcing of consumption goods in many sectors will become regionalised, and potentially localised, even for some larger companies. In effect, e will experience a ‘re-shoring’ trend, particularly of mid-sized manufacturers, from Asia and elsewhere. The report excludes high-value density products (those with significant value per tonnage of weight) from this trend, but quotes a recent Boston Consulting Group analysis that identifies even industries (transportation goods, computers and electronics, fabricated metals, machinery, plastics and rubber, appliances and electrical equipment, and furniture) as already close to the tipping point where it makes economic sense to manufacture regionally, or even locally, rather than in far offshore centres of production. The reasons for this expected ‘re-shoring’ are several-fold and well rehearsed, but ‘Making at Home, Owning Abroad’ usefully recaps and updates them:

i. **Increasing labour costs to capital**: the report predicts that the total labour-cost savings of manufacturing many goods in China will only be about 10% to 15% so that many companies will find that making products in the East that are destined for consumption in the West will bring only marginal cost savings.

ii. **Rising commodity prices**: similarly, it notes the rising costs of commodities as the demand from emerging economies impacts on global markets; also other pressures, such as climate change constraints on production and transport will translate into commodity price rises.

iii. **Environmental emissions legislation**: the report notes that while the international community has largely failed on climate change, it still foresees the introduction of tighter national and international emissions regulations related to the production and transportation of goods - particularly as business and transportation are key sources of climate change emissions. In the UK, for example, the business sector accounts for 15% of all emissions, while transport accounts for 26%.

iv. **Peak oil**: the report includes a brief but interesting discussion of peak oil, a much-disputed topic. While noting the uncertainty locked into oil pricing and its subsequent impact on transportation, in terms oil stocks it cites “…strong evidence…” that oil production will peak before 2030 under practically all scenarios. Moreover, it refers to what is taken to be a robust model of the world oil market by the International Monetary Fund (IMF) that states:

> “…our prediction of small further increases in world oil production comes at the expense of a near doubling, permanently, of real oil prices over the coming decade. This is uncharted territory for the world economy, which has never experienced such prices for more than a few months.”

v. **Changing consumer expectations**: finally, a subject that ‘Making at Home, Owning Abroad’ doesn’t really develop, but we add to this list because of its importance, is the issue of changing consumer expectations - particularly in relation to climate change, localism and social equity. This is a topic that *Making Futures* has regularly featured, not least through its ‘post-Fordist perspectives on consumerism’ strand: that citizens are no longer content to see themselves as passive entities within unidirectional consumption systems, but are increasingly looking for options that might allow them to exercise their agency within production and consumption relationships, particularly where these are restorative or regenerative in terms of both social and environmental capitals in ways that citizens can directly identify with, for example, in relation to improving their locales.

All the above factors imply that production will indeed move closer to the customer and will be carried out in low volumes with a strong focus on
the reduction of unnecessary stock and waste. They also connect back to the spread of craft and maker movement values mentioned earlier; craftspeople and artisanal micro-manufacturers who can show that they are responding to these issues, for example, by engaging with circular 'cradle to cradle' principles as much as possible (i.e., reusing durable components, eliminating waste wherever they can, and (where feasible) drawing on renewable energy sources) are particularly likely to have futures as makers. Of course, it will not be easy. The ‘high street’ competitive struggle will, as ever, be intense, especially as mid-sized companies start to re-shore. Competition fronts are most likely to be fought around copyrights and, perhaps even, the supply of equipment and certain base materials. But adjusting to the necessary changes will not be easy for corporate players either. For many it will mean dismantling sophisticated operations built around high-volume exports to build complex new production systems within, or close to, each of their markets. Moreover, as discussed in relation to ‘Jugaad’, above, their R&D is simply not built to deal with the ad-hoc, flexible and frugal innovation that new low-cost design-to-make systems permit.

Indeed, it is particularly telling in this regard, that one of the big four global corporate consulting firms, Deloitte, has recently produced a twenty-one page executive briefing on the maker movement advising that companies begin to track it as an early signal of the future business landscape. They recommend that senior managers develop feedback loops into maker communities in order to gather intelligence that will help them entirely rethink the corporate business enterprise - its products, assets and markets, but above all, its modus operandi and mind-set.

**Zero-Marginal Cost Society**

Finally, there is the critical issue of whether it will simply be worth some companies trying to compete with small micro-producers based on possible rates of return. Here we reference Jeremy Rifkin’s notion of the trend towards near zero marginal cost operations. We have already noted how digital fabrication technologies are becoming available to smaller-scale (ultimately domestic) makers; moreover, how they can reduce start-up, production and materials costs. Rifkin predicts that these 3-D production systems will obey the same economic logic as 2-D digital media systems that have reduced the costs of producing text, voice, image and sound communications to the point where they are almost free. He claims the end result of this process will effectively be the removal of many forms of product exchange from capitalist market equations. In this he points to a huge expansion of the Collaborative Commons allied to the so-called emerging Internet of Things, i.e., the migration of a raft of fundamental modern socio-economic structures (consumer goods production, energy production, financial systems, knowledge and data platforms, distribution and communications systems) into low-cost digitally enhanced network infrastructures. Indeed, Rifkin anticipates these infrastructures will consolidate into a type of parallel but alternative political economy - indeed, will perhaps become the dominant non-capitalist political economy as the effects of these developments swell beyond the economic realm to fundamentally alter our social and political institutions.

Whatever one feels about eventual destination depicted in Rifkin’s vision, it is not necessary to completely accept all that he claims to nonetheless appreciate the legitimacy of some aspects of what he says. Taken with the trend towards local production, opportunities are indeed likely to arise (in fact are already developing) for craft producers and micro-manufacturers as digital production costs continue to fall. Of course, not all craft producers will want to adopt digital fabrication techniques, and still less do we envisage market-based exchange relations ceasing to exist. However, many large trans-national and national markets will perhaps fragment into a spectrum of smaller-scale local markets embedded in local cultures and weaving economic value chains with social value chains; and which despite their local orientation, will constantly interact with wider globalised communities and enterprises. In effect, are likely to construct our lives in and out of mixed instantiations of small-scale market and commons associations, as these simultaneously orbit around the periphery of a reduced number of global production and consumption chains.

**The Ideological Figure of Making**

We accept that aspects of this imagined ‘molecular evolution’ in the making might sound too hopeful, perhaps even naïve. In defence we would repeat that we are, of course, only too aware of the fate that Piketty’s scenario implies: that the future return of craft is unlikely simply to be a matter of freely choosing agents engaged in the small-scale making and voluntary material simplicity agendas typically associated with middle-class life-style choice. On the contrary, we are likely to see a great deal of what might more appropriately be termed enforced material simplicity, brought about by deprivation and marginalisation and in which self-directed making
and mending is not experienced as affirming an liberating, but rather as a form of marginalisation and emasculation. Yet we must also reiterate what was noted earlier, that this future is not inevitable. There is no law that says this must happen; we have agency and can act to change these circumstances.

This last thought returns us to the heart of the craft enterprise and what we might call its ideological dimension. Craft can lend definition and identity to the life-cycles and rhythms of human work and being, can make comprehensible our experiences of materials and objects and show how these mediate our relations with self and others. Given this, and the endurance of the so-called ‘social turn’ in creative practice more broadly, it is not surprising that craft today has become an instrument of social engagement, quoted by the fine arts and design alike.

For one of the principal reasons for the current revival in craft and maker movement activity is that the craft ‘project’, if it may be called this, so successfully appears to straddle the various contradictions underpinning modern life: craft recognises itself as enmeshed in market relations, yet is still capable of exploring notions of autonomy, embodiment, technology, work and their relation to everyday life - in effect part of the commodity system, yet simultaneously claiming a space for living according to values that reach beyond commodity relations. For these reasons craft is, and will remain, powerful as an idea and set of practices that serve as rallying points for a critical and engaged public. Not as a ‘slogan’ or a ‘program’ (to return to Guattari’s quotation), but as something that is ‘felt and lived...’ This critical potentiality is important because what it comes down to, finally, is to what we want... to what we desire. And this, as Making Futures has consistently sought to suggest, is at least a question of how we learn to desire (a better) desire.

Needless to say, preparations are well under way for the fourth edition of Making Futures which will take place in September, 2015. We look forward to continuing the good work of exploring with colleagues and community our common future in, and through, making.

Malcolm Ferris
Making Futures Curator

References
1 Elements of this essay were first published as the introduction to the print booklet of abstracts to the Making Futures conference at Mount Edgcumbe, September 2013; and as a presentation entitled ‘The Return of Craft in a Sustainably Aware Post-Growth Society’ in the ephemera conference at Copenhagen Business School, 2014.
2 Felix Guattari, Molecular Revolution in Brazil, Semiotext(e)/ Foreign Agents, distributed by MIT Press, 2007. The quote is also used on the MIT page promoting the book.
3 I use the first person plural as a rhetorical device; the positions outlined in this paper represent my opinions only, and any errors or omissions are mine alone.
4 For a full description of the component elements of the conference programme, consult the Making Futures 2013 website at: http://makingfutures.plymouthart.ac.uk/
5 We link this progressive idea of craft to what we have referred to as its Theatre of Becoming, i.e., the slow drama of the encounter between body and material in making. This serves, however, not simply as a potential description of making as experience, but also as a trope, or symbol, for the idea of craft more generally. See, for example, the introductory essay to the second volume of the Making Futures conference, Making Futures – the crafts as change-maker in sustainably aware cultures, available at: http://makingfutures.plymouthart.ac.uk/journalvol2/index.php. Richard Sennett analyses this ‘body-material’ encounter through the component elements of gesture, resistance and rhythm. See Chapter 7, ‘The Workshop: Making and Repairing’ (pp. 199–220), in Richard Sennett, Together: The Rituals, Pleasures and Politics of Cooperation, Penguin Books edition, 2013.
6 Caroline Arscott discusses this apparent contradiction between the socialist politics of Morris and his practice as a producer of handcrafted luxury goods for a bourgeois market. She quotes Walter Crane’s explanation of how Morris saw this dilemma: “...according to the quality of the production must be its cost; and that the cheapness of the cheapest things of modern manufacture is generally at the cost of the cheapening of modern labour and life, which is a costly kind of cheapness after all.” See Caroline Arscott, ‘William Morris: Decoration and Materialism’, (p. 9) in Andrew Hemingway (Editor), Marxism and the History of Art: From William Morris to the New Left, Pluto Press, 2006.
7 The UK’s return to growth is presently the subject of intense debate as to whether it is a solid recovery built, for example, on manufacturing production and sales, or whether it is fundamentally another house prices driven credit-based boom. Time, as ever, will tell...
8 Since the late 1960s there has been a steady stream of critics who have questioned the feasibility, moral legitimacy and sustainability of the idea of perpetual economic growth that they see as the underlying assumption of the contemporary capitalist organisation of society. See, for example, E. F. Schumacher, Small is Beautiful: a study of economics as if people mattered, Vintage, (1973); S. Latouche, Farewell to Growth, Polity Press, (2009); A. Gorz, Capitalism, Socialism, Ecology, Verso, (2012), to name but a few. There now seems to be a renewed interest in returning to these and other recent texts to critique the paradigm of growth orientated capitalism. See, for example, the ephemera conference, ‘Organising for the Post-growth Economy’, Copenhagen Business School, 2014, and the forthcoming special issue of ephemera on this theme to be published in late Autumn of 2014. The ephemera site is at: http://www.ephemerajournal.org/
9 Piketty shows that the historical norm was for the rate of return on capital to be higher than the growth rate of output and that this fell with the evolution of pre-industrial agrarian societies and their socially-rigid, oligarchical structures. This broadly remains the case even as Western nations transition into industrial societies, but changes in about 1913, when it becomes profitable to invest in industrial production. For Western nations the next eighty years or so, mark a period of increased social mobility, a narrowing of inequality levels, and the advance of democratic institutions, with the data suggesting that this changes were induced by the two World Wars and population growth. However, world population began to decline from the late 1970s, and since circa 2012 the return on investment is moving in the direction of being greater than economic growth with the trend clearly showing that we are heading towards a society in which accumulated and inherited wealth again become primary sources of power. Thomas Piketty, Capital in the Twenty-First Century, Harvard University Press, 2014.
There are of course myriad examples of customisation one could discuss, but a simple yet effective case appeared in a CNN blog that reported on the customisation of orthotic insoles for shoes using a small domestic printer. Whereas a custom insole could cost $500 to $800 from a retailer, an insole could be made on a 3-D printer for about $2, although the customisation element did require input from a 3-D scanner. See: At-home 3-D printing could save consumers 'thousands', CNN, July 2013, at: http://whatsnext.blogs.cnn.com/2013/07/31/study-at-home-3-d-printing-could-save-consumers-thousands/


Reported by Benedict Dellot in ‘These new one-man makers’, RSA Enterprise blog, March 2014. Also stated in the CNBC report listed in footnote 12 above.


A selection of, largely mid-scale, UK re-shoring case studies can be found on the Manufacturing Advisory Service (MAS) Reshore UK site, at: http://www.mymas.org/manufacturing-support/reshore-uk A more extensive selection of largely American re-shoring reports and case studies can be found on the Re-shoring Initiative website at: http://www.reshorenow.org/

The session strand ‘post-Fordist perspectives on consumerism’ has appeared within each of the three Making Futures editions to date. The 2012 Making Futures conference also featured a keynote introduction by Professor Kate Soper based around her research into ‘Alternative hedonism and the theory and politics of consumption’. The issue of copyright protection in digital environments is of course already hotly contested, and the dispute is rapidly spreading to the 3-D maker world. For example, the start-up company Authentise has created a streaming service for 3-D printing files that protects design rights by making it impossible for users to store and share the files. The solution is similar to Spotify’s for music files, or Netflix’s for video files. See the Authentise website at: http://www.authentise.com


The Collaborative Commons is a term for the ecosystem of sharing that is developing around the Internet and digital tools more generally. It is not to be confused with the Creative Commons, which, as a non-profit organisation that enables the sharing and use of creativity and knowledge through free legal tools, can be considered a key institution within the wider collaborative commons, see: http://creativecommons.org/
Craft revitalisation as a change agent in Latin America

Adélia Borges

One of the most important facts in the Latin American current design scene is the alliance between designers and artisans. It is a collective, large-scale, and widespread phenomenon.

It is also a recent occurrence: in the region, the institutionalisation of design happened through a rupture with the ancient wisdom manifest in our material culture. The heritage of our artefacts was completely disregarded and depreciated. A deliberate desire of abolishing hand-made objects in favour of machine-made objects followed a view in which manual traditions were part of a backward past, underdevelopment and poverty, which would be left behind by a promising future, attainable through machines. In the name of progress and Latin America’s desired inclusion in the hall of developed nations, it would be better to bury these empirical practices and replace them with purely rational principles – Science, Technique and Methodology.

In Brazil, the seminal moment for this happened in 1963, with the creation of the Escola Superior de Desenho Industrial (ESDI – Superior School of Industrial Design) in Rio de Janeiro, one of the first Latin American university courses. Its curriculum was entirely based on that of the Ulm School of Design – Hochschule für Gestaltung Ulm, in Germany, that professed ideas of ‘good form’ or ‘good design’, which should be expressed in an international language.

If ‘form follows function’, it is not necessary to pay attention to local cultures as, once an ‘adequate’ form is reached, it can be repeated forever and independently of time and place. A good international form was considered as the only valid aesthetic for a rational serial production, typical of large manufactures, which emerging Brazilian designers would supposedly demand.

It was believed that industrialisation would kill craft. The advancement of modern industry would be inexorable and, little by little, make pre-industrial production disappear. To ‘defend’ craft, in this scenario, would be a mere reaction of people going against the flow of history, hostile to humanity’s development. In short, a nostalgic backward view that would be buried by world progress. The non-critical adhesion to a functional language became a prevailing force in the instruction and practice of our design. Design schools also prepared their students for a serial production market, typical of large manufactures in developed countries. As industrialisation in the region was still in its early stages, the consequence was the stagnation of design and the lack of a job market for young graduates.

On the other hand, our craft tradition was pulverised, spread over rural areas of poor regions, losing people and suffering from an accentuated loss of cultural significance. The rich traditions of manual production were suffering due to competition with industrial products imported from China, and the artisans began to repeat the industrial forms and/or to adopt stereotypes in production. In many places the same ‘motifs’ could be seen: scenes of snow or fluffy polar bears, berries and other delicacies exclusive to the Northern hemisphere which appeared on a variety of artisanal products.

Before continuing, it is important to make clear what the craft is that we are talking about. In Northern countries, craft techniques are learned in university courses and are practised by educated people who see in this activity a form of self-expression – which brings them closer to art than to design. In Latin America, it is an activity disseminated mainly throughout countryside areas, but also favelas and fringe areas in the cities, where the artisans make objects collectively as a way of coping with adverse conditions. These objects can be reproduced in series and are conceived within premises usually attributed to design, such as to fulfil a functional requirement and to employ specific materials. The production techniques have been transmitted through generations by elder members of a community, not learned at school.
Different paths of coming together

In the 1980s, in many countries – such as Colombia, Mexico, Argentina, Uruguay, Chile and Brazil – designers started a movement towards the countryside, seeking a revitalisation of craft.

There is neither standard procedure nor a ready-made recipe for this revitalisation – and it could not be otherwise, as different situations call for different responses. But certain paths have been followed during this development. We can mention initiatives for:

- Improvement of working conditions for artisans;
- Improvement of technical conditions of the product and of standards of quality;
- Making use of the potential of local materials;
- Developing graphic and packaging design for artisanal products;
- And – an important point – initiatives which ‘anchor’ the formal references of the objects in local cultural traditions.

Sustainable development

In workshops held in communities throughout the region, a new stage of the craft emerged. Initiatives marked by entrepreneurship and social innovation brought a new push to sustainable local development. In the words of Australian curator and researcher Kevin Murray, a privileged observer of the craft scene in the Southern hemisphere, a truly silent (r)evolution began in Latin America.

It is important to keep in mind that artisanal production is in tune with recent ideas of sustainable development, which embraces concepts of environmental responsibility, economic inclusion, social justice and cultural diversity.

Considering the environmental dimension, the practices of artisans are, historically, connected to the use of local materials. Because the distance between gathering raw materials and their transformation is short, little energy is required for transportation of supplies and the finished products.

In a country with a great vegetal biodiversity such as Brazil, it is interesting to see how artisans are constantly innovating in the use of natural materials. Among the materials present in recent experiences are ‘golden grass’, a very beautiful kind of grass that only occurs in one region of the country; rubber from the Amazon; fish skin, a pretty interesting new material; and dry leaves.

In Latin America there is also a great tradition in the use of recycled materials, well before the word ecology was incorporated in the agenda of governments and business people. Due to poverty, recycling has always been part of the behaviour of our societies. In the workshops, we see the use of many materials that come from recycling, such as plastic bottles, cardboard from transportation boxes or fabric strips that remain as waste from machine cuts in textile industries.

Concerning the economic dimension of sustainable development, craft intensively absorbs the work force and generates better income, particularly in the lower classes. As Indrasen Vencatachellum, who worked for UNESCO for many years, warns, the effect of craft in generating jobs and resources is much more strategic than one may imagine, due to the multiple effects of the sales of these products. We must include in the ‘accounts’ of craft all the people who take part in the elaboration of raw materials and the necessary equipment for the making of the pieces, in addition to those who transport the objects and those who distribute, sell or export them.

In Brazil, some surveys have found that participation in the Entrepreneurs Qualification Programs have produced an increase in the average income of individual artisans of between 50 and 300 per cent.

Social transformation caused by those programmes is very important as well. When visiting communities in some regions in Brazil, I have heard moving testimonies. I have heard the artisans say: ‘I have more confidence in myself and in my life now’, ‘my mind has changed’, ‘I am not as ashamed as I was before’. Designers and managers who spend time with the artisans say that many of them were ashamed to talk in front of an ‘educated’ person. Today, they look up, talk confidently and lead meetings. ‘They feel much more their own bosses’, ‘they stand more firmly on the ground’. Illiterate or functionally illiterate people suddenly become stars of History with a capital H; they appear in newspapers, they give talks.

In many communities, houses were built or renovated to function as headquarters for associations. This way, artisans are able to alternate part of the day at home and part of the day at association facilities, where they talk about various subjects and have access to information that they would not have if they were isolated in their
homes, such as talks on health and hygiene that may be offed. Meetings also prompt artisans to organise on other issues, such as collaboration to drill a well in order to have drinking water.

Big cities are no longer the only path for a better life. Programmes of craft requalification have allowed people to stay in their hometowns or areas of origin and achieve a quality of life which, before, they could only reach by moving to a larger city. The interruption of migratory flows – and in some cases even its reversion – has been happening in many cases.

Cultural diversity has been recently pointed out as the fourth pillar of sustainable development. Concerning this issue, we observe that, together with food, craft is one of the most important means of representation of a people’s identity. Through craft, not only are materials and techniques powerfully represented but also collective values. They express singularity. Even nearby villages have unique characteristics. This singularity is totally connected with the agricultural and culinary traditions of each place.

Projects that work with local cultural identities make artisans proud of their origins and everyday lives. They enhance their notion of belonging. They work as what Brazilian designer Ronaldo Fraga calls a ‘mechanism of cultural appropriation’ of the place where they live. The changes increase their self-esteem and affect families, husbands, children, social groups and neighbourhoods.

Delicate relationships

The alliance between designers and artisans is, undoubtedly, a crucial phenomenon due to the social and economic impact it generates and its cultural meaning. It is widening the reach of many Southern hemisphere countries’ artisanal objects. However, there have also been many detrimental experiences, showing lack of real respect for local cultures, work without continuity, and unequal exchanges.

One thing that has taken place is visits by teams to communities, taking with them ready-made projects, sometimes even prototypes, so the artisans end up elaborating with their own hands something that others have created. It doesn’t allow a real dialogue, since the designers are seen as providers of brains and the artisans as suppliers of hands. There may be situations where a designer or a company will ask for nothing more than labour from the artisans. There is no problem with this, as long as it is clear what is being requested and payment is properly carried out, rather than referring to the projects as ‘social design’.

The German designer, professor, and design theoretician Gui Bonsiepe, who lives in Latin America, alerts us to what he calls the ‘productivity approach’ within the theme of craft and design, which ‘considers artisans as qualified and cheap labour, utilizing their ability to produce objects developed and signed by designers and artists’. According to Bonsiepe, a great deal of naivety is necessary to accept this approach, presented as an ‘aid’ for artisans in peripheries. They use humanitarian interests as excuses to produce designs ‘inspired’ by the local folk culture or designs brought directly from the center in order to take advantage of cheap labor in those communities. This practice in design tends to continue dependency relationships instead of contributing to their eradication. (Bonsiepe, 2011: 63)¹

The American journalist Bruce Nussbaum, former design editor at Business Week magazine, wrote a provocative article for Fast Company magazine about this topic, entitled: ‘Is Humanitarian Design the New Imperialism? Does Our Desire to Help Do More Harm than Good?’ In his words, should we take a moment, now that the movement is gathering speed, to ask whether or not American and European designers are collaborating with the right partners, learning from the best local people, and being as sensitive as they might be to the colonial legacies of the countries where they want to do good.

In addition, he asks, ‘might Indian, Brazilian and African designers have important design lessons to teach Western designers?’²

Two years earlier, English author John Thackara presented his view: ‘The most powerful lesson for me, after twenty years working as a visitor on projects in India and South Asia, is that we have more to learn from smart poor people regarding things like ecology, connectivity, devices and infrastructures, than they have to learn from us.’³

The relationship between artisans and designers is a delicate one, and the same goes for relationships between each of them and project managers. Technicians of financing and in entive programmes usually wish to obtain, in the shortest time possible, the most expressive results possible. Designers and
artisans counter the argument, saying that many managers, even though they mean well, often come with an official point of view; they are insensitive to the nuances of each different place and are more concerned with fat figures they can write down on their reports than with qualitative changes.

Oswaldo Salerno, of Museo Del Barro (Museum of Clay) in Assuncion, Paraguay, says that the Inter-American Bank launched a problematic programme to improve artisanal pottery production in Paraguay.

The tradition of Guarani pottery is to bake the pieces in an open fire. They came and introduced ovens, which were sold to the artisans through loans. The oven changed resulting colors, changed the process. Furthermore, those changes did not open new markets; the artisans had great trouble to pay the loans. Before introducing resources, it is necessary to research cultural and historic meanings of a given production.

Mistakes have the power to teach lessons. It is better to leave craft alone rather than make careless, pretentious interventions. The effects of an inappropriate intervention can be highly damaging. The more traditional craft techniques are, the less the designer must interfere in this aspect. The older the tradition, and the 'further away from civilisation' the community where it is done, the higher the danger and the greater the care needed. An action cannot be isolated; otherwise, when it ends, it leaves no positive results in the communities but instead creates enormous expectations which are almost always frustrated. Some people must stay where they are in order to systematically continue the work. Outside consultants may unleash the process, but its continuation must be anchored in local bonds.

We must reflect on the bad experiences and learn from them. What are the key factors that allow an action to be continuous? What kind of relationship must be established between designers, communities and programme managers? What kinds of interferences are beneficial? How do we deal with local knowledge repertoires? How do we identify existing abilities? How do we develop work that resonates deeply in the artisans' lives? These are a few questions that must be urgently discussed – otherwise, harmful programmes may be set up.

A promising activity

Apart from these problems, the revival of crafts has proved very promising in Latin America. There may be no more significant indication of the success of Brazilian craft re-qualification programs than the existence of young artisans. Until a few years ago, the artisans wished ‘better fates’ for their children, while many traditions passed from generation to generation were suddenly in danger of interruption. Today, in many places, we see teenagers and youth taking part in craft, and not only girls and young women, but also boys and young men, which is a novelty in this scenario.

The prognosis of the extinction of crafts has not been confirmed. In Latin America and elsewhere, there are many clues to the contrary, indicating that the place of craft in our society is expanding. This growth is not merely based on the ability these objects have to fulfil their functions, but on their symbolic dimension. In this renewed significance, what matters is the ability an object has to bring to their users values that have only been recently acknowledged, such as human warmth, uniqueness and belonging.

Instead of the uniformity and standardisation of industrial products, craft products are never identical. They possess the beauty of imperfection. They age with dignity, able to remain valuable to us for our whole lives. They tell us about a precise place where they were made by concrete people. They are honest and dependable. They convey culture and memory. Because of all these things, they can touch – and the use of the verb touch is not fortuitous – our hearts, our souls.

In conclusion, in Latin America craft has proven to be a crucial 'change maker'. As an activity that preserves the environment, expresses cultural identities and leads to the improvement of life quality for the people who produce and consume it, it is an important tool for achieving a kind of progress that really matters in the contemporary world.

Notes

1. Bonsiepe, G. (2011) Design, Cultura e Sociedade. São Paulo: Blucher. ISBN 978-85-212-0532-6 10-12482, CDD-745.2. In his book, Bonsiepe says that the theme of craft and design can be studied through the following perspectives, which can appear in pure or mixed forms: a conservative focus, nationalization-inclined, productivity-inclined, culturally-inclined, or essentialist, paternalist and focused on promoting innovation.


Tomás Diez
The Fab City

Abstract
Today’s economic, environmental, social and political crises are the result of a model that was shaped during the last 100 years. This model is based on oil processing (energy and raw materials), chain production and the creation of a global economic system. Our oil-based economy and serialised production model has allowed humanity to increase the capacity of manufacturing resources to solve its basic needs whilst investing less time and human resources and, furthermore, to generate new materials and processes for the consumption of goods and services by the masses. The spatial separation of production from consumption, and the acceleration of manufacturing processes (mainly in food), have allowed humans more time to expend in other activities. The rise of an entertainment-based society is the result: once your basic needs are met, you can use the most recent technological discoveries to consume and produce spectacle and leisure. We need to change our relationship with technology in order to achieve a more sustainable, productive and knowledge-based way of living, bringing production closer to consumption and managing our lives with more efficient and demand-based dynamics.

Keywords
smart city, smart citizen, Fab Lab, Fab City, self-sufficient city, do-it-yourself, digital fabrication, Barcelona, urbanism

A place where everything happens, or used to happen: The city
In today’s society it is in cities where most human interaction takes place. Urban settlements are among the most complex systems created by mankind, and are the places where the biggest challenges of our future will happen. It is a fact that our present productive model is putting at risk the sustainability of the next generations. Although it might sound like a ’70s or late ’90s assertion, the sentiment remains and is becoming even more critical, and from different points of view. The technology, the resources and the administrative make-up of cities today are obsolete, and in the main continue to be based on out-dated models that encompass economic, social, political, environmental and technological perspectives. The majority of our cities function under an old industrialised model that emerged around 200 years ago in Manchester and Liverpool, with the industrial revolution. The current industrialised model relies on access to raw materials in Africa and America, cheap physical labour in Asia, and access to oil resources, mainly in the Middle East. Western societies consume food and products manufactured thousands of kilometres away from the cities we live in, which produce trash that is not being reused, and actually is being shipped thousands of kilometres away, or contaminates adjacent ecosystems.

The economic and productive model began to shape the industrialised city a couple of hundred years ago, first by establishing centres of production within the city borders, and then by absorbing the population of rural areas; people came to live in precarious conditions but were attracted by the new possibilities offered by the urban centres. Years later, production left cities and moved thousands of kilometres away from them, increasing the use of fossil fuels in the transportation of goods, levelling job opportunities and, more critically, separating knowledge of production from consumption. The result is that cities have become big factories of trash, and their subsistence depends on technology produced far away. Our cities are the physical manifestation of the consumption-based model we are living with today.

But, on the other hand, cities need technology to function and to offer their citizens the commodities to live and to satisfy their needs. The logistics of urban centres are dependent on core technological capabilities which allow them to provide services, facilitate resource distribution and resolve emergencies within their limits. Today’s cities not only have to fulfil the needs of their citizens through the construction of major infrastructure such as
pipelines, fibre optic networks, public transportation and high quality public spaces; they also need to innovate and create their own technologies, and to share with other urban centres in order to construct solutions for the city, and by the city – and through its citizens.

Where is technology produced? Why?
In the medieval city, most of the productive activity happened within the city walls, which created the physical boundaries for the exchange of knowledge. The city walls served as a physical limit, which concentrated its problems but also forged solutions through the local production of goods. In this sense, we can say that the artisan work was produced in order to satisfy a local need or desire, which could then be connected with other towns or cities, in a secondary level of importance. The industrialisation of production decoupled the purpose of fabrication from its immediate reality; it scaled up into regional, national and global interests and, furthermore, to a standardised production system which finally created what we observe today: a person in Delhi uses the same microprocessor in their computer as a person in Buenos Aires, or in Cape Town or Washington, but at the same time we do not need to use the same cups, tables, toys or specific tools in China, Ukraine or Peru. In the case of a functional item this might not be important, but it becomes serious when it refers to the public lighting of a city, a public transportation system, or the furniture we use in our living rooms; most of these objects were conceived and produced for the environmental conditions and users of different places, and which are removed from the reality of those who own and use them. More critically, these objects and devices have been standardised, as if there were not different people, or different countries, with different conditions … creating an average global standard set for consumption. A universal consumption kit has been created.

A recent history of why we use what we use
If we go back to the last century, we will discover that a great deal of the technology we consume today was developed in the context of the military industry. It was this which allowed us to create most of the inventions that define our everyday life: from how and what we eat, to the way we communicate with each other, among many other simple activities. In Sex, Bombs and Burgers, Peter Nowak states: ‘We’ve come to the point where it’s almost impossible to separate any American-created technology from the American military. Chances are, the military has had a hand in it, and industry has been a willing partner’ (2010: 12)

From Nowak’s book we can understand that the most basic instincts of human nature that have instigated the development of the major advances of today’s technology – the war industry, the food industry and the sex industry – have created major changes in our everyday lives, in ways that most of us are not aware of. The First and Second World Wars gave us things like the microwave oven, the hand-held camera and personal computers. Later on, the Cold War was the beginning of today’s internet, when Vint Cerf and colleagues conceptualised a distributed network of connected nodes in order to maintain information flow in case of a nuclear attack on the US. Today, the internet has become the most influential recent invention for shaping the way we live, share and produce.

In The Self-Sufficient City, Vicente Guallart, Chief Architect of the City of Barcelona, maintains that the ‘internet has changed our lives, but has not changed our cities’ (2012: 9). Guallart has developed a whole conceptual framework for how a multi-scalar approach, mainly supported by connections between ICT, urbanism and ecology, will reshape the model of our cities, just as the oil industry and serialised production did a hundred years ago. ‘The information society, however, connects people to people, objects including buildings with buildings, including community so that the flow of resources between nodes occurs on a smaller scale, allowing, from the interaction of thousands of similar nodes, the “emergent” system’ (Guallart, 2012: 55).

But the industrialised model is under stress, and certainly we are at a moment of transition through the creation of new tools that will redefine and shape our reality. The informational and productive tools in the hands of citizens seem to be the key players in this process, as Guallart notes: ‘The regeneration of cities on the model of connected self-sufficiency only makes sense if it allows people to have more control over their lives and gives them more power, as part of a social network’ (2012: 55).

There is no question about the importance of new tools for citizen-based accountability. From common tools like community radio or printed advertisement to the most recent Kickstarter projects like Formlabs (http://formlabs.com), Spark (http://www.spark.io) or Smart Citizen (http://www.smartcitizen.me), we can see that ITC is putting in the hands of people a vast access to new ways of participation in everyday life decisions. Radio, video reporting, blogging,
environmental sensing ... today, as citizens, we can get access to open source tools and platforms and use them to expose irregularities and crime, share an event, create a new voice in our neighbourhood, or communicate with our community. The case of a nine-year-old student in the UK has been a recent case in point: she took pictures of her school's food and shared it on her own blog, creating awareness of the conditions of school meals. ‘Martha Payne, aged nine, uploaded a picture of her lunch. Martha’s blog soon began to fill with pictures and reviews of her school’s food, which attracted the attention of mass audiences’ (William Cook, Daily Mail Online, 2 October 2012).

The case of Martha is fascinating: she used a digital camera (or the one from her smartphone) and uploaded to an existing blogging platform. Now Martha is a celebrity and runs a charity programme for children in Malawi. This may be hugely enhanced by the media and by our spectator society, but at the same time it makes us think about the possibilities of the tools we have at hand today and how significant they could be if we use them to improve our living conditions. Beyond existing tools in the form of websites, apps, and other traditional tools, today’s citizen participation in accountability could be exponentially changed by the introduction of ‘the tools to make the tools’.

The productive city: Barcelona 5.0

Our cities import products and produce trash, tons of trash. Obsolete products, plastic packaging, cans, and rotten food end up in our trash bins (1.2 to 2 tons of food produced worldwide never gets eaten, while 870 million people are underfed), most of it never to be used again. Barcelona is one of these cities, and it wants to change that. Imagine productive neighbourhoods equipped with digital fabrication laboratories (Fab Labs) and connected with other neighbourhoods and cities throughout the world, exchanging knowledge and addressing the problems of the community, like public lighting, playgrounds, environmental conditions, energy production, food production, or even local production of needed goods such as domestic furniture or simple mobility systems; using old products as raw materials, recycling plastic to be 3D printed again, or using old electronics to produce new useful devices. Futuristic?

Fab Labs were initially created by the Center for Bits and Atoms at the Massachusetts Institute of Technology. Their success was surprising even to their creators; as Director Neil Gershenfeld observed: ‘they happened as an accident’. Fab Labs started as a kit of tools and machines that CBA provided to a local community in inner-city Boston, as part of its outreach programme. Fab Labs started to spread to Ghana, Norway and India in the early 2000s, and then to Barcelona, Amsterdam and the rest of the world. Today there are around 150 labs in more than 35 countries, across continents. All Fab Labs share the same inventory of machines and processes and are connected through the internet and videoconferences, building one of the biggest networks and communities of makers in the world.

Fab Labs have a global scale, but Barcelona is forging a new model of a productive city that is based on local manufacturing enabled by the use of digital fabrication machines and processes and, more importantly, by the construction of a makers’ community not only limited to Fab Labs. Antoni Vives (Deputy Mayor of the City) and Vicente Guallart (Chief Architect of the City) launched the Fab City project in the seventh Fab Lab Conference in 2011, which took place in Lima, Peru. The Fab City project came about from a discussion that took place in Boston between Vives, Guallart and Neil Gershenfeld. The discussion was basically centred on the question of productivity in cities, and how our cities today only import goods and produce trash. Informally, Guallart has named this model ‘from PITO to DIDO’ (PITO refers to ‘product in, trash out’ and DIDO refers to ‘data in, data out’). Barcelona is proposing a new model for cities, based on the production within the city, recycling materials and satisfying local needs by local invention – the DIDO model, in which a majority of the imports and exports of a city will happen in terms of bytes (information) and all the atoms are handled at the local scale. This is the Fab City project: productive citizens using common tools and sharing knowledge about making and manufacturing to solve local needs and generate new businesses and educational programmes – a whole productive city.

This year Fab City’s plans include the opening of two new Fab Labs in inner Barcelona: one in the district of Les Corts, one of the wealthiest neighbourhoods in the city with a highly educated population and access to commodities; the other in Nou Barris, one of the most conflictual districts, located on the city’s periphery and based on a ‘60s development model with superblocks and with high rates of youth unemployment. Both Fab Labs will be equipped with the basic machines and tools that each Fab Lab has network-wide. It will be named ‘Ateneus de Fabricació’, a Catalan translation of ‘fabrication athenaeum’. These two Fab Labs will be...
the beginning of a city network with the objective of installing at least one athenaeum per district in the coming years. The idea of the city Fab Labs is to provide the means and tools for citizens to incubate businesses, learn new ways of production and fabricate change for their communities, in strong connection with the worldwide network of makers.

IAAC and Fab Lab Barcelona have developed projects which could be used at the scale of a micro-controller for an entire house, like the Fab Lab House, constructed in 2010 for the Solar Decathlon Europe competition, or the scale of a city or territory. The Fab City is a city-scale project that will be strongly supported by another project developed within IAAC and Fab Lab Barcelona: Valldaura self-sufficient labs, which exist on a territorial scale. Valldaura is a 130-hectare estate located 15 minutes from Barcelona city centre, inside the Collserola Metropolitan Park, the green centre of the metropolitan area. Valldaura was acquired by IAAC in 2010 and aims to develop different kinds of programmes that focus on three main principles of self-sufficiency: the production of energy, the production of goods and the production of food. Valldaura will be the incubator of new ways of production using natural and sustainable processes, and of the generation of new materials; it will allow for field tests and development of solutions for the self-sufficient city in an old monastery (Can Valldaura), but at the same time it will be connected with the world.

Photos copyright Adrià Goula
Do-it-yourself is not new – Do-it-with-others is better

Steward Brand’s The Whole Earth Catalogue (1968–1998) was released as a DIY guide for making and giving access to tools for people to develop a more self-sustainable way of living. The catalogue was updated in every issue, with how-to guides to build different devices and inventions, like water filters and solar-powered lights, to improve not only individual lives but community living. What happened with all these movements? Why did the catalogue reduce its print-run in the 1970s to finally stop altogether in 1998? The catalogue became obsolete, perhaps because it was not needed in a consumer-based world.

However, the DIY movement was far from dead after the disappearance of The Whole Earth Catalogue – DIY is alive today in a new way through the use of the internet and open source tools such as Instructables (http://www.instructables.com/), Makezine (http://makezine.com/) and Thingiverse (http://www.thingiverse.com/), among other platforms, which are giving people access to new tools of creation and production, not only by providing instructions on how to make a solar-powered light or a complete 3D printer, but allowing users to upload, edit and share those instructions and their knowledge of how to make things. If we link these platforms with Fab Labs (http://fab.cba.mit.edu/about/faq/), MakerSpaces (http://makerspace.com/), HackerSpaces (http://hackerspaces.org/wiki/) and other facilities for local manufacturing, then we will have an ideal mixture of the global-digital world and the local-physical one, both articulated and synchronised in order to produce solutions and satisfy needs and desires, hopefully without compromising others’ needs and desires.

The smart citizen

In Barcelona during the last few years, the term Smart City has been in most of the mainstream forums, meetings and events, mainly connected with technology, urbanism and architecture. Barcelona hosts one of the most important forums of Smart Cities in the world – The Smart City Expo – and every year it brings to the city the biggest companies (IBM, CISCO, ABERTIS, etc.) and most important city government decision-makers internationally to discuss the new role of ICT in the development of more efficient cities. The orum is a perfect marketplace, and the term Smart City is the perfect brand to buy and sell new products related to technology and cities. But where is the citizen in this whole ecosystem of big traders, investment in infrastructure and new urban plans?

Together with a group of fellow researchers at IAAC, Fab Lab Barcelona and MID (Media Interactive Design Studio), we began raising questions with ourselves and with our students about the role of the citizen in the production of information in the city. At IAAC we run a complete studio class on Smart Cities and the role of ICT in the new urbanism. One of the main questions is: what are the tools that we have as citizens to produce information or goods in the city? In order to answer those questions we started by developing an Arduino-based kit that allows a user to capture data from the environment, which can inform us about the levels of air quality, noise, temperature, humidity, amount of light, solar radiation or radio wave exposure and can automatically upload the data to an online platform (http://www.smartcitizen.me) in order to share it and compare it with others’ findings. The kit uses any domestic WiFi connection, is powered by a lithium battery and, once connected, will automatically start to push data to a server in order to share it with others. The Smart Citizen project was launched in a crowd-funding campaign using a Barcelona-based platform, Goteo (http://www.goteo.org), which supports mainly open source projects.

The Smart Citizen project achieved its campaign’s goal in September 2012, raising 13,748 Euros in 80 days to produce the first 20 kits and develop the first version of the online platform. On the platform the data from the kits will be displayed and available for users to share, create visualisations, or generate triggers. Ultimately this has been developed in order to provide more tools for interaction between the citizen and the city. Less than a year later, Smart Citizen raised $68,000 in a 30-day campaign on the crowd-funding site Kickstarter, becoming a network of close to 1,000 people in the world who are capturing data and developing tools for participatory urbanism and activism.

The Smart Citizen project aims to develop a local network of data collectors not only in Barcelona but also in other cities of the world. In addition to the fact that there are several projects similar to Smart Citizen, one of its strengths is the ‘localisation’ of the data and the creation of a local community. The aim of the Smart Citizen project is better explained through this metaphor: make the cloud (i.e. online information and data) ‘rain’ in front of our homes and use both hardware and software tools to act in the city to understand it.
A new literacy

The introduction of new tools and technology in our everyday life has shaped the way we learn and what we learn. Until the '60s most of the work in an office was done without computers, course materials in universities were printed, medium-sized businesses did the accountancy by using notebooks archived on shelves. In the '70s computers became accessible to small and medium-sized businesses and organisations, requiring new skills for new tasks to perform with those new tools. Finally, in the '80s, computers became accessible to anyone; the popularisation of personal computers (PC) reached our homes. In the early '90s most of the schools in the western world introduced computers into classrooms and libraries, and learning word processors or image treatment software became part of standard educational programmes. Today's world operations depend on those new skills acquired by the new workers, leaving the machines in industry, and moving to offices in the city. As most of us know, this model of packed workplaces in front of computers is likely to be obsolete, and the 2008 crisis is just a starting point of a probable huge collapse. More and more office workers are being made redundant, and it seems that even those skills are not up-to-date anymore.

The 'first work, then rest' model also seems to be obsolete, as well the time = money equation we use to quantify and qualify what we do, how, and when. Today most of the unemployed of the world have time to spend but not the money to accompany it; the system failure resides in the fact that 'nothing moves without money'. This is a pathology which needs to be healed by the will of citizens. The internet is allowing us to have access to high quality courses in computer science, neurology, physics and electronics (i.e. EdX courses offered by MIT, Stanford and Harvard), or simple courses on how to learn the use of a tool, like how to learn to edit a movie, or to edit pictures using Photoshop, or how to program in C or Python (Codeacademy, KahnAcademy); learning is no longer necessarily connected with a formal institution – it can be achieved by anyone, anywhere, anytime, and for free. As we have learned how to use Word, Excel or Powerpoint, we will learn how to model in 3D, operate a laser cutter, or program a micro-controller. These new skills will determine our power to influence how our reality is shaped, because we will have access to the tools to do so.
Recently, a media series covered the importance of learning programming, or coding. According to the BBC, coding could be compared to learning Latin 2,000 years ago. Moreover, learning code is basically shaping a new way of thinking: ‘That, really, is what it means to inhabit the coded world: to understand what it means to use these machines to think with. This is what thinking has become in the 21st century condition’ (Tom Armitage, BBC-UK online, 26 December 2012). Not only coding but modelling and scanning software and tools, or any other skill that will allow us to relate both physical and digital worlds, will become mandatory in courses at schools, universities and training programs.

The next five years

‘A once-shuttered warehouse is now a state-of-the-art lab where new workers are mastering the 3D printing that has the potential to revolutionize the way we make almost everything’ (Barack Obama, President of the United States of America in the State of the Union address, CNN, 13 February 2013, Douglas Rose, online edition).

In the above quote, President Obama is referring to 3D printing as the major boost in today’s production model, but this might be too simplistic. 3D printing is the tip of the iceberg, while distributed and personal manufacturing is much more complex in essence and, at the same time, it might take several years to print fully-functional objects. Neil Gershenfeld states in a recent article in Foreign Affairs (2012) that 3D printing fever could be compared with media coverage for the microwave in the 1950s, which seemed to consider it as a replacement for the kitchen, while in fact although it made our lives better, we still needed the rest of the tools in a kitchen to produce complex food. Fab Labs could be compared with that kitchen, and 3D printers with microwaves; instead of food, in these labs new inventions are being produced at a faster speed than industry and university are doing today.

3D printing might not change the world itself, but it is the trigger for a major movement of which we are a part. It seems that there is a cycle in history, and the artisan, DIY practitioner or guilds are finding new tools and media to make, collaborate and produce technology. With the tools, the conditions, and the reality of life today, the human factor is the only aspect that seems to remain the same. Most of the phenomena we speak of today have been part of a previous period of history; what is really changing is the means to achieve these processes, and how we can now link things that previously had seemed incompatible.

The years to come will be transitional and critical for the construction of what may become a ‘second renaissance’ or a ‘high tech medieval age’.

References


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About the author

Tomás Diez is a Venezuela-born urbanist who specialises in digital fabrication and its implications for future cities. He is the director of the FAB City project at the Institute for Advanced Architecture of Catalonia (IAAC) (http://www.iaac.net), one of the initiators of the Fab Lab Barcelona (http://www.fablabbcn.org) project, and a PhD researcher at University College London (http://www.cities.io). He holds a Bachelors in Urban Planning and Sociology from the University Simón Bolívar, a Masters in Advanced Architecture from IAAC, and a Diploma in Digital Fabrication from the Fab Academy Program at the MIT Center for Bits and Atoms (http://www.fabacademy.org), with which he works as a close collaborator in the development of the Fab Lab Network worldwide with the Fab Foundation. He is co-founder of the Smart Citizen (http://www.smartcitizen.me) project and StudioP52 (http://www.studiop52.com), both in Barcelona, and is the co-chair of FAB10, the 10th international Fab Lab conference. His research interests relate to the use of digital fabrication tools to transform reality, and how the use of new technologies can change the way people consume, produce and relate with each other in cities.
New Routes to Sustainability – strategies for realising craft’s potential

Abstract:
The constantly shifting dynamic between craft and design is at the crux of this keynote address, which challenges us all to progress the debate on craft and sustainable development.

I begin by briefly reviewing the valuable progress made in this area of critical enquiry over the past five years. Specifically, I outline the assumptions we are now able to make regarding the value of craft knowledge and skills - both as impetuses to materials and product lifecycle innovation, and as tools for communicating about environmental and ethical issues. In doing so, I suggest that we now seek to build on this knowledge, looking beyond the issue of value to also consider actual mechanisms by which craft’s innovation potential can be best fulfilled within the sustainable development movement.

In opening up this debate, I consider the current status of craft practice, as defined by its relationship with design. I outline the impact of developments in communications and manufacturing technology, and of shifts in consumer values: in particular, I explore collaboration as an impetus to creative craft and design innovation.

I propose that interdisciplinary collaboration, bridging craft with science, technology and engineering, is one strategy with particular significance for the sustainable development agenda. Referring to new examples in the fields of environmental sustainability and social innovation, I show how makers and STEM subject professionals are working together: both to frame environmental and ethical research questions rooted in real-world issues, and to pool the resources needed to find solutions. In the process, I explore how – at its best – such collaboration can unite distinctive yet complementary ways of seeing, understanding and responding to the world.

This approach presents the craft sector with both opportunities and challenges, particularly in terms of ‘mainstreaming’ progressive approaches to craft and design practice. Collaborative programmes, supported by universities and sector support agencies, play a vital role. Yet public spending cuts are underpinned by a political and institutional separation of the arts and humanities from the sciences, technology and engineering. Focusing particularly on education, I conclude by exploring specific challenges posed by education reforms at school level and by Higher Education funding priorities, outlining the Crafts Council’s strategy for addressing these challenges through advocacy and research.

The Crafts Council - the national development agency for contemporary craft in England - is pleased to have participated actively in all three of the Making Futures conferences. Research is crucial to our work, not only informing our own education, training, exhibition and market development programmes but also enabling us to engage with government and influence policy. Over the past four years, we’ve increasingly valued the Making Futures conference, and the work it’s done both to build the literature around contemporary craft and to strengthen the academic craft community.

I want to challenge us all to push forward the debate on craft and sustainable development: to build on what we’ve learned from events and associated research and to extend our thinking in new directions. As part of this, I think it is important that we take a minute to consider our starting point – the learning we have gone through over the past few years, and the assumptions that this means we carry.

Clearly, as representative of the Crafts Council I bring a particular perspective to the debate. Working with many of this country’s most progressive makers - through our professional development, exhibitions and acquisitions programmes – gives us an unusual insight into current trends in craft practice. But we also conduct our own research in the field. At the last Making Futures conference, in 2011, we reported on research that showed that just under a third of makers said they had changed their practice in the previous three years, in response to environmental concerns; and that around half that number had responded to ethical issues in their work. Since then, we have published a series of nine research
briefings that investigate craft’s contribution to the economic, social and cultural fabric of the UK; and environmental sustainability and well-being are amongst the topics we’ve investigated in depth in this way.

This work has led us, over the past couple of years, to conceptualise craft’s contribution to the environmental and social innovation agendas as a kind of jigsaw of related pieces.

Studio Swine: Hair Glasses

First, we see a great strength in materials innovation, covering a wide spectrum of work - from those makers working to find new uses for recycled, reclaimed and ‘difficult’ replenishable materials, through to those who are pioneering new eco-smart materials for the future. I was struck by a paper from Faith Kane and her colleagues, presented at Making Futures 2, that drew similar conclusions to our research, around the role of craft knowledge and craft methodologies in unlocking innovation. As an example, these spectacles by Studio Swine are made from human hair suspended in a biodegradable, plant-based resin. In contrast to the more common metal or petroleum-based plastic frames, their construction uses little energy and releases no harmful substances into the environment.

Product lifecycle innovation is a second strong area of practice. Here we see work made using sustainable technologies such as Ian Hankey’s glass-blowing furnace, showcased at Making Futures 2. We see work that is designed to promote sustainable consumption, using a range of approaches that encourage people to keep and adapt the objects they buy, rather than replacing them. It also embraces choices such as direct selling and local and ethical trading, that makers often build into their businesses. Yuli Somme and Amy Twigger-Holroyd’s papers, presented at Making Futures 1 back in 2009, were important in defining this field of work, with each maker having developed a business that promotes sustainable sourcing, making and consumption across the whole product lifecycle.

Third, many makers focus on influencing and challenging attitudes towards sustainability, whether through education or through the work they exhibit. Environmental messaging is important here, with one example being the work of bookmaker Tracey Rowledge, who the Crafts Council supported as part of the 2008 Cape Farewell mission. This is not the whole story though: the idea of craft making as a way of envisaging and prototyping an alternative, more sustainable future is also important in the current discourse. Kate Soper, Mary Loveday-Edwards and Chris Smith, all spoke on this topic at Making Futures 2, their papers introducing the idea of the creativity, nostalgia and ‘alternative hedonism’ to be found in making, to the sustainability debate.

Finally, our research shows that craft can contribute to social innovation outcomes around work, health and relationships, all of which are crucial to individual and community well-being. Our research has identified how craft participation can provide relief for older people in chronic pain; and can give young people with learning disabilities a sense of control over their environment. We have seen how craft activities can create a sense of connectedness for people excluded from communities, bridging cultural and language barriers. We have also seen how craft programmes can engage young people at risk of exclusion from the workforce, and how craft education at degree level promotes social mobility within the graduate population in a way that other art and design subjects do not. So whether as a first step towards self-confidence or as a springboard to self-employment, facilitated craft learning can promote and enable the social equity that is at the root of many social innovation programmes.

Revisiting what we already know allows us to face forwards with confidence and focus. And that is what the Making Futures conference theme this year challenges us to do. It is correct to push the debate in a new direction - and it is right in particular to focus in on the evolving relationship between craft and design, and its influence on the craft and sustainability debate.
The Crafts Council was 40 year old last year, and our history reminds us that this dynamic - between craft and design - is in constant flux, shaped by economic, cultural, social and political change. The moment we find ourselves at is not so much a sudden shift as part of an ongoing process. How to define this moment? Well, the conference introduction suggests a 'disappearance of making', but it's our view that craft is enjoying a moment of particular cultural prominence. Yes, craft is still held back by current education policy – and I will come back to that shortly. But at the same time, it has a current popularity perhaps not experienced since the 1970s. Exhibition visitor numbers have remained strong over the past few years.

Craft’s current popularity should not surprise us: in fact it is argued that craft has a particular resonance in times of political, social, economic and cultural crisis. But the way that it is connecting with – and is both shaping and being shaped by design trends - is a product of particular times. I would like to take a minute to explore this, here.

First, we are currently seeing huge consumer interest in the handmade aesthetic – in mass-produced goods embodying qualities more often associated with craft. This is a pervasive design trend explored by the most progressive Milan Furniture Fair exhibitors, yet one which global brands have also capitalised on - in both design and marketing terms. It is also the subject of a thriving discourse ranging from academic critique to consumer trends analysis. This discourse suggests that our immersion in the digital world has led us to value the physical and the tactile in new ways: that an object with 'imperfections' feels more authentic and has more personality, for us, than just another digital device; that, as our books, music and photos become hidden, we value distinctive, even personalised objects that say something about our taste; that things that are handmade – or that look handmade – can offer a comforting sense of familiarity and even nostalgia, in difficult economic times.

In this context, David Pye's concept of the 'workmanship of risk' (1978, p.4) has renewed social and cultural resonance, refocusing design and craft around a shared aesthetic. And the boundaries between the two disciplines are being further blurred by new manufacturing technologies. We have all seen how designers are using 3D printing and rapid prototyping technologies, connected to online user interfaces and smart materials, to bring qualities previously associated only with the handmade object, to mass production. At the same time, these same tools – and others - are being not only adopted but also creatively transformed by makers. Craft – as a specialist form of materials knowledge, and as a process of reflectively working with and pushing against the boundaries of a medium – is finding a new role in developing tools for the next generation of designers and makers.

A third characteristic of the evolving dynamic between craft and design – and one I want to focus on today - is collaboration. The idea of collaboration as an innovator accelerator is established in the management literature: by working together, it is said, people with different but complementary expertise can challenge conventional thinking and find unexpected new directions in their work. In practice, increasing numbers of designers and makers are choosing to work in collectives and on collaborative projects, pooling resources and expertise in a way that presents an alternative to the traditional craft model of the solo studio practitioner. Though of course this push towards collaboration is not limited to professionals – today it is usual for technology companies to involve their users in product development and beta testing, emulating the kind of relationship once more commonly found between makers and the clients who commission them. As communications technologies and social networks become increasingly sophisticated, it becomes easier still for people to find collaborators and work together despite geographical distance. And as trend continues, so design and making – as separate yet connected disciplines – will continue to evolve.

The collaboration I am describing is not just happening between makers, but also across disciplines. What I want to consider now, is how this type of interdisciplinary collaboration can reinvigorate our approach to environmental sustainability and social innovation, particularly when collaboration brings makers together with professionals in the fields of science, technology and engineering.

So, what does this mean for craft and sustainability? Looking first at innovation in the environmental sustainability field, this is work from LoopPh, a creative agency with its roots in textiles and a specialist in designing urban space.
LoopPh: TreeSkins

For this project, LoopPh synthesised scientific research from Taiwan, the US and the UK Geneticists, in the fields of nanotechnology, synthetic biology and genetics. The resulting ‘TreeSkins’ allow trees to sense and respond to environmental change, by coupling smart textile ‘skins’ with genetic enhancement of the tree’s natural functions. For example, the ‘TreeSkin’ pictured on the left uses tiny hairs to capture and neutralise air-borne carbon particles, 10 times more efficiently than untreated tree.

Julian Ellis: stitched textile composite

Julian Ellis’s surgical stents may be familiar to you from the Power of Making exhibition, a partnership between the Crafts Council and the Victoria & Albert Museum in 2011. Julian is an engineer who has developed a specialism in embroidery, and his work has also found application in the auto and aerospace industries. Fuel costs and efficiency regulations are increasingly concerning manufacturers in these industries, as well as environmentally-conscious consumers, and Julian’s work uses embroidery to bind layers of fabric into composite body panels that are light enough to make a significant difference to fuel consumption.

Studio Swine: Sea Chair

The Sea Chair is a response from Studio Swine to the current plight of the oceans and of the English fishing communities that once depended on it. It proposes an open source sifting machine and mould system that allows waste plastic particles to be collected and reformed into a ‘sea chair’. The ‘sea chair’ system is designed as a prototype for future systems that could reduce the size of the ‘Pacific Garbage Patch’ that stretches from California to Japan, whilst creating new sources of income for struggling fishing communities.
There are many other innovative examples too, of course:

Marin Sawa, whose Algaerium project has created a new type of bio-power in the form of light from bioluminescent algae, pumped into living textiles for the home; Markus Kayser, whose Solar Sinter uses concentrated sunlight to fuse desert sand into solid forms – a kind of zero-energy 3D printer; Suzanne Lee, who – working with scientists at Imperial College London – has created fabric that can be grown from bacteria and made into clothing; Zane Berzina, whose work explores the potential of electrostatic as a zero-energy, interactive material.

We can see from these examples that this kind of intersection between craft and the science, technology and engineering disciplines is happening in many different ways, through collaborations ranging from information exchange and consultation to partnership. But in all cases, there is some kind of interaction between a craft specialist and a professional from an entirely different discipline. Why does this produce such powerful innovation? Finding the answers involves talking to scientists, as well as makers. And what we found when we did is that scientists value the challenge of working with makers. As molecular biologist Ellen Jorgensen said at our Assemble 2012 conference, ‘We scientists love it when artists and makers bring us wild ideas to work on.’ Likewise, Greg Siegle, a Pittsburgh neuroscientist who runs a programme connecting scientific researchers with artists and makers, describes how each project pushes his research centre ‘up to and beyond the limits of our technologies’. But also we know from research, that makers bring very particular, distinctive skills, knowledge and approaches to interdisciplinary working. They are:

**Material knowledge and making skills**

It seems obvious that makers are materials specialists. But, being tacit, this knowledge is often undervalued. In fact, combined with their reflective thinking style, makers’ understanding of materials’ affordances and tolerances, of how they react to heat or pressure, is an invaluable stimulus to innovation. Gained predominantly through practical experience, it is very different from the scientist’s more theoretical knowledge. In practice, makers know how to push a material or tool to its limits without breaking it, and they have an insatiable desire to know more. As a result, they often see opportunities overlooked by scientists and have the will and tenacity to see these opportunities through to innovation.

**Human interaction**

An intimate understanding of how people respond to materials and objects is another aspect of craft knowledge. This understanding includes how to convey and evoke human responses through materials and form, as well as to create objects that fit the body and function well. And it is invaluable in prompting innovation by connecting scientific knowledge with the real world. Indeed, scientists themselves – including Greg Siegle, the neuroscientist we mentioned above – describe the ability to work with human emotion as a gap in their own professional knowledge that collaboration with makers and artists can fill.

So now I am going to turn our attention towards interdisciplinary collaboration in the field of social innovation. Because it seems to me that the dynamic is a little different here.

**Reflection in action**

Broadly speaking, scientists test hypotheses for success or failure; whereas makers and designers explore problems and open out new questions through a process of action, reflection and change. Making is in itself a way of understanding the world, that involves working with and around resistance, rather than avoiding or trying to defeat it. From Sennett, we are familiar with the idea that this characteristic of craft thinking is not only highly applicable to other professional disciplines – including science, technology and engineering – but also that it facilitates team working. Indeed, Sennett describes the craftsperson as a ‘sociable expert, able to facilitate innovation by engaging with other people in a way that stretches their thinking.
The *Hamefarers’ Kist* project was inspired by maker Hazel White’s realisation that older people in remote areas continue to experience isolation from their families, despite the ubiquity of digital communications technologies. Following visits to care homes in the Shetlands, Hazel realised how often older people are distanced from families who have moved away in search of work, and how their relationships could be improved through access to up-to-date digital images. Having consulted with the older people she met, Hazel worked with app developer Paul McKinnon to find a solution that would replace a digital interface with something more human and familiar. The resulting *Hamefarers’ Kist* is a box containing several knitted pincushions, each with a different pattern associated with specific people, places or events. Placing one of the pincushions in the box brings up images from a person or event on the screen in the box lid. The images are uploaded by younger relatives on the other side of the world so, crucially, the box’s owner needs no technological know-how to operate it. Hazel’s approach shows using craft knowledge not just to provide an innovative solution to a social problem, but also to involve users and technology specialists in its creation.

Working with Barbara, an early stage dementia patient, Chloe collected a series of ‘treasures’, each associated with a piece of music and a particular memory from the past. Placing the object in the box triggers the music, providing a multi-sensory prompt for the recollection of stories from Barbara’s childhood, marriage and latter years. For example, the ceramic rabbit we see here was given to Barbara by her grandmother when she had chicken pox; and when placed in the box it ‘plays’ a polka that prompts Barbara’s recollections of dancing together. Chloe has since undertaken a residency at the Design Museum – an opportunity which illustrates interdisciplinary collaboration in action.

Many social innovation and social design projects in the developing world have been criticised for imposing Western solutions onto local communities. One of the challenges that social innovators and social designers therefore face is how to genuinely engage a community – and potentially one with its own language, values and priorities - and support it in addressing its own needs. Sarah Rhodes’ research, presented at Making Futures 2, profiled two exemplary fair trade initiatives, operating in Botswana and Kenya. These programmes employ Western makers, but not as designers of products suitable for Western markets, to be reproduced by local artisans albeit at a fair price. Instead, the Western makers had worked collaboratively with local communities, to translate craft traditions and skills into income-generating activities in a way that addressed poverty and environmental protection simultaneously. The result was improved standards of living and education for children, as well as the preservation of community-based cultural traditions.

To give another example, colleagues who were at Making Futures in 2011 will also remember Dr Trevor Marchand’s research with Yemini minaret builders. For those who were not there, Dr Marchand is an anthropologist who uses making as a research methodology: in fact, he undertook a whole apprenticeship – with the minaret builders – as part of his doctoral research. The understanding he developed of the life and working culture of a specific community is fascinating in itself. But, by demonstrating craft’s potential as an anthropological research methodology, he also reveals its role as a social innovation tool. Using his approach, craft can engage and potentially mobilise local knowledge, leading to social innovation solutions that are facilitated but not dictated by Western designers and aid organisations.

Other makers, including Jayne Wallace and Chloe Meineck, have used similar technologies and collaborative ways of working to help people with dementia. This is Chloe’s *Musical Memory Box*, an existing project which was further developed during a Craft + Technology Residency co-ordinated by the Crafts Council with Watershed, and supported by the *Autonomic* Research Group at Falmouth University.
Other examples we could look to here include several featured at previous Making Futures conference – the Craftspace Shelanu collective, the Autonomatic project 1479 plates and the Ethical Metalsmiths project. And this is not to mention numerous education-focused projects that use craft to engage and improve the lives of young people at risk, children with disabilities and older people with dementia, some of which we profiled in the Making Value research we published in 2010.

Again, the intersection between craft, science, technology and engineering plays out in different ways in the social innovation field. Elevation in action, materials knowledge and understanding of how people relate to objects remain important, but there are other roles for craft knowledge that relate particularly to the engineering-focused examples we’ve just been talking about. My colleague Karen Yair has written about this, and I want to pick out a couple of her points.

As we have seen, making has a specific value in promoting understanding across language and cultural barriers. By working together on practical tasks, craft can unlock our understanding of unfamiliar contexts, and help to foster socially equitable, collaborative relationships that engage people as participants in a programme rather than as its beneficiaries.

In a similar way, craft can help people from different backgrounds to work together, identifying and prototyping improvements to the place where they live. Innovative urban planning games and community consultation systems use materials to encourage people to think spatially and communicate through making. And in both multi-cultural Western communities and developing countries, the richness and complexity of craft materials and making processes can add a further dimension, helping to unlock community creativity by prompting ideas about aspiration and identity.

At the last Making Futures, in 2011, we discussed the value of the contribution made by makers to the environmental sustainability agenda. This year I have been keen to look at how this contribution is actually happening. And in this respect, the convergence between design and craft, and the collaborative mind-set opened up in each field, is a key influence. What we are seeing is that progressive makers are working in all sorts of collaborative scenarios, with communities and with professionals, from other disciplines as well as their own. As well as their technical skills and aesthetic capabilities, these collaborating makers are bringing distinctive yet complementary ways of thinking and working to an interdisciplinary team.

Craft is unlikely to usurp science by craft – and placing the arts and sciences in diametric opposition is deeply unhelpful: instead, we see the two disciplines as distinctive yet complementary ways of tackling the same real-world problems. Empirical evidence shows the value of craft in challenging convention, pushing boundaries and producing innovation in technology, engineering and science. And such collaboration is critical, if the science, technology and engineering disciplines are to fulfil their human potential.

This is a time of great potential for makers to drive innovation in science, technology and engineering. The rapid pace of technological change is enabling innovation-focused collaboration between specialists from different disciplines, whilst the proliferation of online collaboration platforms is reinforcing a new culture of shared innovation. However, interdisciplinary working currently remains at the cutting edge of craft and science/technology/engineering practice: the examples that we have seen today represent craft at its most progressive. Whilst we need to retain the very specialist, studio-focused models of craft practice that predominated in the past, we also need to encourage these new, more collaborative models to flourish. As Gavin Ford said, one of the teachers involved in our Firing Up programme re-introducing ceramics into schools, "It’s been really good working with children in the science departments and then coming down here into the art department and seeing the application of their scientific practice in the ceramics they’ve made."

Clearly, education has a clear role to play here, especially as political and institutional separation of the arts and humanities from the sciences, technology and engineering risks undermining the dynamic, cross-disciplinary energy we see here. As one of our conference sub-themes, education’s strategic development is a topic I would like to close with today.

We at the Crafts Council are active in campaigning for a strengthening of craft education’s place in the school curriculum and the HE and FE landscape. To this end, we regularly contribute to government consultations – on subjects ranging from school
the opportunity to build up the scale of research in new areas of academic enquiry, we have not yet had the same level of engagement as in the art and design research community. As a relatively new field of study, it is particularly concerned with craft, and indeed to the wider field of specialist arts institutions. This development has been particularly concerning within the Russell Group universities, to the detriment of craft research funding has been increasingly concentrated on ‘elite’ institutions within the Russell Group universities, to the detriment of craft research funding has been increasingly concentrated on ‘elite’ institutions in the arts. The increasing research funding focus on ‘elite’ institutions has undoubtedly held back newer fields of academic enquiry, like craft research, and inhibits its ability to deliver on the government’s own economic development policies.

Unfortunately, over the past 12 months the funding focus on ‘elite’ institutions has also become a cause of concern in relation to Higher Education Knowledge Exchange policy. Nonetheless, there remain good opportunities to promote interdisciplinary working through the AHRC’s creative economy Knowledge Exchange hubs. The Crafts Council supported the bid for the REACT Hub, based at the Pervasive Media Studio in Bristol and working with HEIs from Bristol, Exeter, Bath and Cardiff as well as a range of creative industry partners. We call on the AHRC and its partner research councils – under the guidance of Research Councils UK – to maintain and build on this kind of emerging interdisciplinary infrastructure.

Understanding the impact of these evolving policy areas on schools, colleges and HEIs is crucial in focusing our future work. The Crafts Council’s current funding focus on ‘elite’ institutions has undoubtedly held back newer fields of academic enquiry, like craft research, and inhibits its ability to deliver on the government’s own economic development policies.

At the Higher Education research level, we are encouraged that the AHRC’s current funding plan encourages collaboration between arts and STEM disciplines. We also note that, whatever our perspective is on the ‘impact’ agenda and its consequences, it is likely to create new opportunities for cross-disciplinary research focused on real-world issues. We remain anxious, however, that HE research funding has been increasingly concentrated within the Russell Group universities, to the detriment of specialist arts institutions. This development is of particular concern to craft, and indeed to the wider art and design research community. As a relatively new area of academic enquiry, we have not yet had the opportunity to build up the scale of research activity or academic infrastructure seen in more established disciplines. The increasing research funding focus on ‘elite’ institutions will undoubtedly hold back newer fields of academic enquiry, like craft research, and inhibit its ability to deliver on the government’s own economic development policies.

In terms of school curriculum development, we are encouraged to see that craft included in the draft National Curriculum Programme of Study Proposals for Art & Design and Design & Technology. However, we are concerned about the focus within the draft curriculum on craft appreciation and history, rather than on learning through making itself. Learning through making – in addition to learning about making – is not only a valuable pedagogy in its own right, but also lends itself to alliances with other curriculum areas and subjects. Connecting craft with both STEM and arts subjects, as well as the study of literacy and numeracy, expands the range of learning styles available to children and fosters a cross-disciplinary approach to problem-solving. In terms of developing craft as an expanded field, we see this development as crucial and continue to advocate for its inclusion in the DfE’s draft programmes of study.

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Unfortunately, over the past 12 months the funding focus on ‘elite’ institutions has also become a cause of concern in relation to Higher Education Knowledge Exchange policy. Nonetheless, there remain good opportunities to promote interdisciplinary working through the AHRC’s creative economy Knowledge Exchange hubs. The Crafts Council supported the bid for the REACT Hub, based at the Pervasive Media Studio in Bristol and working with HEIs from Bristol, Exeter, Bath and Cardiff as well as a range of creative industry partners. We call on the AHRC and its partner research councils – under the guidance of Research Councils UK – to maintain and build on this kind of emerging interdisciplinary infrastructure.

Understanding the impact of these evolving policy areas on schools, colleges and HEIs is crucial in focusing our future work. The Crafts Council published research briefings summarising Higher Education policy developments – along with course, qualifications and student statistics in 2008, 2010 and 2012. It is now building this work into the ongoing monitoring of craft education data from Key Stage 3 upwards. Our Craft Education Study published in February 2014 represents the start of the process, equipping us with baseline data and case studies that we hope to update regularly in future. You may also be interested in our Craft Education Literature Review (2012) which summarises recent pedagogic research at school level.

References
‘Frugal Innovation’

Innovation is a major imperative for companies and governments worldwide. But following the financial crisis of 2008, it has become harder to rely on the tried-and-tested formula which sustained innovation efforts in the developed world for so long, namely, highly structured R&D processes that result in expensive top-down projects. Instead, everyone is asking how we can do more for less, while serving broader markets?

One solution is for the West to look to places like India, Brazil and China for a frugal, flexible approach to innovation – to individuals, like Dr Mohan, a resourceful innovator in Chennai, India, who has created a highly frugal and effective solution to a major public health problem, and Harish Hande whose Solar Electric Light Company (SELCO) in Bangalore, India offers affordable, sustainable lighting solutions for those who live outside the electricity grid.

Despite their remarkable work, such individuals are hardly exceptions. Emerging markets are teeming with frugal and flexible innovators like them. In the six years that my co-authors and I have been researching the phenomenon ofubad (a Hindi term that roughly translates as ‘overcoming harsh constraints by improvising an effective solution using limited resources’), we have encountered hundreds of entrepreneurs in resource-constrained circumstances worldwide who have innovated in areas as diverse as health care, education, financial services, energy and entertainment.

The self-expanding diabetes clinic

India has the dubious distinction of being the diabetes capital of the world. In many cases, rural patients don’t know what diabetes is, let alone that they may be suffering from it. Even when they do know, the lack of good rural health care means they have to travel to distant cities and take time away from work to get the necessary medical attention.

Given that 70% of India’s 1.2 million people live in villages, this situation has all the makings of a public health disaster.

Dr Mohan is director of the Madras Diabetes Research Foundation and Chairman of Dr Mohan’s Diabetes Specialities Centre in Chennai, capital of Tamil Nadu. Deeply concerned about the consequences of a looming public health crisis, and aware of India’s socio-economic realities, Dr Mohan engaged in a frugal and flexible piece of thinking: what if physicians could consult patients remotely without either group having to travel?

After much trial and error, Dr Mohan brought to life a mobile clinic, housed in a satellite-enabled van, which visits remote parts of Tamil Nadu and links urban doctors to rural patients and community health workers. The van has telemedicine technologies to conduct diagnostic tests and transmit them via satellite, even from areas that lack internet connectivity. From their offices in Chennai, Dr Mohan and his colleagues can see and communicate in real time with rural patients through video monitors, while tests such as retinal scans are transmitted within seconds for immediate evaluation.

To avoid straining the frugal business model, Dr Mohan improved a partnership with the Indian Space Research Organisation to obtain free satellite communications for his telemedicine service, and recruited young volunteers from small towns to run most of the operations in the mobile clinic. Already Dr Mohan and colleagues have screened more than 50,000 people across over 40 villages in Tamil Nadu and provided treatment to thousands of patients.

Solutions in clay

Mansukh Prajapati is another example of a resourceful innovator. A potter by trade, he had for years been experimenting with clay to produce a variety of durable goods. In 2001, an earthquake had devastated Prajapati’s village and the surrounding area. Reading a report of the devastation in the
Mitticool a viable version of what became the experiment for several months and eventually had intuition, told him that he was on to something. He live across the continent.

Most of the people in Prajapati’s village live without reliable electricity, as do many Indians across the continent.

Prajapati’s training as a potter, coupled with his intuition, told him that he was on to something. He experimented for several months and eventually had a viable version of what became the Mitticool (mitti means earth in Hindi). The product works like this: water from an upper chamber seeps through the side walls, cooling the lower food chamber through evaporation. The fridge consumes no electricity, is 100-per cent biodegradable and produces zero waste during its lifetime. Importantly, it only costs around US$50.

Prajapati first told the Mitticool to people in his own village and then, after making design improvements, began selling it across India and then internationally. Demand soon exceeded supply so Prajapati decided to find a way to transform pottery from an artisanal craft into an industrial process. After developing an entirely new and more efficient method of working with clay, Prajapati began training women in his village in these industrial pottery techniques. He then hired them to work for him in his new factory. The Mitticool was the first product that Prajapati mass-produced and following this he soon built other products from clay, such as a non-stick frying pan that retains heat longer than other frying pans and costs a mere US$2. Prajapati now runs a flourishing social enterprise and his ground-breaking inventions, which deliver more value at less cost, have earned him accolades all over the world.

Here comes the sun

Providing lighting to rural homes in India is a major challenge. Over 40% of India’s population live outside the electricity grid and many have to rely on kerosene lamps for lighting. Kerosene is expensive and not always available, and produces a poor quality of light and unhealthy fumes.

Harish Hande saw this problem as a potential opportunity for jugaad innovation. In 1995, he founded SELCO to provide affordable solar energy to India’s rural poor. To do so he had to rethink how he financed his business, priced his services, and distributed and maintained his solution.

He started with $30 seed money. Banks were hesitant to lend and venture capitalists deemed his unproven business model too risky to invest in. So Hande bootstrapped SELCO: he used the $30 to buy his first solar home lighting system, which he then sold. With the revenues, he purchased additional systems, which he also sold, and so on.

As Hande penetrated deeper into rural areas, he learned that his potential customers – many of whom earned $1 to $2 a day – could not afford the up-front costs of buying and installing his solar lighting systems, and there was no economical way to maintain them across multiple villages. His solution was to create a rural network of small-scale entrepreneurs who own and maintain the solar panels and batteries, and rent them out to consumers on a pay-per-use basis.

This business model made SELCO’s solution affordable and accessible to scores of rural customers, including corner-shops, small-scale farmers and women working from home. It also created an incentive for local entrepreneurs to distribute and maintain the equipment over time. Within a few years, 200,000 households have already taken up the solar lighting system.

A universal solution to universal challenges

The fruits of jugaad innovation include the $2000 Tata Nano car, the $50 Aakash tablet PC, 1 cent/minute mobile phone calls, $500 electrocardiography (ECG) machines (and $1 ECG scans), $25 water purifiers, a 70 fridge that runs on batteries, and so on.

In the course of our research we learned that the entrepreneurial spirit of jugaad is not limited to India. It is widely practised in Argentina, Brazil, China, Costa Rica, India, Kenya, Mexico, the Philippines, and other emerging economies. Brazilians call it gombiarra; the Chinese, jiejian chuangxin; and the Kenyans, jua kali.

A resource-constrained and unpredictable environment makes frugal and flexible innovation necessary, even vital. Jugaad innovators have a mindset that encapsulates several attitudes and practices, including the ability to seek opportunity in adversity, do more with less, think and act flexibly, keep things simple, include the margin, and follow the heart. Specifically, jugaad entrepreneurs are...
resilient, frugal, adaptable, inclusive, empathetic and passionate. All these traits help them to compete and succeed in the complex world of emerging markets.

But the *jugaad* mindset, and the innovations that result from it, not only hold promise for the poor in emerging markets. Increasingly, such a frugal and flexible approach has relevance to Western economies that are reeling under the pressures of economic recession and limited budgets.

Unsurprisingly, we have found that many Western firms, faced with resource constraints of their own, and recognising the limits of the expensive, rigid and insular structured approach to innovation, have begun to apply *jugaad* and its principles within their organisations. For example, GE has applied *jugaad* to develop radically affordable ECG machines not only for India and China, but also the US and Europe; other firms applying *jugaad* include PepsiCo, Unilever, P&G and Renault-Nissan.

Yet, while *jugaad* offers an interesting and useful counterpoint to more structured approaches to innovation, it isn’t necessarily a substitute for the latter. Rather, *jugaad* can be an effective complement. For instance, as in the example of Dr Mohan, although his *jugaad* approach has been successful in delivering diabetes care in an affordable and effective way for some people, it has yet to achieve scale. Scaling the solution will probably require a more systematic application of resources around the basic model he has developed.

In conclusion, for firms and governments around the world struggling to deal with scarcity and complexity, our research suggests that *jugaad* and the emerging markets it comes from offer a solution not only in the developing world but also in the increasingly resource-constrained and complex West. Innovators like Dr Mohan, Mansukh Prajapati and Harish Hande, and their relentless pursuit of frugal and flexible solutions, could be just the thing the world needs to grow without depleting the planet’s resources.
Craftwork as Problem-Solving

Convened by Trevor H J Marchand, Professor of Social Anthropology, School of Oriental & African Studies, University of London, with support from the British Academy.

This workshop aimed to enumerate the diversity and complexity of problem-solving strategies employed by craftspeople in order to better understand how these are perceived and evaluated by makers themselves and by the societies in which they operate. It invited contributors to explore the multiple kinds of intelligence involved in design and making, and to consider the roles that culture and the environment play in forming and transforming the tactics that makers engage in. In so doing, the workshop also sought to reflect upon the lingering (or perhaps newly-emerging) social stigmas associated with ‘hand work’ and vocational training as well as the changing status, value and purpose of craftwork in the 21st century.
Introduction

My aim in coordinating a workshop on “craftwork as problem-solving” was to bring together a mixed group of designer-makers, architects, anthropologists, and researchers of craft to discuss problem-solving tactics and strategies employed by craftspeople. The call for papers invited presenters to explore the multiple kinds of intelligence involved in design and making, and the ways in which the intelligent practices that constitute craftwork and problem-solving are perceived and evaluated by makers themselves and by the societies in which they work.

Furthermore, workshop presenters were invited to consider the roles that society, culture and the environment play in forming and transforming the problem-solving strategies that makers engage in. These include, for instance, training regimes and formal educational background; access to tools, supplies and workspace; the limits and potentials of the physical body (including ageing, illness and injury); socialisation and cultural understanding (including perceptions of environmental and social sustainability); political and economic regimes; changing technologies, and the introduction of new materials. Problem-solving in craftwork also operates in relation to a wider arc of social and environmental concerns including green agendas and environmental sustainability, the desire for socially-beneficial engagement, and the pursuit of communal identity. In sum, problem-solving in design and making involves the ways in which these factors and concerns are interpreted through localised regimes of making and doing.

Learning through mistakes

Over the past two decades, anthropological fieldwork has taken me to West Africa, Arabia, and East London. My studies with craftspeople have consisted chiefly of training and working alongside masons and carpenters in order to better understand local apprenticeship regimes, social politics, and embodied ways of learning and knowing. Still photography remains an important tool for documenting and representing craftspeople, but video is becoming increasingly central to my work. In 2012 I commenced an in-depth study of embodied learning among a cohort of novice fine woodwork trainees at London’s Building Crafts College. Video data from the college was used for analysing “problem-solving” strategies that are communicated and negotiated between woodworkers.

“Being in the zone” and operating in “oneness” with tools and materials is only part of the story behind skilled handwork. Learning and practising a craft inevitably includes ruptures to the flow and making mistakes. Even the most seasoned expert is susceptible to making errors when experimenting with new tools, methods or materials; confronting novel design challenges; or, simply, when having an “off day” in the workshop. A degree of risk is therefore inherent to handwork.

But risk in handwork extends beyond control of the mind-body in action to encompass the quality and performance of the tools and the properties of the materials. The design or function of a tool, for instance, may not be entirely proficient or the task at hand, or it might malfunction during operation. Materials – especially natural ones such as timber, stone or clay – possess distinctive characteristics, inconsistencies, and “flaw” that behave and respond in sometimes unpredictable or unforeseen ways to applied actions with a tool.

The fine woodwork carpentry practices I researched at the Building Crafts College constitute a ‘workmanship of risk’. Slip-ups are a persistent possibility. Learning to quickly and accurately identify the error and to make the necessary adjustments or repairs is therefore an essential element in the woodworker’s skill set. In many cases, identifying the exact location, cause and nature of the problem involves a little detective work which inevitably delays production, but, productively, it progresses learning. Speed, efficiency and accuracy in solving problems come with experience, and such experience comes only through making mistakes in the first place, and setting them right.
A part of my ongoing research is to explore in detail how mistakes are identified and problems solved at the carpentry workbench. My observations and analysis focus on video-recorded sessions between trainees and woodwork instructors. The day-to-day practice of sorting out slip-ups and repairing gaffes is more usually undertaken by carpenters on their own, and in silence. But when it unfolds between two individuals, their thoughts, ideas and strategies are verbally communicated as well as practically negotiated through their coordinated – and sometimes not so coordinated – activities. Problem-solving processes are thereby more immediately accessible to the researcher’s observation, transcription and analysis. Additionally, my recording of workbench sessions captured the dynamics of teaching and learning, and of communicating and interpreting techniques in language, and with the body. Trainees were not only guided through the activity of identifying the mistake(s) they had made and deciding upon a suitable remedy, but they occasionally benefited from the instructor’s demonstrations of how to more adeptly engage with a particular handtool.

Woodwork instructor Cheryl and first-year trainee Nikki coordinating efforts to solve a problem with a wood joint. Photograph by Trevor Marchand, 2012

An example of a one-on-one workbench tutorial session is that between Cheryl, the first year convenor, and Nikki, a first year trainee with no previous woodworking experience. The tutorial between Cheryl and Nikki lasted 7 minutes and 46 seconds, and it focused on an ill-fitting timber stopped mortise-and-tenon” joint that Nikki was making. The below represents a selection of the long transcription of the interaction between the two parties:

Cheryl (C): ‘This piece feels like it’s...’ Without completing her utterance, Cheryl picked up the assembly and turned it over, setting it back down on the worktop on its opposite face to examine further.

Nikki (N): Leaning with his elbows on the worktop and moving in closer to Cheryl, Nikki reached with his left hand into the focal space and, while touching the seam between the two components, inquired softly ‘Could it be on this side somewhere...?’

C: Absorbed in her own thinking, Cheryl interjected, redirecting Nikki’s attention to what she was examining: ‘Right, have a look at that’. She placed her right hand on top of the stile, near to where it joined the rail. The instructor began ‘If we look at it from the other side...’, and she completed her thought by
physically demonstrating how the two joined components rocked back and forth. Nikki grunted understanding. ‘So that’s… that’s lower down’ she said, pointing to the bottom face of the rail where it joined the stile. ‘And so when I press on there…’, Cheryl moved her hand back to the top of the stile component and rocked it by pressing down with her middle finger, once again finishing her statement with the physical action. ‘Remember?’ she asked Nikki, referring to an earlier conversation they had, ‘I said this looks like it's tilting’.

N: ‘Yeah.’ Nikki leaned in closer to watch Cheryl’s fingers pressing down on the top of the stile.

C: ‘It clearly is. Isn’t it?’ Cheryl declared. ‘So if we pull these apart’ she continued, while teasing the tenon out of the mortise, ‘let’s make sure it isn’t one wonky piece or another wonky piece; that it’s just a wonky joint’.

The detailed transcription produced from the video recording contains more than just the dialogue and an account of the carpentry exercise in question. It includes thick description of posture, movement and activity, as well as hand gestures and the ways in which either party investigated the timber and carpentry joints through touch. It reports how visual judgement was employed, the ways sight lines and shared focal points were established, and how available light sources in the workshop were optimised for carrying out visual assessments of the timber joint components. Throughout the exchange I note the selection of various carpentry tools and other utensils, and the ways they were used by either party to point, measure, compare and repair. I describe how the instructor scrutinised Nikki’s lines and the indentations made with pencil and marking gage respectively while preparing his timber components. In doing so, Cheryl was able to “excavate” and interpret the student’s previous procedures, to judge the accuracy of his saw cuts, and to detect where the trouble spots lay. The transcription also includes observations of the ways instructor and trainee employed basic physics (i.e. testing resistance and balance) to diagnose the trouble with the joint.

Finally, the transcription endeavours to capture the fluctuating rhythms of Cheryl and Nikki’s exchange, and to record their use of humour, their changing facial expressions, and the flux of emotional states including frustration, bewilderment and accomplishment. These details serve to more accurately identify convergences and divergences in communication and understanding between the two parties, as well as their struggles to speak, to do, and to be heard.

Fieldwork at the Building Crafts College included in-depth audio-recorded interviews with the trainees and instructors. By interweaving material from my interview with Nikki with the transcription of the workbench tutorial, the final analysis provides insights into his educational background, individual ways of learning, attitudes toward teaching, and his recent attraction to woodworking. Such insights flag up moments during the tutorial when the instructor successfully accommodated Nikki’s preferred mode of learning – or not; and, likewise, when Nikki resisted or was less responsive to Cheryl’s preferred methods of teaching. Ultimately, the detailed account aims to make apparent the complexity and “thickness” of exchange that unfolds between both parties in a short period of time, and in collaboratively resolving a problem.

Summary of Key Issues

A number of general conclusions can be drawn from the problem-solving tutorials I have recorded at the Building Crafts College, and these are applicable to many kind of hands-on craftwork. Problem solving in craft relies, in the first instance, on having a critical eye (and sense of touch) to spot an upcoming challenge or to detect that something has gone amiss; and to make that observation as early in the design-and-making process as possible. Once challenge or trouble has been detected, patience is required to systematically examine the thing(s) being made; retrace steps and procedures; review the methods of making; imagine alternative ways forward; and evaluate them, perhaps with the aid of sketches, drawings and mock-ups. In contrast to eliminating a mistake altogether, a maker may purposefully choose to leave traces of it in the finished work or to positively incorporate it in the finished piece. Making errors and skilfully integrating them can become part of the overall design process.

Whether eliminating or integrating an error, the activity of problem solving is embedded in the maker’s existing knowledge and experience. But, in the process, experimentation with the tools and materials and testing out new techniques to find solutions pushes boundaries and broadens horizons. Possessing a willingness to learn, and to learn in perpetuity, is vital. The central case study showed
that the task of resolving a simple mortise-and-tenon joint presented a learning opportunity not only for the trainee, but for the instructor as well. The activities of problem solving and learning go hand in hand.

Problem solving is built into every stage of the work: design, costing, budgeting, making and delivering a commission to a client all present challenges to overcome. In sum, craftwork is problem solving; and the craft of carpentry is defined by the distinct array of challenges it throws up for its trainees, instructors, and seasoned practitioners.

Presentations and discussion over the two-day workshop took up many of the ideas and lines of investigation discussed above and expanded upon them with unique insights and case studies. Papers also went beyond the suggested themes outlined in the call for papers, and explore a number of fascinating, related themes. Papers from workshop contributors follow.

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Dr Stephanie Bunn

Woven Communities: A case study of embodied craft practice and intergenerational knowledge of Scottish vernacular basketry

Woven Communities is an AHRC-funded collaboration between Stephanie Bunn of the Social Anthropology Department, University of St Andrews, and craft practitioners from the Scottish Basketmakers Circle (SBC). While initially conceived to compile the knowledge (embodied and otherwise) of Scottish vernacular basketry accumulated since the SBC’s foundation 25 years ago, this academic and practitioner collaboration has rapidly developed new research pathways beyond any kind of retrospective approach, to tell an important story of intergenerational learning through embodied skill mediated through basketry, an everyday, constructed fabric of society. We would like to present the findings of the project so far as a case study of good practice, relevant to other crafts and design practitioners and educators.

The Woven Communities of this project interweave past and present Scottish basket makers’ concerns with those whose lives have entwined different domains of basketry knowledge through using baskets. From fisher-olks to crofters, Travellers to home industry workers, farmers to factory workers, curators, scholars, enthusiasts, craft professionals and ethno-botanists, all are a part of our woven community of practice. Museums have welcomed our group, providing new knowledge about collections. Our ancestors in this concern have ranged from practitioners to estimable curators such as Isobel Grant, collector of ‘homely Highland things’ for the Highland Folk Museum, Sandy Fenton, founder of the Scottish Life Archive, and Rintoul and Baxter, two bird-watchers who created the National Museum of Scotland’s unique basket collection while promoting classes for the Scottish WI.

Our informants and researchers range from fibre artists and willow growers to contemporary crofters.

The story told by our project is not just textual, historical and photographic, but textured, embodied and practical. It is an exploration of the role of basketry practice in promoting a specific form of attention, thought and talk; of the dynamics of intergenerational ‘transmission’ of embodied knowledge and skill; of ‘the wanting to know’ and communicate past skills; and of the role of new media in communicating craft knowledge. Thus the project explores the nature of the craft’s skills and knowing, and how these skills underpin not just contemporary design, but provoke a specific form of engagement, thought and enquiry which incorporates its own regeneration. That is, as stated in the conference aims, basketry entails a set of embodied potentialities, acting as both a repository for accumulated human capacities for learning and as an agent for change.

In presenting our case study, at least two members of the research group, Stephanie Bunn and Julie Gurr, will aim to complement basketry practice with an account of the project and an exposition of its digital research. Our academic dissemination has required an acceptance of basketry practice during presentations and papers at conferences and symposia, producing an entirely different kind of discussion and attention, and we will aim to do this at Making Futures. At the same time, we will show how our interactive, on-going web-publication draws in old and new practitioners from Scotland and abroad, and continues to grow.

wovencommunities.org

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Interweaving answers and questions in Scottish vernacular basketry

Introduction

This paper, developed for Making Futures 2013, is a summary of some key issues related to problem solving which have developed through research conducted for the Woven Communities Project, a part of the AHRC Connected Communities Programme. Woven Communities is a collaboration between several Scottish basket makers (see Figure 1) from the Scottish Basketmakers Circle and the author, an anthropologist at the University of St Andrews – an academic, albeit a basket-making, willow-working one.

Figure 1 Scottish basketeers with creels. Credit: Scottish Basketmakers Circle

The project follows Scottish basket makers' autodidactic research into the social history of Scottish vernacular basketry. The anthropological input has raised questions about processes of learning, enskilling (including problem solving) and intergenerational communication. The basketry input has raised questions about practice as a means of generating talk and thought, and as an engaged way of coming to know a subject. The project has involved working together at all levels, including on museum research; replica making; attending regional events such as the Royal Highland Show and local agricultural shows; demonstrating and teaching making baskets, which in itself elicits a public response; and constructing an interactive website of the project. Through our work we have found that there has long been a pattern of interdisciplinary basketry culture 'transmission' in Scotland, synthesising the practical and the conceptual – an overlap between basket makers old and new, collectors, academics, autodidacts, social reformists, botanists, curators – all with an interest in this subject. We have found ourselves members of just one very recent stage of an ongoing, overlapping, interconnected, interwoven basketry community.
**The Scottish vernacular basket**

For the benefits of this paper, I take basketry to include baskets, mats, rope making, traps, screens and other related artefacts woven from plant material. As such, basketry is a technique for making baskets and beyond. This technique involves incorporating tension into diverse plant materials to produce a range of constructed textiles which, while using stranded, linear or threadlike materials for their construction, become transformed through weaving, coiling, plaiting or twining into structured two- or three-dimensional forms (see Figure 2) (Ellen 2009; Wendrich 1991, 1999).

**Figure 2** Knitting basket from grass and willow from Arachle or Argyle. Credit: Highland Folk Museum.

On initial assessment, Scottish vernacular basketry seems to be a straightforwardly utilitarian practice. There is usually little added colour or decoration, nor is it directly linked to any obvious contemporary meaning system or aesthetic such as one might find in other parts of the world, such as, for example, Yekuana baskets as discussed by Guss (1989), or Dogon baskets as discussed by Griaule (1965). For these latter groups, basketry is woven into social mythology, linking person, body and cosmos through creation myths and cultural action. For Scottish basketry, while until recently interwoven with all manner of social and cultural practices, its role as container or other domestic artefact, drawing on local plant ecology and responding to social and economic needs, is what shines through.

At a pragmatic level, basketry is itself a solution to several problems linked to human domestic and economic activities, most particularly containing and carrying things. I would argue that it is a uniquely human solution. Indeed, I have only come across one animal, the fairy lamp spider, which makes structures for containment and transport, as opposed to nests, shelters or traps, which are far more ubiquitous woven forms across the animal kingdom.

Basketry is a tremendously old human solution to this problem. The technique is probably older than that used in any other textile (Mellaart 1966; Wendrich 1999). As a form of weaving technique, it is arguably close to our gestural system. And it is a true fabric of society, providing solutions to problems of transport and containment, along with matting, trapping, shelter and bodily protection across the world, long before we had mechanised systems for making carrier bags, cardboard boxes or shopping trolleys. In Scotland, until recently, baskets provided an interface between people and so many aspects of domestic, social and economic life, from fishing o farming, crofting to home-building, from industry to the military – indeed baskets did not immediately become obsolete with the onset of the industrial revolution, rather they were initially essential for its development.

**What is problem solving in basketry?**

Problem solving often suggests something out of the ordinary, going about one’s work and encountering awkward or tricky moments, focusing on difficulties that need to be resolved. Problem solving can also be a critical part of the design process, where there is a block on making progress or a new development, which can be solved, suggests Sennett (2009[2008]: 280), by alternating between trying to approach the problem head-on and ‘going with the flow’, or also by stepping sideways, trying new materials or new skills, and then switching back, comparing and changing. Furthermore says Sennett, while ‘studies of ability often dwell on problem-solving … that act … is intimately connected to problem finding.

I would suggest that, in contrast to this ‘one-off kind of problem solving, in basketry, problem solving is a part of the process of the work, not something exceptional. Basketry technique is quite standardised and formalised for specific basket forms. For example, for Scottish creels, quarter crans and some line baskets, the maker will often specify precisely the numbers and sizes of stakes and/or strands required (see Figure 3), along with the exact height and depth of the basket. Yet despite this apparent uniformity, the maker is nevertheless solving problems from moment to moment in basketwork, drawing on basketry practices and techniques to do so, techniques which are a part of the process. As such, basketry problem solving is therefore a part of the rhythm, the weave, the aesthetic, the tension of basketwork.
As an illustration, the skilled practitioner, who is highly aware of the subtleties of tension involved in building up a basket, might use a different thickness of material from strand to newly introduced strand, just to introduce a different pressure and change the shape a fraction if a willow stake in the structure is uneven and could alter the form of the basket. Or the maker might use a different degree of hand-pressure to similar effect. This is a result of working with plant materials which are of their nature uneven to the extent that they can disrupt the form of the outcome from moment to moment. A second, and the most fundamental, illustration of continued problem solving in basketry is that in weaving a basket the maker is creating a three-dimensional structure at the same time as using it as the frame or ‘loom’ on which they are weaving (see Figure 4). The basket acts therefore as both product and technology, both form and frame on which it is made. This integrated technology and form, and basketry’s associated need for continued problem solving and attendance to the work explains why no basket can be made by machine (Mason 1895).

Figure 3 Detail of frame basket showing range of strands. Credit: Highland Folk Museum.

Figure 4 Kishie making at Woven Communities symposium with Ewen Balfour. Credit: Scottish Basketmakers Circle
Aside from these two core practical factors, three further aspects of problem solving illustrated through Scottish vernacular basketry are materials, adaptation to change and mending.

**Materials**

Materials are inextricably linked with the technique and final form of baskets. In the Pitt Rivers Museum in Oxford, there is one very famous museum case containing string and basketry artefacts from around the world, several examples of which use quite different materials and techniques while producing similar final results. This display evokes a 'chicken and egg' question of whether any of these three aspects of the basketry process (that is materials, technique or form) directed the development and use of the other.

Decisions involved in material use for Scottish baskets are closely linked to local plant ecology, but historical and cultural factors also play a part. Considering the decisions made in choice of materials for baskets suggests that the resistance created through limitations of materials in some regions of Scotland are a linked aspect of the dynamic, improvisatory, flexible and iterative process of basketry problem solving. People think laterally and use what is at hand, adapting technique where necessary, while being immersed in specific socio-cultural contexts.

In the Scottish Highlands and Northern and Western Isles, access to basketry materials varies widely. Arguably the two most usual British basketry materials are willow, and then rush. These plants do not grow so well in the more extreme mountain or island regions of Scotland so that, of necessity, Scottish vernacular basketry is integrally bound up with plant ecology. Aside from rush and willow, plants that are used in Scottish basket-making practice include heather, straw, moorland rush (floss), marram grass (bent) and docks (dockens). Hairmoss was also used in the past. The use of plants is also bound up with historical connections to both Ireland and also Scandinavia and Viking culture. Thus creels on the Western Isles – Lewis, Harris, the Uists and Skye – are more likely to be similar to the Irish creel and made from willow, hazel or heather (see Figure 5). One Skye basket maker told me of two postmen from Harris who travelled to Skye each year to collect hazel for baskets. On Shetland and Orkney, the influence is more Viking, and straw or dockens are often used for back baskets, which here are called kishies or caisies. The weaving technique for these latter materials is quite different from that on back creels from other regions, although the form is similar. The curator of Shetland museum told me that even from one coast to another, materials might vary from bent grass to dockens or straw for one basket form, depending on availability, yet the strokes remained similar (see Figure 6). When new materials such as rattan were introduced across the UK, a specific new technique was essential, however (see Figure 7). Yet some people from the Islands did try to weave this material in local strokes, and also many kept to the old materials, although they were less durable than rattan.

![Figure 5](image1.jpg) **Figure 5** Heather back creel, Badenoch. Credit: Highland Folk Museum.

![Figure 6](image2.jpg) **Figure 6** Shetland Museum, straw. Credit: Highland Folk Museum.
**Adaptation to change**

Perhaps indicative of basketry’s pervasiveness as an accepted fabric of society in Scotland was its adaptations to economic change as new forms of work and uses came along. Its success as a living craft may also have been reflected in its adaptable character and the range of possible uses and forms it afforded (Gibson 1966) along with the flexibility, improvisatory and dynamic nature of the practice. Thus, with the development of the herring industry alongside regional line fishing in the nineteenth century, came the introduction of woven herring quarter crans (see Figure 8), an official royal herring measure certified by inspector’s stamp. This was a stake and strand rather than a frame basket, which was historically more common. Less well-made crans could be adapted as general working fish bas ets and larger, more developed, forms also came to be used as great line baskets. Their capacity to draw on local use of materials also contributed to their adaptive quality. With the Highland clearances, where people were often moved to the extreme limits of Scottish land such as the remote Monach Islands off Uist, where there were almost no raw materials available, bent (marram) grass was woven into waterproof grain bags to transport grain across the sea to the mill.

**Mending**

The kind of heavy work for which baskets were used on crofts from Shetland to Lewis meant that baskets such as woven straw *fishies* or heather creels often lasted little more than one season, or a year at most. Similarly in the fishing industry, the life span of a quarter cran was very short, often just a few months. Baskets are not easy to mend because new strands have to be inserted into what has become a quite rigid structure, so it is often easier to use them until they fall apart and then to throw them away, and start again. Since they biodegrade, there is a quite sustainable aspect to this. Nevertheless, it was all more work and, in the domestic sphere, for the housewife who may have paid cash for her basket and was not able to mend it, a broken basket handle was a loss. Scottish travellers saw this as one problem they could solve and make a living.

**Figure 8** Quarter cran, other fishing bas ets and frame basket. Credit: Scottish Fisheries Museum, Anstruther.

With the industrial revolution, baskets were at first essential for containing and transporting goods and materials in Scottish mills, factories and distilleries, as well as for use in hospitals and the military. Mechanization did not make basketry obsolete, rather there was an explosion in the need for new forms to transport the expanding products of new industry. Such a demand for baskets led to the development of basketworks and the growth of blind asylums where basketry became a source of income for the disenfranchised. The Highland Home Industries also fostered new developments and training of crofters and Highland housewives in the use of new forms and technique. Baskets were made for hot air balloons, hospital cots, surgical dressings, factory skips and post vans, and were used in all means of travel.

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from and thus by mending the baskets, whether through adding new struts or just a piece of wire, the householders’ problem became a partial solution to their own means of subsistence.

**Baskets as solutions to questions not asked**

Aside from these aspects to basketry problem solving, there is the question of basketry answers – at times excessively wonderful basketry solutions – which appear to have arisen without obvious stimulation from any problem, even in the face of adversity or hardship. Most particularly, the question arises about the reason for making delightful, beautiful, even marvellous baskets, showing developments in dexterity and skill, and which seem to be artefacts of quality which came about through no impetus other than a need to find the best possible solution for a specific task. These are answers in search of a question, perhaps revealing a necessity not articulated.

Such unprompted solutions include variation and seeking after perfection. If Scottish vernacular baskets were just ‘homely Highland things’, utilitarian and made for use until worn out and unmendable, why was there an impetus or ‘need’ for variation and for the pursuit of excellence as there so clearly has been among some basket makers (Grant 2007)?

Illustrations here include the diverse forms of the line basket or scull which vary around the Scottish coast despite being made of quite similar materials and for similar use throughout Scotland. Thus while most line baskets developed from the use of willow to rattan over the last century or more, they did so in many different ways. Contrast the deep, bowl-shaped line sculls from Cromarty with flat ended-out line sculls just a short distance around the coast from Arbroath, as made by Peter Lindsay, for example. Lindsay’s work is also a case in point in regard to the pursuit of excellence in Scottish vernacular basketry. He is one of the few named basket makers we have discovered from the past, and he did this work in his spare time from working at an Arbroath mill during the day. His work suggests the use of boat-building equipment for creating laminated frames for the sculls, as opposed to bent hazel or willow. The attention to detail in the finish and the veneness of the weave suggests a maker who was concerned to develop his work as finely as possible, which probably explains its collection by the National Museum of Scotland and presence in the 1951 Living Traditions Exhibition part of the Festival of Britain (HMSO 1951).

Other remarkable, beautiful, apparently unnecessary solutions to this kind of unnamed problem, made far from the demands of mainstream use, include the Monach Isles grain basket, Western Isles straw horse collars, and simple bait cubbies from Shetland, made from heather or floss. In all cases, it is difficult to explain the reasons for creating such beautiful work in situations of such restraint, utilitarian necessity and short artefact lifespan.

**Figure 9** Fine horse collar from bent (marram) grass, North Uist. Credit: Highland Folk Museum.

This final section provokes reflection on human motivations in craft rather than providing solutions. At the panel discussion in Making Futures, proposals ranged from suggesting that such aims for perfection are an inherent aspect of handwork to more nihilistic views. Gareth Neal suggested that restraint is often a feature of such a striving for excellence, a view which resonates with the concerns of design philosopher Wilhelm Flusser (1999), and to a degree...
my own. All contributions to the debate gave only partial solutions to this question, however. As human beings, such efforts at improvement in our work are both a feature of our development as a species, and are important motivations for new developments in design and technology more specifically. For now, we can just puzzle on this while continuing to be content that some craft workers, at least, see the need both to work to solve existing problems and provide answers to problems which are not always evidently there.

**Notes**

1. I am indebted to Skye basket maker and artist Caroline Dear for telling me this.
2. Thanks to Dr Ian Tait, Curator of Collections at Shetland Museum, for this information.

**References**


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Stories From the Workshop: Communicative practices amongst craft practitioners

My research argues that craft practice and language are not antithetical and maintains that professionally-situated, talk-in-interaction is fundamentally constitutive of a craft-person's epistemological standpoint.

I proceed from a crafts literature that maintains that "craft and theory are like oil and water" (Dormer 1997) and that "an object that ticks all the craft boxes … may not present an interesting case for theoretical discourse" (Adamson 2007). This orthodoxy has kept language and practice at a distance from each other. My critical point of departure is that this canonical view, what Gee (2004) would class as big-D Discourse(s), effecti ely connotes a genre from the top down thus predetermining what type of 'theory' and what 'theoretical case' might be. I counter this essentialising, etic, view of craft practice by locating the small-d discourses of crafts-people's talk-in-interaction through ethnography, observation and recording. In orienting to an emic approach I argue for the vital role of language in underpinning craft knowledge. My theoretical and analytical approach to this data is grounded in narrative research and its commitment to apprehending human experience (see Bruner 1986) and revealing the realities that are bound up in spontaneous, unplanned everyday uses of language-in-practice. Drawing upon 'small story' research, orienting to emergent, ongoing tellings (see Georgakopoulou 2007) these 'stories from the workshop' can be cast against orthodox, paradigmatic, carefully written, abstract institutional Discourse(s) (see Hymes 1996).

This paper will use short transcripts of professionally-situated, talk-in-interaction amongst craftspeople and present an analysis of their uses of language. I will show that language plays an important role in constituting particular epistemological standpoints that breach canonical typifications and craft epistemologies that are predicated wholly upon practical skill knowledge (see Gates 2013a, b, and Mackovy 2010 for discussions). These social interactions go some way, (in returning to the crafts literature), to address Harrod's concern with the lack of a "common language that made sense of this multiplicity of activities" (Harrod 1999) as they reveal a complex inter-disciplinary communicative nexus of meaning-making.

References:
Abstract
My research presents the case that craft practice and language are not antithetical and maintains that professionally situated talk-in-interaction is fundamentally constitutive of craft-people’s ways of knowing. I proceed from a crafts literature that maintains that ‘craft and theory are like oil and water’ (Dormer 1997: 219) and that ‘an object that ticks all the craft boxes … may not present an interesting case for theoretical discourse’ (Adamson 2007: 169). This orthodoxy has kept language and practice at a distance from each other. My critical point of departure is that this canonical view, what Gee (2004) would class as big-D Discourse(s), effectively connotes a genre from the top-down, thus predetermining what type of ‘theory’ and what ‘theoretical case’ might be. I counter this essentialising, etic, view of craft practice by locating the small-d discourses of craftspeople’s talk-in-interaction through ethnographic, observation and recording. In orienting to an emic approach I argue for the vital role of language in underpinning craft knowledge. My theoretical and analytical approach to this data is grounded in narrative research and its commitment to apprehending human experience (see Bruner 1986) and revealing the realities that are bound up in spontaneous, unplanned everyday uses of language-in-practice. Drawing upon ‘small story’ research, orienting to emergent, ongoing tellings (see Georgakopoulou 2007), these ‘stories from the workshop’ can be cast against orthodox, paradigmatic, carefully written, abstract institutional Discourse(s) (see Hymes 1996).

This paper will use short transcripts of professionally-situated talk-in-interaction amongst craftspeople and present an analysis of their uses of language. I will show that language plays an important role in constituting particular epistemological standpoints that breach canonical typifications, craft epistemologies that are predicated wholly upon practical skill knowledge (for discussion see Gates 2013, forthcoming; Makovicky 2010). These social interactions go some way (in returning to the crafts literature) to address Harrod’s concern about the lack of a ‘common language that made sense of this multiplicity of activities’ (Harrod 1999: 409) as they reveal a complex inter-disciplinary communicative nexus of meaning-making.

Introduction
My central claim, and what this research shows, is that craft practice and language are intimately entwined. I argue that locally occasioned, professionally-situated talk is fundamentally constitutive of crafts practitioners’ ways of knowing in the world. Proceeding from a crafts literature that has long maintained a schism between practice and language, I argue that by orienting to an ethnographic approach – by listening to what language is used for amongst craft practitioners and by turning to discourse analysis – orthodox representations of the relationship between craft and language can be breached.

In this presentation I will take a critical position on the canonical view of the relationship between craft practice and language. I will then describe my research method and outline a theoretical and analytical perspective before moving to illustrate and discuss my case, working with examples of data. I will present an ongoing analytical sketch around a theme that circulates in my present data.

A canonical view of craft and language
The schism between making things and language has been well rehearsed in the crafts literature. Richard Sennett reminds us of the historicism of the view, drawing on Denis Diderot’s words from the eighteenth century: ‘among a thousand, one will be lucky to find a dozen who are capable of explaining the tools or the machinery that they use with any clarity’ (Sennett 2008: 94). During the 1990s Peter Dormer, then author of some of the most visible writing on the crafts, held that ‘what can only be shown cannot be written about’, warning that anyone who thought otherwise would ‘distort the integrity of the very subject they profess to respect’ (Dormer 1997: 230).
What these views, separated by two centuries and more, are reflecting upon is the task of turning making into language – the challenge of articulating practical action, techniques, and procedures. But this really only prescribes a limit of language. I am more interested in what language does do. By orienting to the orthodoxy of a sharp binary between tacit and propositional knowledge, we cannot help but see craft practice in a language-less world founded wholly upon practical and procedural skills. In addition, most definitions of craft’s peculiarities and particularities across multitudes of practices imply that they are bound by an observance of material matters. As Janet Koplos summarizes: ‘what something is made of is always part of the point’ (Koplos 2002: 82).

As a practitioner, I would argue from experience that there is a lot more to something that I will tentatively and hesitantly call ‘craft knowledge’ than can be reductively annexed as an epistemology of making. Nonetheless, a view has held sway that ‘almost nothing that is important about a craft can be put into words … craft and theory are like oil and water’ (Dormer 1997: 219). Now, whether theory is the oil or the water in Dormer’s analogy, we find a more recent evocation of the status quo in Glenn Adamson’s writing: ‘an object that ticks all the craft boxes … may not present an interesting case for theoretical discourse’ (Adamson 2007: 169). To me, this rather begs the question ‘which theoretical discourse?’ – surely there are a multitude of ways of approaching something theoretically.

As an art historian, Adamson offers a perspective on craft, but his words disclose the possibility that the agenda is set – the discourse has been predetermined from his perspective. Adamson and many others are writing about craft, not of craft: offering representations of something at one remove. We might refer to these texts (after James Paul Gee or Norman Fairclough) as a big-D discourse, canonical texts that connote and shape a genre or field from the top down – typically from the academy.

But in the words of educational theorist Etienne Wenger: ‘There is a big difference between a lesson that is about the practice but takes place outside of it, and explanations and stories that are part of the practice and take place within it’ (Wenger 1990: 100). And with this view in mind the concern of this research is to reveal how the small-d discourses, the non-canonical, the everyday professional talk of crafts practitioners, brings to light the concerns of a field from the inside.

To return to Peter Dormer just once more: His thinking was predicated upon craft knowledge being locally distributed. The examples he gave, of engineers and scientists solving problems working together, would not, I imagine, have been silent gatherings. There would have been the sound of talk, just as it permeates and underpins many of our interactions.

Methods

I too am looking at craft practices through a particular lens, looking at craft from a particular methodological standpoint. But whereas much of the established crafts literature brings with it its own agendas and concerns, this research orients to an emic, ethnographic perspective, attending to the voices of the inside of practice. In short, the job is to look for what language does ‘on the ground’ for the people that are using it amongst themselves.

I make relatively long field recordings, usually around two hours, of naturally occurring talk in professional settings, transcribe sections of the recordings and analyse what is going on – what people are talking about and how they are doing it. The situations that I make use of are gallery conversations, those gatherings that usually precede gallery shows, or I invite a small group of craftspeople to simply chat at one or other of their studios. The important thing, notwithstanding methodological and theoretical implications, is to capture passages of everyday, unrehearsed, naturally occurring talk. The transcripts are anonymised: my focus is on the concerns of a particular type of person – the contemporary crafts practitioner – rather than any revelation of any attributable biographical detail.

My concern is the collecting and analysis of spoken, naturally occurring discourse in the ongoing present. It is an ‘ethnography of the now’ and as such is distinct from the post-rationalisation and sequencing of events often brought to bear in biography and oral history. The analysis draws on one relatively long data strip. Its occasioning was a gallery conversation during an exhibition at a contemporary crafts gallery. This data is drawn from various points of the second hour of a two-hour event. The atmosphere was informal. Three of the exhibiting makers (this is how they categorise themselves in the data) have been joined by about ten visitors. Most of them could be described as being (loosely) in similar professional circles. After a brief description of the project – its inception and development – the artists ‘open the floor’ and invite all present to join in the conversation.
In this way it is less like a presentation and more of an informal chat. All are seated amongst the exhibition.

**Theoretical position**

Language, spoken or written, is not a neutral system for the projection and reception of information and pre-existing knowledge. Language is something we do things with and language-in-use reflects and shapes all our social practices and cultural formations. Discourse analysis is a broad term that embraces myriad ways of thinking about how language-in-use is enmeshed in social action. Seen as the practical integration of language above the level of the sentence, and experience, discourse becomes fundamental to the constitution of knowledge. As Burr observes: ‘it is through the daily interactions between people in the course of social life that our versions of knowledge become fabricated’ (Burr 2003: 7).

As I am trying to drill down into the concerns of working practitioners as worked up through their talk as a counterpoint to the top-down essentialism of the big-D discourse, orienting to ethnomethodology motivates a commitment to how people actualise their culture through interaction. Ethnomethodology, underpinned by social constructionism, holds that the ways in which we, as social actors, apprehend the world are historically and culturally specific – what we know is dependent upon context. Language does this through indexicality: that word use is socially produced and tacitly recognised amongst interactants. As Alain Coulon remarks: ‘the sense of talk is always local and ... generalisation about the meaning of a word is impossible’ (Coulon 1995: 20).

The understanding of local meanings is enriched by the detail afforded by ethnographic observation. Although transcripts are artefacts and talk is loosened from its physical context and analysed elsewhere, by being present and having longitudinal knowledge of the field the extinct never becomes completely abstracted from context.

This work shares ideological ground with narrative research regarding motivations and standpoint. I am not, however, claiming that narrative is the sole mode deployed in crafts practitioners’ talk. The data that I collect are unrehearsed, improvisatory interactions that evolve in an ongoing present. It is grounded in experience. So while not always story-form telling, there is some distance from them to what Jerome Bruner identified alongside narrative as its counter – the logico-scientific mode. The data, even when in argumentation or explicative modes, tends toward giving meaning to experience rather than seeking absolute truths.

Ambiguity and possibility feature more frequently than any positivist claims for record. And here we can draw upon Dell Hymes and his concern with the asymmetry of discourse registers – that the spontaneity and humanity of unplanned talk is ideologically dissociated from the abstract meticulousness of institutional and academic registers. Institutional leverage, prestigious discourse registers and the canonical agendas of a field’s literature normatively render the concerns of lived experience relatively voiceless.

Within a general rubric of discourse and narrative research this work can be quite specifically situated in Small Story research. As co-constructed and under-represented non-canonical narrated acts embracing tellings other than prototypical narratives, we can ‘locate(s) a level and even an aesthetic for the identification and analysis of narrative: the smallness of talk, where fleeting moments of narrative orientation to the world can be easily missed out on by an analytical lens which only looks out for fully fledged stories’ (Georgakopoulou 2007: 146).

**The joint construction of a concept of ‘process’ through the process of talk**

If there is a generalisation that can be made across all of the data in this study, it is this: talk about making things – that is, direct reference to the techniques and procedures of craft making – figure very infrequently. This claim is counter to typifications that would have ceramicists talking amongst themselves about kiln temperatures, and woodworkers about chisel sharpening. This brings to mind Tanya Harrod’s concern that, beyond discipline-specific technical literature, there was a lack of ‘a common language that made sense of this multiplicity of activities’ (Harrod 1999: 409). Although writing about the field of the 1990s, Harrod’s words can be seen as emblematic of the disparities between the Discourse of record, and the discourse of everyday life. There would appear to be some tension between these D/discourses: very little of what is spoken about in the data is what is normatively described as ‘craft knowledge’ – making things, but my central claim is that talk, and craft practices are co-constitutive.

Bearing in mind this apparent tension, in this analysis I look at how the concept of ‘process’ is deployed in the data. Craft is, and has, normatively been defined...
in terms of the relevance of materials and the ways in which they are worked. From this focus upon materials and making we might assume the position that ‘process’ defines the p ocedural implementation of technologies upon material to arrive at a more or less specified orm, or making things.

During the data, explicit reference to process(es) is made twenty-four times. As a quantitative comparison the terms ‘maker’ and ‘making’ were used twenty-nine times between them in the same data. Interestingly, perhaps, the word ‘craft’ was used just once. In addition to direct lexical use of ‘process(es)’, some chunks or episodes of data allude to the concept (gradual, temporally registered emergence of work(s)) without direct lexical use. I will start by looking at how the word itself is deployed and worked with by the participants to show how the word’s meaning remains fluid and utable, yet uncontested – maintaining an apparent stability of meaning amongst the talk.

Having made the comparison between ‘process(es)’ and ‘making/maker’, I will proceed from the instances of the two terms’ collocation. I will use collocation – the lexical selections made around process – as the basis for this analysis. By examining the lexical choices made around particular word uses we can start to understand what the word means to those using it at that time.

**Two views: manual vs. mental**

Process is collocated alongside making in two strips. In both cases it is John who is speaking:

31) that’s a thing that reflects about making processes as well

63) erm, sort of dialogic kind of thing going on in the making process

At lines 31 and 63 John uses the two words together in what I would argue is a very strong association. ‘Making’ and ‘process’ register as something close to a compound word. He is aligning the act(s) of making to the notion of process through their collocation. We can see that for John the idea of process, in these two instances, is freighted with the physical actions of making, of procedural practical work. We can read this as being in line with an orthodox view on what process might mean in the crafts – as closely allied to making. But, if we think from the other end of the compound/dyad, John is signalling that making is processual: temporally registered, the fact that he has uttered the two words together is of some interest. This is because both utterances still make the same linguistic sense if ‘process’ is omitted. John could have just said ‘making’ as the subject of his speaking but instead is emphasising that, for him, making is linked to process – contingency and time.

Nothing startling can be claimed of the foregoing. In summary, the processes of craft involve making, and making is embedded in time: an orthodox understanding. John’s thinking is aligned to a conventional stance and quite tightly defined. However, a few lines later the orthodoxy becomes a little unsettled as what he considers to be part of the process becomes expanded.

31) John: that’s a thing that reflects about making processes as well, the

32) exhibition is a work in progress …

35) so the show is kind of a working process and we wanted the conversations to be part of that

36) working process so that we could have the response of people and to kind of if you like carry on

37) working with people who were coming to see it

38) Liz: yeah

39) as a kind of conversation thing

The making processes of line 31, perhaps orthodoxly characterised by hammering, stitching, or throwing, become more diffuse as the show, archetypically constituted as a finished, static artifact, is embraced by John’s idea of process. *So the show is a kind of working process* (lines 35–6). By expanding the concept of process, it shifts away from the insular, solo workbench and into the publicly interactional realm of the gallery. It also shifts in time, from what happened then at the workbench to embracing the ongoing present of *now* at the gallery.

At line 35 John says we wanted *the conversations to be part of that working process*. In work outside the scope of this paper I frame this line within a general argument for the participants’ view of talk being important. Here I wish to develop a particular angle. John has drawn ‘making’ away from the bench and into the gallery, he has moved it in time to the narrating present. Making, on his terms, has become necessarily more social and he is advocating the poly-vocal consequences of others, as invoked in lines 36–7. Here we can see making processes – as an expanded concept – being described in the terms that talk is referred to as inter-textual. This can be seen condensed in line 39, *as a kind of conversation thing*, pointing toward his utterance at line 63: *erm, sort of dialogic kind of thing going on in the making process.*
John’s words can be read as a counter-narrative to craft’s normative assumptions. However, his move to expand the notion of ‘making process’ should be tempered with his reference to ‘skilled processes’ at line 409, a signal that his view also is anchored in traditional approaches.

So, even with its collocation to making, John’s uses of the word ‘process’ are still ambiguous. They represent only two uses of the twenty-four. The remaining uses – the vast majority – do not align to conventional notions of making. In fact the term can be shown to be deployed in opposition to these conventional notions of practical action.

In the following strip ‘process’ becomes dissociated from making as per John’s usage. The concept becomes something more of a topic in its own right as a definition is worked up by Haley.

290) Haley: so you know it is a thinking process rather than – I think that’s what it is for me it’s about a thinking process not an outcome.
292) Liz: yeah yeah
293) Haley: but all of our work is seen in outcomes so you … 90 per cent of what I do during the year is about the thinking process and the process – probably more than that actually and
296) 5 per cent is about the individual object being out there
297) um and I don’t y’know even going down to how you make a living or what you do I
298) make my living from the process, not from the outcome

Although Haley makes a collocation with thinking (as a parallel to John’s making), the word ‘process’ is used several times in this strip – it is in circulation in the discourse for longer than a single reference. As the word hangs there in the talk it is ‘on offer’ more for the others to use, question, or work with – it is ‘up for grabs’. Despite this, Haley holds the floor and deploys ‘process’ on her own terms.

Haley is making a clear link between process and mental activity through the double collocation of thinking at 290 and 291. It would be tempting to view this as an opposing view to the shorthand view of John’s ‘making processes’ – i.e. mental vs manual. But the opposition that Haley sets up is of outcome(s) (291, 293, 298). She is not distancing her position from making, as an active concept, but rather from the relative stasis of outcomes – made objects and artworks. (Elsewhere in the data Haley makes clear declarations of her affinity to materials and materiality.)

This strip can be seen as a response to what Haley can see around her. It is important that the physical context of this utterance is a gallery space, typically populated with outcomes. For her it is frustrating that 90 per cent of what (she does) during the year remains unseen and recognised (she assumes) in contrast to the 5 per cent about the individual object being out there (296).

Alignment around process

All of the participants have spoken of the project in terms of change, contingency, and interaction. John draws together the concepts of materiality and time in the following lines:

246) dealing with
247) the kind of fluidities and the kind of way that time happens through material
248) how we kind of push stuff about to kind of make our world.

Although not explicitly referenced, John’s allusion to a concept of process is clear in these lines by bringing together material, time, fluidities, and make. His attitude to making processes is echoed in his calling up of material. By the metaphorical use of through, time is made tangible, time is figuratively materialised. He invokes the group through his use of we and our. How far this group inclusivity extends beyond the artists themselves and out to a broader horizon of the other participants is unclear.

Rachel utters the following lines shortly afterwards though:

267) I mean we had [artist’s name] in the library looking at material stuff but
268) this is y’know processes.

Rachel is not one of the exhibiting artists but a known associate. She runs a materials collection at a university. She is here extolling the virtue of material needing to be animated by doing things with it. We can read this as a response to John’s use of we and our, aligning herself to John’s signalling of a group identity (of the artists?) circulating around a concept of process.

I argued earlier that Haley voiced opposition to the static nature of exhibited outcomes. She was contrasting the invisibility of a thinking process
to our work seen in outcomes. Rachel's words are performing a similar thing in separating actions from artefacts. She uses the cultural capital/leverage of mentioning a well-known artist. But any hint of this being a boast is qualified with the almost immediate but. She appears to be elevating the group's advocacy of processes above the passive observer role played by the artist. The use of the contraction y'know could be seen as a filler but equally the personal nature of y' could be a strategy to align herself to the artists through this sharing of opinion and knowledge. In this way a visitor known to the artists is aligning herself to the ongoing joint construction of the concept of process. She is contributing to the group-work by identifying and aligning to their repertoire and concerns.

Throughout, the data process is frequently collocated with time. We have seen above how time is used to invoke a notion of process without ‘process’ itself being deployed. This is based on an assumptive view of ‘time’, ‘material’, and ‘making’ being a sort of recipe for what process might be. Haley's use at line 287:

287) so again this musician was very involved in process and time

can be seen as part of the work done by the group of artists throughout the data to align themselves to an ecology of practices and professions much broader than orthodox representations of craft practices afford. It is worked quite succinctly by Liz just a few lines before Haley's utterance:

269) Liz: to add to that its why then process is so
270) it's the star in the object isn't it it's the key that links everything
271) and then doesn't separate makers from other disciplines or from life itself because
272) we all know it's not like that.

The artists use the deployment of process to work up a collectivised worldview of adjacent practices – for example, choreography, gardening, cooking, and music. It connects them to a sphere where outcomes are often dematerialised or immaterial and is simultaneously used to distance themselves from the normative assumptions of a gallery environment.

**Conclusion**

Across these necessarily few examples it is immediately appreciable that there is no singular definition of ‘process’ to be located. Each interlocutor, not all previously known to each other prior to the occasioning of this data, has brought with them their own understanding laden with prior and current context. But between the speakers and the listeners understandings of the concept tacitly circulate and are allowed to settle, affording a facility in that moment, emerging through the relative messiness of unrehearsed situated talk.

An example of how messy and ragged talk can be can be seen in John's words. From outside of the context of the interaction the following makes no real cognitive sense. But on the ground it went uncontested, doing its work in that moment:

353) the actual processes are really quite similar but the process of going through
354) that process are quite different and I don't really see myself I don't really see much
355) difference in the working processes between …

And that is an important point: these positions are not the product of a carefully crafted manifesto or position paper, but contingent meanings worked up interactionally through the mundanity of talk. Enough resonance and meaning is afforded to get each interlocutor to the next ‘now’. It is interesting that none of the uses, oscillating as they do, between concerns of temporality, materials and other differences are ever contested or disputed. Very little unpacking is requested, or offered. Meaning is made jointly through the practices of local, contextually-dependent interaction. In this way the concept has a doubly-bound investment in indexicality: certainly the speaker brings meaning along, but a new salience is forged in the mix of being there, in the now.

For these makers making meaning is construed by looking outward from the bench. In addition to orthodox characterisations of an inner dialogue with a material, language and communicative practices afford ways of world-making that extend to broader ecologies of inter-practice understandings, forging emergent and shared constellations of concerns and attitudes.

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This paper will look at the practical, technical and creative potential when a traditional crafts person who works with his hands and sketchbooks is given the opportunity to work full time in digital design, working with CAD/CAM and 3D printing machines.

I have worked as a glassmaker and designer for 25 years, working from sketches and then developing my designs ‘on the end of the iron’ in a hot glass workshop. The process I have used has remained virtually unchanged for 2000 years. As a successful designer, I have had over 70 products go into production and many of them are still being produced today. I have worked for prestigious companies such as Habitat, Selfridges, Dartington Crystal and TVG and am currently on the design team at Caithness Glass. I never used digital technology and only used a PC as a word processor. Indeed, I was very much against the use of CAD, believing that although fine for product design, it could be detrimental to creative development within contemporary craft.

Last year I was given a new role within Plymouth College of Art within resource development. A major part of my work is to facilitate the use of our 3D printer, and help to plan our new Fab Lab. In order to do this, I have learnt how to use a 3D CAD programme and how to export the data into files that can be used on a 3D printer, milling machine, laser cutter and water jet cutter.

This has been a tremendously exciting time for me, and has completely changed my outlook on the use of digital technology in contemporary craft.

I have used my past experience to work out ways of bypassing the limitations of working with a very simple 3D printing machine, achieving results that would be expected from a far more complex and expensive piece of equipment. I will use examples of the work that I have printed from my own designs and that of students from PCA to evidence that very complex outcomes can be created using traditional modes of thinking based on years of practical experience within the workshop. I wish to demonstrate that tacit skill is transferrable into the digital world and is just as relevant when working in front of a computer screen.

After six months away from a glass workshop I made a piece that I would like to display using traditional methods. It evidences an improved understanding of scale, proportion and composition and is I believe a financially sustainable product. New technologies could well be the saviour of a dying craft.

This paper will explore the reasons for the significant improvement in both of these separate practices, due to the interaction of each on the other. It will cover the acquisition and application of practical and tacit skill and detail the vital importance of tacit understanding which enables the skills to be transferrable.
Transferring Skill over 2,000 Years: A study of two disciplines

Introduction
This paper will look at the practical, technical and creative potential that is made possible when a traditional craftsperson who works with his hands and sketchbooks is given the opportunity to work full time in digital design. Over the last 12 months, I have worked with Computer-aided Design (CAD), incorporating Rhino and Desktop Inventor, and Computer-aided Manufacturing (CAM), using Computer Numerical Control (CNC) milling machines, laser cutters and 3D printing machines.

I have worked as a glassmaker and designer for 25 years, working from sketches and then developing my designs ‘on the end of the iron’ in a hot glass workshop. The glassmaking processes I have used have remained virtually unchanged for 2000 years. As a successful designer, I have had over 70 products go into production. I have worked for prestigious companies such as Habitat, Selfridges, Dartington Crystal and TVG and am currently on the design team at Caithness Glass. I never used digital technology and only used a PC as a word processor. Indeed, I was very much against the use of CAD, believing that although appropriate for product design, it could be detrimental to creative development within contemporary craft.

Last year I was given a new role at Plymouth College of Art within resource development. A major part of my work is to facilitate the use of our 3D printer, and to help plan our new Fab Lab. This has been a tremendously exciting time for me, and has completely changed my outlook on the use of digital technology in contemporary craft. I have used my past experience to work out ways of bypassing the limitations of working with a very simple 3D printing machine, achieving results that would be expected from a far more complex and expensive piece of equipment. I will use examples of the work that I have printed from my own designs, and those of PCA students, to provide evidence that very complex outcomes can be created from inexpensive, simple machines, using traditional modes of thinking, based on years of practical experience within the workshop. I would like to demonstrate that tacit skill is transferrable into the digital world and is just as relevant when working in front of a computer screen.

I hope that this paper will articulate the acquisition and application of practical and tacit skill and detail the importance of tacit understanding that enables the skills to be transferrable, including the vital transfer of the concept of quality.

I also hope to examine the possibility that, far from replacing traditional craft as I originally thought would be the case, the introduction of digital technology could actually save the endangered and, in some cases, dying traditional crafts from disappearing from public perception altogether. I will also discuss the notion of whether digital design can be regarded as craft.

As a master craftsman and researcher, I have published a number of papers on the subject of tacit skill, knowledge and understanding. As with this paper, my approach is somewhat personal and much of what I say can be described as conjecture, albeit informed conjecture. (For further information see Hankey 2011.) This is in fact, the heart of the matter. My thirty three years as a professional craftsperson is enough for my words to be taken seriously. Tacit knowledge is easily recognised and evident in the creative work that we produce, but is very hard to articulate explicitly our tacit understanding.

There is a necessity for the re-evaluation of tacit knowledge within administrative and political structures. In modern society with technical rationality as its dominant model of thinking, the working practitioner has very little credibility or voice. All my work is an attempt to square the circle: combining learning and making a living and history with the future; valuing the whole person; learning as much as writing. Designs and ideas for sustainable processes using ancient and traditional craft skills alongside modern technical innovation are an aspect of this determination to look to the past for what could be used in the future, just as I use a historical lens to view how tacit skills were valued in the past and how they could and should be valued again.
The transferral of skill

This paper describes the transfer of skill from one craft to another, and due to the nature of glassmaking, where techniques and processes have remained unchanged for centuries, the transfer of skill from one age to another. I have been incredibly fortunate to have had the opportunity to transfer my practical skills from one discipline to another in a professional working environment not once, but twice. As we are talking about practical skill it is important to see that the cognitive skills, design skills or cerebral skills embedded both within and outside of the practical, continue to develop and are actually enhanced by the experience of transferring from one discipline to another. In my case, I have moved from craft engineering to glassmaking, and then to a third discipline, CAD CAM, incorporating digital design and making.

In terms of historical processes, I was trained in the 1980s as an engineering craftsman within the traditional incremental apprentice system developed over hundreds of years. I later changed to work in a manner more akin to that of the ancient Roman glassmakers of 2000 years ago, and then once again, to work with cutting edge technologies including Cad Cam and 3D printing.

From Craft Engineering to Contemporary Glassmaking

I was trained as an engineering craft apprentice on the installation and maintenance of glass furnaces at Pilkington Glass in St Helens. Even though the float glass process and furnaces were very new technology, the factories around them were hundreds of years old. Interestingly, due to the long history of the factories, and with working practices and attitudes handed down from craftsman to apprentice over the years, back in the mid-1980s the notion of the Journeyman was still prevalent within the workforce, particularly with the older engineers.

As you came out of your apprenticeship you were expected to spend at least two years gaining experience before the rest of the workforce accepted you as a craftsman. Looking back into history, recently ‘graduated’ craftspeople would be expected to travel to other places of work, gaining experience in different working environments before returning to the original place of employment – hence the name – Journeyman.

This was explained to me by a gas engineer who I trained under for the first year of my apprenticeship, just before he retired. Even though the formal practice of journeymen ceased many years earlier, the workforce continued to regard a craftsman that had just come out of his or her time as a ‘Journeyman’. Indeed it took 10 years (a four-year apprenticeship followed by at least six years on the job) to be regarded by others as a master craftsman. That term is conferred on a craftsman by his or her peers, and should never be assumed by or attributed to ourselves.
This extra time, this ‘journey into our craft’ is the all-important time when we are still learning, without a tutor, having to think for ourselves and problem solving with nothing but our tools, our hands and our past experience to aid us. This is the time for the acquisition of tacit skill. This was recognised as a vital part, if not of the education, then of the making of a craftsperson.

**Tacit skill**

When we consider compression joints in domestic or industrial plumbing, they need to be tightened up to produce a water-tight or gas-safe joint. If you don’t tighten the joint enough, it will leak. If you tighten the joint too much, it will leak. You have to get it just right; you judge it by how it ‘feels’. This is tacit skill, implied but not stated. I found that this skill is directly transferrable to glassmaking. It’s not that I understood the material, but rather that I knew that I had to look for and understand the ‘feel’ of the glass. Another vital factor is that it’s not just the particular tacit skill that is transferrable, but the concept of ‘quality’ that goes along with it.

I have two examples of quality, the outcome of jobs that occurred within a week of each other when I worked as an apprentice craft engineer at Pilkington glass. In the first instance, a union joint on a water pipe above the glass furnace began to leak onto the hot float glass, causing the whole production line to be shut down. The resulting loss of income to the company would have equated to tens of thousands of pounds for an average unscheduled shutdown. Once I had arranged safe access to the area, I had the leak fixed in ten minutes and production was started again. The result was water tight but it looked awful. Both sections of pipe were out of line and there was jointing compound left on the pipe fittings. However the job was regarded as a great success as it was done quickly and safely, and I was congratulated on the quality of my work. Time was the most crucial issue with this job.

The very next job involved fitting a radia or in the MD’s office. I must have spent three times the usual time fitting the radia or, checking and double checking, but above all, making sure it looked level in relation to the wall and floor. Again, the foreman congratulated me on a quality job, even though it took much longer than usual to achieve the outcome. In this case, the job looked perfect and there were no leaks, but time was not an issue.

My point here is that when we transfer advanced technical and tacit skills from one discipline to another, we also take with us the certain knowledge that what quality means can change from one job to the next, and there is not a fixed ‘one solution fits all’ answer to what quality represents within any discipline that involves autonomy of purpose.

Quality, in the performance of a practical skill, can be described as the correct selection and implementation of a number of criteria of fluctuating importance which vary depending on the job in hand. No two jobs are the same and we must therefore amend the nature of the quality needed for each one by choosing the correct criteria from which we implement the necessary ideals, tools and processes needed to achieve quality in the job at hand.

This concept of quality, the understanding that criteria change constantly depending on the job in hand, gained in any discipline, can easily be transferred and applied to another discipline, for example, from craft engineering to glassmaking.

**The Transfer of a Concept of Quality**

![Diagram of practical skills, tacit skill, and quality criteria]

- Accuracy
- Practical skill
- Knowledge of materials
- Time
- H&S aesthetics
- Cerebral skill
- Design, conceptual understanding

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Alongside the concept of quality, the move from craft engineering to glassmaking is made far easier when we consider the knowledge and tacit 'feel' of any material. For instance, in industrial or domestic pipework, copper is a soft metal that when over tightened will cause the fitting o leak. The actual pressure on a compression joint needed cannot be written down. It cannot be accurately measured. It has to be 'felt', with tacit knowledge gained from repetition and experience. Copper when worked becomes hard and brittle and needs to be annealed in order to soften it again. Molten glass also must be annealed, and has a 'feel' as well, a 'life' that can be recognised and acted upon with knowledge based on experience and repetition. The feel is different, but I am aware that any material has a 'life', certain attributes that apply to it and nothing else. A tacit 'feel' for one material allows the craftsman to look for and be open to the unique characteristics of another. In this way the transfer of practical and tacit skill from one discipline to another becomes easier, alongside a concept of quality.

Perhaps the most significant criterion that needs to be addressed for the first time in the transfer of skills from craft engineering to contemporary design specialising in glassmaking, is that of autonomy of purpose. A craft engineer works unsupervised but under instruction from a managerial hierarchy, or from technical drawings and best working practices. A contemporary craftsman is a designer, developing new ideas, perhaps using processes developed specifically for the job in hand. Autonomy of purpose enables a craftsman who possesses tacit skill to experiment with the new, allowing the development of tacit knowledge and understanding.

Autonomy of Purpose separates the factory worker, following a pre-defined plan, from the contemporary craftsman, who is free to experiment and develop even our greatest mistakes. A factory worker possesses tacit skill, but the contemporary craftsman possesses tacit skill, knowledge and understanding.

Using Reflective rationality to develop a new glass furnace, using historical thinking to develop a new business model.

Before the development of complex admin systems, all decisions were made within the working environment, and the craftsman, in this case the glassmaker, also developed and built the furnace equipment, mixed the glass batch and produced the product. As a qualified engineer with experience in the installation and maintenance of large-scale glass furnaces, it seemed logical to build my own furnace, one that cuts the energy needed to run it by more than half. I designed a prototype design based on a 17th century furnace, and more complex systems are planned which use ideas first seen during the renaissance, although with modern materials and technology. (The design of the furnace is evident in Hankey 2009.) I have been working with glass since 1981 and spent eight years as technical instructor in hot glass at the RCA, and it was only recently that I first began to mix my own glass batch. This way of working is far more labour-intensive, but this is not a negative. With the glassmaker more in control of the materials and the process, the skills that previously were thought beyond modern knowledge are retrievable again. It is not that the skills were necessarily lost, but that the ideological insistence on a way of working (which values speed and a mechanistic heterogeneity over tacit knowledge and a thoughtful, cradle-to-grave approach to a process and a material) has made us blind to the possibility that a different way of working could give us the skills we thought we had lost.

The furnace was tested for the first time at the second Making Futures conference in 2011 and was situated at the Dartington Hall Trust site ‘The shops at Dartington’ for 12 months to prove its viability. It is a perfect example of the transfer of a concept of technical and tacit skill, knowledge and understanding from one discipline to another. Borrowing a business model from the 17th century and combining it with modern technology and materials, it has proved to be a very successful and reliable furnace that cuts the daily, hot-glass workshop gas bill, from £120 per day to less than £30 if run on natural gas.
The RGH1 glass furnace, developed on 17th century thinking with cutting-edge materials and computer-controlled high/low combustion system. It cuts down the cost of running a professional studio by 75% running on natural gas, while enabling excellent glass quality.
Transferring traditional craft skills to digital technologies

This third transfer of skill, from glassmaking to CAD CAM design, raises the very interesting question as to whether work undertaken using digital design and making is, could or should be regarded as craft. If we consider the new haptic tools, force feedback devices that allow us to ‘feel’ the surface of a 3D on-screen design, and the way in which we can now interact with 3D Autocad with a simple scanner such as Microsoft Connect, found on an Xbox, the answer is obvious. Anything that involves movement of the human hand to interact with material, whether solid, tangible or digital, in order to produce a 3D design, must be considered a craft. Anything that involves the performance of a practical skill is craft. We are already at a stage where we can manage without programming and even the keyboard itself. New interactive technologies, coupled with solid CAD programs such as Solidworks, provide a completely intuitive experience for the designer, where the hand dictates what happens to the on-screen material, without the use of traditional or digital tools. As the hand is guided by the mind and the eye, this new development is extremely similar to one of the oldest ceramic processes, throwing a pot on a wheel.

As I have become used to working with a 3D Touch printer, I have found that I felt more comfortable using it after I stripped the printing heads down to replace components. It was as if I needed to get my hands involved with how it works in order to get to ‘know’ the machine. It seems rather informal to say that I can now ‘feel’ when the printer is ‘happy’. Comfortable, know, feel, happy. These words seem too simple to be listing in a published paper, but they are what tacit skill is all about. Implied, but not stated; tacit knowledge and understanding deals with the feel of things. I can hear when the machines’ motors are slowing slightly, indicating that the height of the build bed needs fine adjustment. I can also hear a slight juddering when there is a problem with the feed material. I can see when the raft appears either too hot or too cold and I understand the strange electronic glitches that only occur when the machine hasn’t been left to cool for long enough before the next print is started.

It is important to recognise that a 3D printer, or CNC milling machine, is simply a complex tool and not creative in itself. The tools I use for glassmaking only become creative once they are in my hands. Only when a machine possesses autonomy of purpose will it become creative in itself.

As a musician I see parallels with designing and making, and composing and playing. In a literal performance of a skill, the musician has the ability to make the notes ‘sing’. The gaps between the notes, the strength of each note as it is struck or played and the resulting sustain, are all variables that can make a piece of music excellent or dull. An acoustic guitar is played and the result is immediate – the hand strikes strings and presses down on frets resulting in an immediate outcome. This is very similar to throwing a pot or blowing glass. A simple cylinder can ‘sing’ or can be dull depending on the practical and tacit skill of the maker.

An electric guitar takes a signal from the strings to the pickups converts it via an electric signal to the amplifier. Interestingly, the result can be distorted to such an extent that the guitarist can ‘play’ feedback from the speakers as well as the strings. No-one would deny that the performance of music using distorted electric guitar can result in extremely creative outcomes – the influence of Jimi Hendrix in rock music is testament to this.

Similarly, the ability of a maker to influence the creation of computer-aided design using the hand and indeed the body enables a creative outcome which can be further ‘distorted’ using digital technology. The ways in which we can and will be able to creatively ‘distort’ and ‘play’, manipulating the original design will possibly enable the most exciting developments in creative CAD CAM.

Using traditional craft skill to enable us to bypass limitations of the cheapest type of 3D printers

The most simple 3D printers, such as the 3D touch, build upwards from a base plate, making it easy to construct a simple form such as a cylinder, but impossible to build outwards as there is no support for the material. Much more expensive 3D printers incorporate supports that are generated from the original design. As a craftsperson, it was simplicity itself to design supports within the CAD file, which then enable any form to be printed. The results from a 3D printer costing £1,000 are extremely exciting, making 3D printing accessible and affordable.

It is common to see supports in 3D printers costing upwards of £10,000. They are programmed into the conversion software and are automatically generated from the CAD file. What I am doing is replicating that process, but building each prop ‘by hand’, that is, building individual props into the CAD file as the
design is created. This is a natural thought process for a maker who has a practical craft background when faced with limitations. Problems can be solved many times with very basic traditional solutions.

A simple cylinder with decorative pattern, designed on Rhino for PCA BA student, Ruth Harrison. The larger piece is far larger than the maximum making size and is made from two parts, glued together.

Top left – Pixie head, from a Maya animation fil . The file aused glitches as it was imported into Axon 2 to enable it to be printed. I imported it into Rhino first, on structing a secondary raft and built support posts to hold the structure while being built. Note the messy result on the right ear, where the support fell away during the printing process.

Top right – Dragonfl , incorporated fl xible wings printed separately and then assembled.

Bottom – Train, designed on Maya, incorporated into Rhino and then into Axon 2 ready for printing. The supports snap off easily rather li e an Airfix model.
Above – Design on *Desktop Inventor*

Plymouth College of Art is about to incorporate new software into our Fab Lab, to be opened in 2014. We have examples of Mesh programmes (*Maya*), Surface programmes (*Rhino*) and solid programmes (*Desktop Inventor*) and will soon be working with the latest more intuitive software to go with a 3D scanner.

**Using traditional and historical processes to generate new outcomes from CAD CAM**

Above left – A roman cage bowl, carved from one piece of glass. An amazing, incredibly time-consuming and precious piece of work, that could only be recreated today using casting techniques. Above right – A 3D printed bowl that can be invested in plaster, burned out as in lost wax casting, and then cast in glass or metal.
Above – A ceramic tile, slip cast in a plaster mould. The mould was originally produced in steel on a CNC milling machine. Gell fl x was poured into the mould to create a template, which was then invested in plaster to create the mould. This traditional process can be used to produce, not prototypes but batch production pieces, capable of enabling detail of incredible fineness which could provide a sustainable business model enabling the re-introduction of traditional tile manufacturing to the UK.

**Using a two thousand year old glass casting process with CAD CAM to produce the media innovation awards 2014**

I was asked to assist glass artist, Amy Whittingham, to help to produce a steel mould from which her design could be made. Rather than investing 20 separate wax pieces in plaster, I convinced her that it would be easier and far quicker to cast the pieces directly from the furnace into a CNC-milled steel mould.

The first step was to construct her design as a *Rhino* 3D fil

Once this was done, it was possible to produce renderings to see how the piece would look in a variety of materials.
The mould was made with a CNC milling machine and 20 glass awards were cast in less than four hours, each requiring minimal cold work (grinding and polishing). To achieve this result using lost-wax casting would take weeks of work. What makes this process economical is the use of a hot casting technique, poured straight from a crucible, in the same way that glass was made 2,000 years ago.

**Conclusion**

The use of technical rationality as our preferred mode of thinking has resulted in a split that could be seen as between art and science, between what can be articulated and evidenced in words and what cannot. Over the years, the dominance of technical rationality has resulted in the downgrading of the tacit elements within work and as a result, the perception of craft is such that disciplines such as glass and ceramics are considered endangered subjects within art education establishments and in society as a whole.

We are living in a tremendously exciting time where we can bring together art and science, or rather more accurately art and technology, by combining traditional and historical craft processes with CAD CAM technologies. Not since the enlightenment has there been such an opportunity to bring together once more the combination of art and science, technical and reflecti e rationality, the implicit and the tacit. Indeed, the root word of technology, techne, originally meant ‘art’ in ancient Greek. What we are talking about here is a kind of ‘Artology’, perhaps not seen since the renaissance.

Skill, both tacit and implicit, is transferrable across disciplines including digital design but, also essential, is the concept of quality that is developed within the discipline, and the knowledge that there are a variety of ever changing criteria that need to be addressed in order to achieve it in individual and unique creative outcomes.

Rather than further threatening increasingly endangered subjects such as glassmaking, I now believe that new technologies will enable them not just to survive but to thrive. When combined with CAD CAM technology and processes, the traditional crafts may provide production manufacturing methods rather than the prototype development processes currently offered by 3D printing. Even if these methods are for smaller-scale batch production, there is now a real opportunity to make the traditional crafts viable again, not just economically, but as a very real and important part of our society. We can re-connect craft skills with a society which would clearly see the importance, viability and exciting potential when combined with CAD CAM technologies.

CAM on its own is not craft. It is just a series of very clever and complex tools. CAD however, allows us to manipulate virtual materials with our minds, hearts and bodies, with or without a keyboard as an
interface. This is craft. As a guitarist 'plays' distorted and manipulated sounds in order to create art, it will be interesting to see the way in which artists and designers create, distort and manipulate their work in order to make it 'sing'.

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The paper will examine the extent to which it is possible to use craft, not merely as an idea, but as a skills-based mode of expression, to convey an ethical message, and through the physicality of the work and the relationship to craft traditions, to become a contemporary agent of change. Most significantly the paper will examine the concept of embodied narrative, that has emerged out of reflection on making; it will be illustrated by reference to my own installations, that deal with responses to the Holocaust from a familial perspective within a context of contemporary practice. It is a practice that has become a “methodological map of reflection,” an engaged practice… with an open-ended, undetermined procedural trajectory.” (Sullivan, 2010 p85). Thus it places itself in opposition to some contemporary readings of craft that perceive it as merely a reactionary negative in a dialectic of deskilling and reskilling. (Roberts, 2008).

Embodied narrative has its theoretical roots in Phenomenology; Edmund Husserl argued that one must develop a “standpoint”, a baseline that provides a “horizon” (Husserl 1969), a philosophical position from which to understand the world. Martin Heidegger maintains that the “horizon” is set by my Being in the world (Heidegger, 1962). Merleau-Ponty considers the whole, integrated person, as embodied subject; embodied narrative employs the artistic expression, that Plato wished to condemn as a mere distraction, and on the contrary to express through haptic means, what cannot be expressed through text.

Daniel C. Dennett originally proposed embodied narrative as a concept that might explicate the self (Dennett, 1992). Arthur Danto developed a concept, that he called “embodied meaning” to apply to productions in art (Danto, 1964, p580); Bruce Metcalf further refined this theory in the context of the crafts, as “embodied sympathy” (Metcalf, 2002). Metcalf proposes the idea of “sympathetic craft as an extension of its maker’s [hand]. The pot in being touched, extends the potter’s touch to its user…for this process to work, the object must be used” (Metcalf, 2002. p7). I have adapted these models to connote the metaphoric and symbolic content of a work that develops rationales beyond function, signified via its material, haptic and its visual properties.

Meaning is embodied through actual making - in its performative inception. Some of the imprinted meaning is conscious and is deliberate mark-making imposed on the material; other marks are the unconscious product of accustomed (craft) practices embedded, as Shusterman suggests, through “muscle-memory” (Shusterman, p99), and marking by flame in ceramic firing. The embodied narratives of fire, embedded in the vessels, carry the ethical load; they point towards the fires of the crematoria in the concentration camps. The individually crafted objects nominated from my own production in conjunction with appropriated, discarded materials come to stand for the peoples whose rights and identities were shorn by the Nazis. An analysis of the ethical load, informed by Levinas, will be developed in readings of the embodied narratives in recent work, and demonstrate that craft is sustainable, not necessarily merely “ironic”, “supplementary” nor “nostalgic” (Adamson, 2007, p13).

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David Jones

Grenzerfahrung: Embodied narrative – a critical tool to develop a sustainable ethical practice

The concept of embodied narrative has developed through reflection on my practice as a potter and reflective practitioner. This paper examines the extent to which it is possible to use craft not merely as an idea but as a skills-based mode of expression to convey an ethical message, and through the physicality of the work and the relationship to craft traditions to become a contemporary agent of change. The concept of embodied narrative has emerged out of reflection on making; it will be illustrated by reference to my own installations that deal with responses to the Holocaust from a familial perspective within a context of contemporary practice.

This paper addresses the ethical meaning of craft-making and its objects that underpins the issue of craft-work as problem solving. It considers the supplanting of making by industrial production in modernism as symptomatic of moral issues in society, and speculates on whether that ideological disappearance may have been significant in the increasingly bureaucratised views of human beings in the twentieth century and the consequential devaluing and genocidal outcomes that resulted from that instrumental view, through ‘a reduction in our collective sense of agency and well-being’.

The search for understanding is as old as philosophy: Socrates famously quotes the maxim ‘Know thyself’: Γνωθι σεαυτόν (Gnothi Seauton) on a number of occasions: In The Phaedrus, Plato has his character Socrates pronounce that he considers it a waste of time to study myth and art, since he has ‘not yet succeeded in obeying the Delphic injunction to ‘know thyself’, and it seems absurd to consider problems about other beings ‘while I am in ignorance of my own nature’ (Plato 1973: Section 230, p. 25).

I develop the concept of embodied narrative as a tool to explore this necessary self-awareness, as well as social awareness, that derives from my reading of Phenomenology: ‘The body is our medium for having a world’ (Merleau-Ponty 1970: 146) and ‘Because we are in the world, we are condemned to meaning, and we cannot do or say anything without its acquiring a name in history’ (Merleau-Ponty 1970: xix). Embodied narrative is a mode of understanding that has emerged out of reflection on my own raku practice. That practice has become a ‘methodological map of reflectio’, an ‘engaged practice … with an open-ended, undetermined procedural trajectory’ (Sullivan 2010: 85). It has led to personal discoveries through the act of self-reflection on the narratives embodied in material, process, objects and display. My practice has evolved into a complex methodology of making that references a pre-Socratic sensibility which, itself, echoes the later Zen-Buddhist thinking. This philosophy of acting in the here and now, informed by Zen, has generated an awareness of myself as an embodied maker, and led to a largely phenomenological interpretation of making. This has led in turn to the concept of embodied narrative which represents an embedded ethically sustainable position. This derives from the histories of craft, particularly those mediated by Morris, Ruskin and David Pye.

My contemporary interpretation of raku practice utilises the Japanese methodology of making but, by removing the pot red-hot from the kiln, with gloves and/or metal tongs, the cooling is interrupted and the piece is processed by plunging into sawdust. After some hours, when the piece is cold, it is removed from the smothered sawdust which leaves the surface of the clay heavily blackened and ‘burnt’ through contact with carbonised sawdust. The tradition of raku has embedded in its history a focus on hapticity. In medieval Japan the teabowl was passed from hand to hand in the ‘tea ceremony’, which makes raku an ideal vehicle for the investigation of the place of ‘the handmade’ in ‘the age of mechanical reproduction’ (Benjamin 1968), as part of the embodied narrative conveyed by the work. Beuys states that: ‘Thinking is sculpting’ (quoted in Honnef, 1990: 42), implying a reciprocity between mind forming matter and matter forming mind. Raku can be read as a way of creating embodied narratives of haptic enquiry as well as objects for ‘the gaze’. Raku establishes a new language of form and surface distinct from spoken or written...
language, in which new objects evolve from the tradition of making containers for tea ceremony, by hand, as well as appropriating objects. The intimate relationship of the artist to the kiln and to fire itself and the embodied narratives of firing lead to a further extension of the understanding of raku that develops into a ‘way of thinking through fire’ (Jones, 2007: 156). The practice follows the methodology established by Walter Benjamin, who argues that:

The uniqueness of a work of art is inseparable from its being imbedded in the fabric of tradition … the existence of the work of art with reference to its aura is never entirely separated from its ritual function. (Benjamin 1968: 217)

Kant, in the Critique of Judgement, developed the high-seriousness of the new project of aesthetics, through adopting the contemplative position of ‘disinterested objectivity’, as well as in the denial of utility in the aesthetic object. Kant suggests that art objects are autonomous: they possess a unitary identity that is immediate ontologically (Kant 1972: 38) and derives from a dominant emphasis on opticality; sight is the sense that provides the most distance in perception. For the ceramicist this attitude of disinterest seems at variance with the real physical pleasures of making, handling and looking at ceramic objects, for this is an involved sensuality, in which the entire body and all its senses are involved. Pleasure is a quality that is as significant as disinterest in making assessments of art objects.

In his theory of somaesthetics Richard Schusterman states that it seeks for an appreciation of the everyday, to generate a ‘transfiguring intensity of awareness, perception, and feeling, but without high art’s alienating distance and elitism’ (Schusterman 2012: 305). The way in which the concept of ‘embodied narrative’ is utilised in understanding my practice of necessity involves an awareness of the metaphoric and symbolic content of an object, signified haptically as well as optically. Embodied narrative is embedded in the work by the hand (and the extensions of the hand – tools and fire); a trace of the history of making is imprinted on/in handmade objects, in this case the abstract vessel – a container. The objects are created by hand-forming and on the potter’s wheel – archaic modes of manufacture that carry their own traditional association. The clay pieces are marked through their manufacture – imprinting with fingers and tools. Clay objects have a secondary existence, for they must metamorphose in order to become ceramic: they must be fired in a kiln and become a new substance. The finished pieces have that ‘making-history’ made permanent through firing – meaning burnt into the clay in their transformation from clay to ceramic.

In my recent practice, a synergy has slowly become apparent between firing in raku and the Holocaust, which became their embodied narrative, inscribed into the matter of the vessel, burnt into them. Holocaust etymologically is: holo = whole / caust = burnt – it stands for the complete combustion of the sacrifice in the temple. The heat involved in firing my vessels is even hotter, but the effect on clay bodies is not so total as on human bodies.

Daniel C. Dennett originally proposed ‘embodied narrative’ as a concept that might explicate the self (Dennett, 1992). Arthur Danto developed the idea that he called ‘embodied meaning’ to apply to productions in art (Danto 1964: 580); Bruce McTear further refined this theory in the context of the crafts as ‘embodied sympathy’ (McTear 2002). Metcalf proposes the idea of ‘sympathetic craft as an extension of its maker’s hand. The pot, in being touched, extends the potter’s touch to its user … for this process to work the object must be used’ (Metcalf 2002: 7). My pieces are not designed for use, but I have adapted these models to note the metaphoric and symbolic content of a work, signified via its material, haptic and visual properties; the notion of narratives is very significant in my work, so I choose to remain with the original nomenclature. Through these embodied narratives the thoughts and feelings of the artist are communicated; they are directly intuitable by the audience, not merely through sight, words and actions, but also via handling the objects that he or she has made, or appropriated. This is a model of interpretation that is significant in contemporary exegesis. Borgdor states that:

Art research begins by addressing questions that are pertinent in the research context and in the art world. Researchers employ experimental and hermeneutic methods that reveal and articulate the tacit knowledge that is situated and embodied in specific acts and artistic processes. (quoted in Sullivan 2010: 79)

Meaning is embodied in a ceramic object through the making – in its performative inception. Then in the secondary activity of interpretation the finished piece is ‘read’ by the maker/artist. Finally it is ‘read’ by the audience. Some of the imprinted meaning is conscious and is deliberate mark-making
imposed on the soft receptive clay; other marks are the unconscious product of accustomed (craft) practices embedded, as Schusterman suggests, through ‘muscle-memory’, which is that ingrained habit that a craftsman develops through practice: ‘muscle-memory extends our range of attention and perception and thus enhances our freedom of action’ (Schusterman 2012: 99).

Embodied narrative is part of a phenomenological account of the significance of created outcomes; Edmund Husserl argued that one must develop a ‘standpoint’, a baseline that provides a ‘horizon’ (Husserl 1969), a philosophical position from which to understand the world. Martin Heidegger maintains that the ‘horizon’ is set by my Being in the world (Heidegger 1962). To critique my work a ‘horizon of making’ is established addressing aspects of hapticity (Tallis), through my understanding of myself as ‘the reflective practitioner’ (Donald Schön). Merleau-Ponty considers the whole, integrated person as embodied subject; embodied narrative employs the artistic expression that Plato wished to condemn as a mere distraction, and on the contrary to express through haptic means what cannot be expressed through text. As mentioned, one of the most recent and fully articulated positions of the body/mind, that he calls soma, has been developed by Richard Schusterman in his theory of somaesthetics.

Merleau-Ponty states axiomatically that ‘I cannot be other than the constitution and the experiences of my body, which enters into the world which is always there for it’ and which also is ‘our medium for having a world’ (Merleau-Ponty 1970: vii, 146). The methodology of embodied narrative depends on the realisation of the ‘ultimate rejection of the mind-body duality, as the embodied nature of feeling, acting, and thinking becomes better understood’ (Merleau-Ponty 1970: xiv) and ‘new synaptic connections form in response to embodied interactions’ (Sullivan 2010: 131–2). Schusterman recognises the perpetually social situation of our lives: he suggests a mode of ‘somatic consciousness [that] is always shaped by culture and thus admits of different forms in different cultures’ (Schusterman 2012: 4). Schusterman maintains that mind, as well as body, are ‘background’; that is, they provide a framework that structures our being, and of which we can be both aware and unaware, e.g. deep-seated racism (Schusterman 2012: 66).

The opening up of the craft tradition under the pressures of modernism has created opportunities to use it for much more expressive intent. Since utilitarian objects can be made far more profitably within a globalised market it has released the traditions of craft to be utilised not merely as referential ideas but as the carriers of meaning from our shared pasts. That meaning is both implicit and consciously developed – marks of process and marks of intention. In my work the narrative embodied in the clay involves making scars by penetrating the clay surfaces with knives – cutting open the skin of clay and peeling back the fleshy overing of space. It is a disruption of the vessel tradition, symptomatic of the break with the past incurred under modernism, that allows expressive freedom.

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Achim Borchardt-Hume, in critiquing the actions of Doris Salcedo in her intervention Shibboleth, reflects on this activity of cutting and incision in a symbolic way:

The act of cutting is motivated in equal measure by anger and the will to harm as by a mode of doubt and enquiry, of ‘testing the limits’. By creating a moment of disjuncture, cuts offer a means of finding out what happens beneath the surface. (Salcedo 2007: 17)

In his posthumously published essay, ‘The Intertwining – The Chiasm’, Merleau-Ponty develops his early phenomenological thinking concerning the body. He suggests a very close interplay between seeing, touching, and the body; seeing is no longer a passive, innocent activity of merely looking at things; as he says: there is a ‘reciprocal insertion and intertwining’ of the ‘seeing body with the visible body’ (Merleau-Ponty 1968: 138). He wants to insist on a blurring of subject with object. Not merely does seeing implicate the seer in every act of active looking, but it can also bring into play the sense of touch and its sensations of haptic space:

Every vision takes place somewhere in the tactile space … palpating it with our look … the gaze envelopes them, clothes them with its own flesh. (Merleau-Ponty 1968: 134, 131)

This phenomenological perspective on art and its making is far from the ‘disinterest’ of Kant; it provides an explanation of the way that the hand combined with the eye is an essential part of the decoding as well as the making of the embodied narrative.

The work, then, involves a meditation on the transience of human existence; the artefacts presented will endure past the death of the maker, for once clay is fired it becomes ‘fi ed’; as such, ceramic remains have nearly the longest duration of any man-made products. Time is ‘embedded’ as an essential part of the embodied narrative of the ceramic object; a vessel can be read as a memento mori, making us aware of our own inevitable death and drawing attention to our own authentic existence. Speaking of another discipline that freezes time, Susan Sontag has observed that:

All photographs are momento mori … to take a photograph is to participate in another person’s (or thing’s) mortality, vulnerability, mutability. Precisely by slicing out this moment and freezing it, all photographs testify to time’s relentless melt. (Sontag, p15)

Broken Hearted. David Jones.

The confrontation of audience with object is an experience where the aura of the work is transmitted through an intimate relationship (parallel to the intuitive ethical interaction analysed by the (Jewish) philosopher Martin Buber in I and Thou; it is characterised by Emmanuel Levinas as ‘the face of the other’ – in short, it is that direct confrontation with another’s humanity. I use the intuitive experience of handling, in addition to seeing, a handmade craft object to connect the audience to that embodied narrative. Seeing or feeling the place where the maker’s hands have been, particularly with ceramics, connects fabricator to audience.

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The ideas concerning embodied narrative crystallise around my recent installation Grenzerfahrung; this can be translated as: border/limit/liminal experience. It critically utilises the theories of Giorgio Agamben, concerning the separation of the animal aspect of our being from the political and social; Agamben makes a distinction, based on Aristotle's Politics, between ‘bare life’ (ζωή in Greek) and ‘political/social life’ (bios in Greek) (Agamben 1995: 1). It is this ‘bare life’ that was most starkly revealed in the concentration camps. In Agamben's analysis, once reduced to this condition of ‘bare life’, the human being is outside the norms of society and can be sacrificed by the ‘Sovereign Power’. Agamben builds on the theories of Hannah Arendt, in The Human Condition (1998), concerning the separation of homo faber from homo laborans. The former ('man the maker') is the quintessential craftsman (socially integrated as well as skilled) who can also be stripped of his/her rights and skills to emerge as homo laborans, the unskilled worker/lumpen-proletariat/homo sacer – the ‘bare life’ that Agamben sees as sacrificed at the whim of the sovereign/(or perhaps The Führer) (Agamben 1995: 71). He describes the liminal interface between the ‘interiority’ and ‘exteriority’ of the social and examines the ways in which the human qualities (of bios) can be restored (Agamben 1995: 4).

Herzen, Gefässe

Through a symbolic use of ceramic and appropriated materials, the intention of Grenzerfahrung is to seek a metaphoric restitution, through the aesthetic-ethical means of the embodied narrative of ‘the hand’, to the former inmates of the camps. The narrative embodies a formula, where the broken skin of the unglazed surface of the clay form stands in the relation: bare clay = bare earth = ‘bare life’ (Agamben 1995). That is, it stands for the most basic aspects of our ‘species-being’ (Marx 2007). The clay is cut, torn and burnt; cutting and tearing also finds an echo in the iconography of Judaism: keriah is the tearing and rending of clothes in Jewish mourning rituals that parallels the 'gash'/cut as an embedded marking that has always been a feature of my vessels, and that I now also read as a signature for my own self, post a major heart operation.
Burning is an integral narrative aspect of the work brought home to me after a visit to Buchenwald, where my grandmother was killed, when the ironic synergy between kiln-firing and the crematoria (and gas chambers) became searingly apparent. The crematoria had been carefully designed by teams of engineers at Topf und Soehne of Ehrfurt to dispose of vast numbers of human bodies in as efficient and ost-effectively manner as possible – a corrupt inversion of our current concern with sustainable developments in ceramics and kiln design, underlining the need for an ethical framework to be considered in all applications of science and art; this work therefore insists on a clear demarcation from the idea of disinterestedness and ‘art for art’s sake’, for as Schusterman says: ‘ethical content so often deeply pervade[s] the artwork’s meaning that the work could not be properly understood without attending to its ethical dimensions’ (Schusterman 2012: 133)

To communicate the ‘handedness’ of homo faber, Grenzerfahrung is composed of hand-made and hand-marked ceramic vessels, collaboratively made ceramic objects and appropriated structures and materials. Meaning is burnt into ceramic in firing, eiterating the fate of the bodies of the victims of the Holocaust. These pieces are juxtaposed with the appropriated waste from the factory, which is marked by the patina of use. The skeleton of the work is composed of disused shelves; they stand for the stacked sleeping quarters in the camps, and also function as the structure that divides the spaces where the piece is exhibited. On the shelves, like exhibits in a Wunderkammer, are individual elements, groups and undifferentiated piles of materials, redolent of the piles discovered at the liberation of the concentration camps.
Conclusion

In *Modernity and the Holocaust* (2010), Zygmunt Bauman makes a strong argument that the Holocaust was only made possible through industrialisation/modernism. The ambition of *Grenzerfahrung* is to disrupt this alienated condition by generating a discourse, through the mode of presentation, between the marginal status of craft, that has continued in a vestigial form in the modern world. The work created through the practice is non-utilitarian and informed by Modernism; it reads craft as sited between design and art, essentially as part of a continuum reaching back millennia rather than a rupture with tradition. Making by hand is significant in the practice – it stands for a directly intuited humanness, a continuity of tradition that has not been subject to ‘the radical rupture in time created by the Holocaust’ (Hoffman 2005: 87). It demonstrates an ethical meaning embodied in the work that is neither ‘ironic’, ‘supplementary’ nor ‘nostalgic’ (Adamson 2007: 13).

It means that my work occupies a contemporary niche in expression that wishes to communicate the concept of damage; in his discussion of *Shibboleth* Paul Gilroy observes of Salcedo’s work the well-attested trope that ‘the idea that the world is broken … corresponds directly to the ambivalent history of modernity as both progress and catastrophe’ (Salcedo 2007: 25).
This analysis of embodied narrative starts to demonstrate the ways in which craft is an essential mode of communication that can be used to address contemporary problems and issues in a sustainable way. The making and handling of craft pieces has an ethical dimension that is in danger of being lost in late modernism/post-modernity. There are aspects of making that communicate what cannot be said and thus can function as a vehicle for the transmission of significant aspects of our moral selves; this can lead to a greater sense of self-knowledge and understanding of others, and may help to prevent other catastrophes that are clearly predicated in the unsustainable abuse of materials, modes of manufacture and workers.

References
A textile can be defined as a flexible material consisting of networks of interlacing natural or synthetic fibres. These networks are formed using various processes including weaving, knitting, crocheting, knotting or bonding. The applications of textiles are endless and as such their pervasive nature places them as a key component of material culture. Textiles encompass aspects of design, art, craft and technology indicating that textile practitioners, in this context those who design and make textiles, possess ‘both a personal and collective tacit understanding of a specific blend of knowledge’ (Igoe 2010). Until recently this knowledge or way of thinking - ‘textile thinking’ - has remained largely unarticulated.

However, such thinking has the capacity to originate new materials and material systems, as well as to express and enhance the potential sensory pleasure of existing materials (Igoe 2012 and Spuybroek 2005). The unique intelligence of textile thinking and the material culture it informs is often overlooked due to the tacit nature of the knowledge involved, which is often stored in the hands of the practitioner or embodied in the resulting textile artifacts.

In this paper we explore the nature of ‘textile thinking’, its origins in traditional craft approaches, the knowledge it generates and its potential for application within the context of sustainable materials design through presenting the development of a project called ‘Textile Thinking for Sustainable Materials’ (TTSM). The project brings together textile designers, product designers, materials scientists, chemists and engineers to establish creative dialogues, with particular focus on an interactive networking event that was held in May 2012.

The project aims to: establish a number of creative dialogues which explore the development of new sustainable materials for design-led functions, alternative use of materials technologies towards design, and new applications of existing sustainable materials within design contexts; to capture and present emerging dialogues and concepts to create platforms for new research pathways; and to assess the application of ‘textile thinking’ within sustainable materials design as a means of advancing knowledge within this field. Working with textile practitioners the project draws on the pervasive nature of textiles to consider the possibilities of materials from: process perspectives, drawing on traditional textile production methods including weaving, knitting, printing and embroidery; aesthetic perspectives, drawing on decorative traditions; and functional perspectives, drawing on perceptions of use.

Focusing on technological and material discourses, through the paper we hope to explore the function of material related knowledge, specifically ‘textile knowledge’ within the context of current and projected challenges relating to sustainable design and materials development. We investigate how such knowledge, generated by traditional textile making practices and materials, might inform the development of advanced scientific and technological procedures and products both within textiles and in other disciplines. We then suggest how multidisciplinary approaches to research dialogues, incorporating collective participation in practical making activities in addition to more traditional forms of discussion and presentation, might surpass that which could be achieved through artistic or scientific approaches used in isolation.
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Textile Thinking for Sustainable Materials

Abstract

A textile can be defined as a flexible material consisting of networks of interlacing natural or synthetic fibres. These networks are formed using various processes including weaving, knitting, crocheting, knotting or bonding. The applications of textiles are endless and as such their pervasive nature places them as a key component of material culture. Textiles encompass aspects of design, art, craft and technology indicating that textile practitioners, in this context those who design and make textiles, possess ‘both a personal and collective tacit understanding of a specific blend of knowledge’ (Igoe 2010). Until recently this knowledge or way of thinking – ‘textile thinking’ – has remained largely unarticulated. However, such thinking has the capacity to originate new materials and material systems, as well as to express and enhance the potential sensory pleasure of existing materials (Igoe 2010; Spuybroek 2005). The unique intelligence of textile thinking and the material culture it informs is often overlooked due to the tacit nature of the knowledge involved, which is often stored in the hands of the practitioner or embodied in the resulting textile artifacts.

In this paper we explore the nature of ‘textile thinking’, its origins in traditional craft approaches, the knowledge it generates and its potential for application within the context of sustainable materials design through presenting the development of a project called ‘Textile Thinking for Sustainable Materials’ (TTSM). The project brings together textile designers, product designers, materials scientists, chemists and engineers to establish creative dialogues, with particular focus on an interactive networking event that was held at Loughborough University in May 2012. The project aims to: establish a number of creative dialogues which explore the development of new sustainable materials for design-led functions, alternative use of materials technologies towards design, and new applications of existing sustainable materials within design contexts; to capture and present emerging dialogues and concepts to create platforms for new research pathways; and to assess the application of ‘textile thinking’ within sustainable materials design as a means of advancing knowledge within this field. Working with textile practitioners the project draws on the pervasive nature of textiles to consider the possibilities of materials from: process perspectives, drawing on traditional textile production methods including weaving, knitting, printing and embroidery; aesthetic perspectives, drawing on decorative traditions; and functional perspectives, drawing on perceptions of use.

Keywords

textiles, sustainability, materials science, inter-disciplinarity

1. Introduction

Recent design research has discussed how textiles practice and knowledge, or ‘textile thinking’, has the capacity to originate new materials, forms, and material systems, as well as to enhance the sensory pleasure of materials (Igoe 2010; Spuybroek 2005).

In this paper we discuss the development of a project called Textile Thinking for Sustainable Materials (TTSM) and in particular a networking event held at Loughborough University in May 2012. We begin by outlining the aims of the project and then identifying the drivers of the project in terms of sustainable development and the areas on which the project has focused to date. We then go on to discuss the notion of textile thinking within cross-disciplinary contexts before reporting on the methods used during the networking event itself. Finally we outline the themes emerging from the project to date, how we perceive these to be informed by textiles and how a textiles approach to sustainable materials might be developed within interdisciplinary contexts.
1.1 The Textile Thinking for Sustainable Materials Project (TTSM)

The TTSM project, funded by Loughborough and the Engineering and Physical Sciences Research Council UK (EPSRC), investigates ways in which ‘textile thinking’ might inform the development of new sustainable materials for design-led functions, alternative use of materials technologies in design, and novel application of existing sustainable materials within design contexts. The project focuses on exploring textiles, encompassing textile materials, processes and modes of conceptualisation, as a site for interdisciplinary innovation in relation to sustainable design.

To date, the project has brought together textile designers and materials scientists with input from product designers, chemists and engineers to establish a number of creative dialogues via an interactive networking event that was held at Loughborough University in May 2012. The aims are to explore the development of new sustainable materials for design-led functions; alternative use of materials technologies towards design and new applications of existing sustainable materials within design contexts; to capture and present emerging dialogues and concepts to create platforms for new research pathways; and to assess the application of ‘textile thinking’ within sustainable materials design as a means of advancing knowledge within this field.

The project draws on the pervasive nature of textiles to consider the possibilities of materials from process perspectives, drawing on traditional textile production methods including weaving, knitting, printing and embroidery; aesthetic perspectives, drawing on decorative traditions; and functional perspectives, drawing on perceptions of use. It was hoped that a multi-perspectival approach would surpass that which could be achieved through artistic or scientific approaches used in isolation and that capturing and presenting emerging dialogues and concepts would create platforms for new research pathways, ultimately fostering further cross-disciplinary collaborative research projects.

Through the paper we hope to explore material-related knowledge, specifically ‘textile knowledge’ within the context of current and projected challenges relating to sustainable materials design and, linking to the conference themes, how knowledge developed through textile designing and making might prepare future citizens to realise a more resilient future by informing sustainable design.

2. Sustainable design and materials

Current and emerging sustainability agendas – relating to responsible sourcing of raw materials, encouraging sustainable behaviours in regard to use, and end of life considerations of material goods – provide the driver for the TTSM project. During the TTSM networking event in May 2012 Debra Lilley gave the following succinct and pertinent definition of sustainable design:

Sustainable design addresses key environmental impacts of a product across its lifecycle, alongside cost, quality and appearance requirements, but then goes further and considers social elements. It aims to generate as much utility and enjoyment as possible out of the smallest possible quantity of resource over the longest possible (or most appropriate) period of time.

Lilley noted that designers have direct influence over approximately 70 per cent of a product, reflecting the fact that the most critical decisions about its materials, aesthetic, function, performance, cost, durability and end-of-life options are determined in the early stages of design. Careful consideration must be made by the designer to ensure that negative effects are avoided and positive features included. Sustainable design is complex, involving multi-faceted challenges, perspectives and approaches. The TTSM project focuses on ‘materials’ as a starting point, drawing on the overt materiality of textiles.

Materials are an important factor in sustainable design strategies linking to the lifecycle, cost, quality, appearance and social implications across all product sectors. Knowledge of materials from both scientific and design perspectives is needed to promote advances in how resources are developed, produced, applied, used and dealt with at the end of their life (Lewis and Gerstakis 2001: 61). Sustainable material choices for designers fall into several key categories: mainstream materials (which can often be recycled), renewable materials, biodegradable materials, and recycled materials (Bhamra and Lofthouse, 2007: 41–43). Theorists suggest that there is no clear hierarchy of materials in terms of environmental impact (Lewis and Gerstakis 2001: 61) and the influence they have on the environmental performance of a product depends on the nature of the product itself, the industry that is being designed for and the context in which the final product is used (Bhamra and Lofthouse 2007: 41). In short, although materials exist that have positive implications in terms of sustainability, compromises must be made
are energy harvesting materials (Black 2008: 46). The three areas noted above – renewable materials, biodegradable materials, and recycled materials – formed the framework for the TTSM project along with a fourth category: energy harvesting materials.

Renewable materials can be broadly defined as materials that are derived from natural sources, which have the ability to regenerate themselves (Fuad Luke 2002: 276). It is worth noting that this alone does not make a material sustainable. Biological systems that balance quality and the capacity of that system to regenerate appropriately against the rate at which materials are removed must be in place. Examples include hemp and bamboo fib e. Renewable materials, when used in appropriate applications, have the potential to save resources and reduce reliance on non-renewable materials (Bhamra and Lofthouse 2007: 43).

Linking to renewable materials, biodegradable materials are those materials that are derived from plants capable of being decomposed by naturally occurring chemical compounds at the end of their life (Bhamra and Lofthouse 2007: 42). Examples include biopolymers such as poly-lactic acid (PLA), which is derived from renewable resources such as cornstarch and used as an alternative material for products such as food packaging (Fuad Luke 2002: 284–285). Current problems with such materials include their stability and the rate and conditions required for decomposition.

Recycled materials are produced from diverting post-industrial and post-consumer waste from landfill and turning it into new products. This can result in conservation of natural resources as well as reduced energy consumption. Whilst some materials are degraded during the recycling process, others result in high quality or virgin state materials, for example Tejin polyester (Black 2008: 95). In addition, design strategies which utilise notions of re-use, up-cycling and re-design offer further approaches to recycling materials (Black 2008: 46).

Energy harvesting materials are capable of capturing, storing and converting energy from external sources such as the sun and wind, to drive low-energy devices (IOP 2012). Examples include piezoelectric (energy resulting from pressure), thermolectric (energy resulting from temperature differences) and pyroelectric (energy resulting from temperature change) (IOP 2012). Ceramics, single crystals, polymers and composites can be utilised (IOP 2012). Current product examples include floor tiles that use the energy created from footsteps to light pathways. This area is relatively new.

How might the unique knowledge gained from designing and making textiles inform the development of new materials for design-led functions, alternative use of materials technologies, and novel applications within these areas?

3. Textile thinking in cross-disciplinary contexts

As noted, the pervasive nature of textiles places them as a key component of contemporary material culture. Emerging research discourses such as Igoe (2010) and Spuybroek (2005) affirm that “textile thinking” has the capacity to originate new materials, forms and material systems as well as to express and enhance the potential sensory pleasure of existing materials. As such, it could prove to be central in the development of sustainable materials for use in wide-ranging disciplines, but what exactly is “textile thinking”?

3.1 Design thinking and disciplinary difference

The principles of ‘design thinking’ as defined by Cross (2007) are increasingly being applied to problem solving and process development in other areas, e.g. business. A ‘design’ approach is increasingly valued for its holistic perspective where unexpected outcomes are opportunistically prioritised to structure and resolve problems simultaneously. However, in trying to identify the common elements of creative design practice Cross has tended to downplay the disparate practices of distinct design disciplines. When explicated as a single unified entity the multidinous design disciplines can become homogenised and over-generalised. The writings of Cross (2007) and others such as Harrison (1978) tend to favour the practices of architects and product designers, often describing very different approaches to those commonly used by textile designers.

Wang and Ilhan (2009) argue that design is distinct from the sciences and humanities not because it possesses a common body of knowledge unique to the discipline as a whole, but because it draws on and synthesises all extant bodies of knowledge as appropriate to the specifics of a particular design practice. They assert that ‘design knowledge actually draws from the general pool of cultural knowledge for the purposes of informing creativity’ (Wang and
Ilhan 2009:19). They propose that the creative act of production is the unifying factor of the design disciplines, rather than a specific body of knowledge. This perspective acknowledges disciplinary difference while still recognising common elements of design practice. For example, while architects might prioritise knowledge from domains such as mathematics and engineering, printed textiles designers may rely on areas including mathematics and chemistry. However, until recently knowledge or ways of thinking particular to the discipline of textiles, perhaps what we might call ‘textile thinking’, has remained largely unarticulated.

3.2 Textile approaches

Textiles are a site where creative and scientific disciplines find a natural meeting point, providing a unique platform for interdisciplinary dialogue and innovation. As an interdisciplinary site, textiles encompass aspects of design, art, craft and technology, indicating that those involved with textiles possess a specific blend of knowledge (Igoe 2010).

The mathematical underpinnings of textiles are clear. Textile designers apply principles of proportion, symmetry and tessellation as a matter of course when devising the structures of repeating pattern across textile lengths. Textile techniques and artefacts have been used to manifest complex mathematical principles physically, a fine example being the crochet hyperbolic coral reef instigated by Margaret and Christine Wertheim and exhibited at the Hayward Gallery on the South Bank in 2008 (Figure 1). It has been suggested that these physical textile patterns precede the abstract analysis that leads to mathematical principles. ‘Gerdes writes that the regularity of plaited products teaches humans to recognise patterns and to use them afterwards for geometrical forms, art, and mathematical analysis’ (Kraft 2004: 281).

The jacquard loom’s punch card operation is commonly recognised as the conceptual precursor to the binary structure of computer programming. However, while in the mathematical arena numerical sequence, pattern and repeat are made explicit, in the textile arena the numerical aspects underpinning the work are often hidden and experienced at a more instinctive level. Ian Stewart (2010) notes we are able to carry out many mathematically based activities without explicitly understanding the mathematical coding that makes them function. The mathematics of textiles is practical, not theoretical.

Similarly chemistry has given the discipline of textiles synthetic substrates with diverse properties that have transformed both fabrication processes and outcomes. The development of synthetic fibres such as polyester has transformed pleating and shibori practices, allowing the creation of permanent, easy-care folds. Chemical advances allow for the increasingly sophisticated colouration and finishing of fabrics, with many textile...
practitioners relying on chemical reactions to create particular functionalities or aesthetics, e.g. the distressed, oxidised surfaces of Arantza Villas (Figure 2). However, designers often only know what effects these reactions will create and how to produce them rather than having a clear understanding of why the various chemicals interact in the ways they do. This limited comprehension of underlying theories does not necessarily compromise their practical use, fostering instead an attitude of open experimentation to seek out desired results.

In textile design the theories of mathematics and chemistry are applied flexibly and almost intuitively to real situations, yielding to unpredictable materials and subservient to wider concerns. Kappraff (2001: 453) states: ‘In order to gain life, ideas must travel from their roots in abstraction to the sights, sounds, smells and textures of the world of experience. Here is where designers enter the picture as co-equals.’ The intuitive, emotional, personal interpretation and practical application of domains of knowledge such as mathematics, chemistry, physics and aesthetics by textile designers produces hybrid, particularly ‘textile’ outcomes that can shed new light on the knowledge domains from which they were born.

3.3 Thinking through making

The practical knowledge at the heart of textile design and production processes is acquired through the physical manipulation of materials. It is widely recognised that knowledge can be gained through the making process. Pallasmaa (2009: 116) notes: ‘Our entire bodily constitution and senses “think” in the fundamental sense of identifying and processing information about our situation in the world, and mediating sensible behavioural responses.’ Hand-making and craftsmanship are key processes used by textile practitioners to develop understanding of both materiality and concept.

Through the constant handling of the ‘stuff’ of textiles and the repetition of the gestures of making, the practitioner’s senses work together to build a comprehensive embodied understanding of both materials and process. Practice leads to mastery and eventually to the development of a whole body comprehension or tacit knowledge that is carried unconsciously within the practitioner but informs the activity of making. Sennett (2009: 9) notes: ‘Every good craftsman conducts a dialogue between concrete practices and thinking; his dialogue evolves into sustaining habits, and these habits establish a rhythm between problem solving and problem finding.’ The expert craftsman’s accomplished hand-making is guided by both the practical methodological knowledge of the ‘right’ way to carry out an action as well as their ‘mind’s eye’ vision of what they are trying to achieve.

Distinctive disciplinary modes of thinking fill er and organise information in ways that reflect their cultural values. However, we believe that not only the domains of knowledge prioritised but also the materiality and making processes of a discipline influence the conscious and sub-conscious thought processes of designers practising within it.

Sensitivity to the materiality and microstructure of textiles is key to textile design. Through their sense of touch the practitioner develops an embodied understanding or ‘material consciousness’ (Sennett 2009: 119) encompassing both the physical properties of materials and the technical limitations of processes. The inherent properties of textile fibres and their processes of manufacture are inextricably interwoven. To create textile substrates yarns and fibres must be flexible enough to bend and twist around each other yet stable enough to maintain their form, creating a finely balanced system. The textile practitioner has an implicit understanding of these material behaviours, the intuitive, tacit knowledge employed in their decision-making process enabling them to control the outcomes of inherently dynamic material systems.

3.4 ‘Intelligent’ materials: dynamic textile systems and ‘textile thinking’

Variations in structure and material composition at micro scales alter the texture, aesthetic and functional properties of planar textile surfaces and the behaviour of any subsequent layers applied to this base. Textile substrates, whether knitted, woven or non-woven, achieve their state of being by unifying a multitude of disparate threads or fibres into one continuous surface. This drawing together of multiple elements creates an emergent system that displays unique, irreducibly complex behaviour particular to its scale, structure and materiality, which could not be predicted by experimentation using alternative materials or scale models. By harnessing this emergent behaviour as a dynamic organisational strategy in the design process one can generate novel, non-Euclidean forms that merge surface and structure. Sensitivity to these constantly changing tensions is essential for the successful production of textile artefacts.

An understanding of the dynamic material properties of textiles has impacted on other disciplines.
Architect Frei Otto uses self-organising textile networks to develop dynamic tension models for problem-solving. By connecting pins with taut thread lines, slackening these threads and then dipping them in water or liquid soap, he exploits the self-organisational capacity of the materials to describe the most structurally efficient form (Spuybroek 2005). Here micro-scale textile models are reconceptualised at macro dimensions, creating designs based on the synergy between the components that make up the whole structure rather than on the behaviour of its parts in isolation.

Another architect, Lars Spuybroek, has adopted the physical ‘textile systems’ of Frei Otto and evolved them conceptually, teasing out the thought processes underlying such textile modelling. He abstracts ‘textile systems’ into ‘textile thinking,’ which he describes as a continuously linked thought process, useful for creating the conceptual cohesion of disparate elements, processes and behaviours. Applying both ‘textile systems’ and ‘textile thinking’ to his architectural practice, he explores the design potential of continuous, complex, flexible systems where relationships between elements create emergent systems and forms more important than any individual part (Spuybroek 2006).

This elucidation of the methodological value of textiles by another discipline not only validates textile approaches but also reframes textile practice within the culture of architecture, subtly recasting it with a different emphasis. The work of people such as Otto and Spuybroek highlights aspects of textile practice not generally articulated by textile practitioners, e.g. the interconnected nature of textiles and the role of their material systems in governing form.

Spuybroek’s emphasis on the continuity and emergence of connected ‘textile’ thinking echoes philosophical works arising from metaphors of draped and folded textiles. For example, in the writing of people such as Gilles Deleuze (2006) and Pannina Barnett (1999) the malleability of textiles and textile modes of thinking are important conceptual strategies, creating an approach where connectivity and continuity are key to the development of novel and innovative ideas.

3.5 ‘Textile thinking’ and ‘soft logics’
Barnett (1999) and Lomax (2000), drawing from Serres, use a textile metaphor, exploring the advantages of ‘sack’ versus ‘box’ thinking. While numerous pliable large textile sacks can be folded into a smaller sack, a large rigid box cannot be placed into a smaller one. ‘Box’ thinking represents an active process driven by clearly defined concepts that leaves little room for doubt or uncertainty, its rigidity seen as rigorous. ‘Box’ thinking is measurable, amenable to precise mathematical prediction and practically applicable. ‘Sack’ thinking is not so easily quantifiable or capable of straightforward explanation. A mathematical model of the complex behaviour of sacks folded within sacks can only describe a range of possible outcomes and, due to the unpredictable creep of the physical textile, does not replicate, in detail, the particular outcome that occurs in reality.

Ingram (2010) points out that mathematical modelling uses selected data, filtered and interpreted by the modeller. Real systems can include unknown elements, such as the factors governing textile creep, that are then omitted from such virtual models. This incompleteness in the mathematical model means that only general outcomes, not specific details, can be predicted at the outset. It could be argued that working with the unpredictable complexity of textiles leads to the adoption of modes of thought which value malleability, connectivity and continuity above the precision and division of Cartesian logic.

Such approaches, that conceptually echo the malleability of textile materiality, are also known as ‘soft logics’, a pliable style of thought that twists, turns, stretches and folds in on itself. Barnett contrasts the characteristics of ‘soft logics’ with binary or ‘hard’ thinking. ‘The binary offers two possibilities, ‘either/or’; ‘soft logics’ offer multiple possibilities. They are the realm of the ‘and/or’ where anything can happen. Binaries exclude; ‘soft logics are to think without excluding’ (Barnett 1999). When judged in comparison to ‘hard’ Cartesian logic, ‘soft logics’ can appear to be woolly and inadequately defined, with no clearly identified thesis. The fact that such thinking is pliable, bending to incorporate external influences, can be perceived as weakness. However, the flexibility of ‘soft’ thinking, its readiness to embrace the unexpected, allows more opportunity for innovation (Philpott 2012). Barnett argues:

... if ‘soft’ suggests an elastic surface, a tensile quality that yields to pressure, this is not a weakness; for ‘an object that gives in is actually stronger than one that resists, because it also permits the opportunity to be oneself in a new way’. (Barnett 1999)
This suggests that ‘textile thinking’ provides us with a valuable opportunity to generate new knowledge in cross-disciplinary contexts.

4. Methods

The approach to the project to date has focused around a two-day networking event, which was held at Loughborough University on 2–3 May 2012. It brought together 22 academics and practitioners from the UK, Ireland and Denmark working in fields including textile design, textile engineering, chemistry, electrical engineering, materials science and product design. The event was managed via continual dialogue between the Dr Faith Kane and Dr Rachel Philpott, School of The Arts, Loughborough University (LU), and through the establishment of a project steering group, which has included Vicky Haines (Design School LU) and Houzheng Wu (Department of Materials LU). The group met before the event to establish key themes and approaches and afterwards to evaluate emerging research directions and strategies for moving forward.

During the event the following networking, idea generation and evaluation methods were used to explore how textile thinking might inform developments within the four identified strands of sustainable design in terms of materials.

4.1 Pecha Kucha presentations
To enable delegates to gain an overview of the knowledge and expertise represented within the group, each participant gave a short presentation of their background and research interests. These presentations were limited to ten slides and five minutes per person and were delivered in quick succession in the first morning of the networking event.

4.2 Themed presentations
To introduce the four identified strands of sustainable design in terms of materials, invited specialists gave presentations outlining the key themes that were to be the focus of the event: biodegradables, renewable materials (linking to composites), recycled materials and energy harvesting materials.

4.3 World Café discussion
Discussions that explored these themes in more detail were facilitated by a ‘World Café’ style forum that aimed to create a hospitable environment (The World Café, 2008). Participants moved between themed tables, discussing ideas in ever changing groups, moderated by a facilitator who hosted each table. Participants were encouraged to document these conversations as they occurred, making notes and sketches on paper tablecloths (Figure 6).
4.4 Dot voting
The tablecloths then provided a focus for reflection and review, as participants surveyed the visual documentation of all discussions and added coloured dots beside topics that they would like to investigate further through collaborative research projects (Figure 7).

4.5 Tours of relevant workshops and laboratories
In order to increase the potential for the development of ideas that encompassed cross-disciplinary working practices, participants were given a tour around a number of departments at Loughborough University and given an overview of certain key pieces of equipment that could be used to fabricate new products and materials.

4.6 An interactive workshop
An interactive workshop led by Rose Sinclair of Goldsmiths University, London, allowed participants to physically explore textile techniques to create electronic circuits (Figure 8). Active making is a method that allows people to play and engage other areas of their brains than those used in solely verbal explorations. The engagement of the whole body in the thinking process relates to ‘thinking through making’ discussed earlier.

Following the networking event several approaches have been initiated to gain feedback on and further develop the emerging themes (listed in the following section) including:

- Follow-up questionnaire (via email)
- Event report for review by participants
- Website development including a blog/discussion function
- Literature review (to consolidate emerging themes and to scope the potential for further research in these areas)
5. Outcomes

Several themes emerged from each of the key strands. Some of the main themes emerging are documented in Table 1, with sub-themes linking to areas informed by textile thinking identified. The number of stars next to a particular entry denotes the number of event participants who expressed an interest in engaging in future collaborative research projects in that subject area through the dot voting system.

<table>
<thead>
<tr>
<th>Emerging theme</th>
<th>Textile Process</th>
<th>Textile Aesthetics</th>
<th>Textile Use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Renewables</strong></td>
<td><strong>Crafted composites</strong>&lt;sup&gt;**&lt;/sup&gt; Carbon/glass fibres could be recovered and re-purposed to create decorative and or functional surfaces</td>
<td>Car tyre products could be deconstructed and reformed to create decorative and functional materials, possibly exploiting thermal insulation properties</td>
<td>Identifying, extracting, collecting and re-using composites. Finding applications where variability in quality and wear can enhance rather than detract from the performance and/or aesthetic of the product.</td>
</tr>
<tr>
<td></td>
<td><strong>Long-life composites</strong>&lt;sup&gt;*&lt;/sup&gt;</td>
<td></td>
<td>Designing in a second life/use.</td>
</tr>
<tr>
<td><strong>Energy Harvesting Materials</strong></td>
<td><strong>Coating exterior architectural materials to harvest solar energy</strong>&lt;sup&gt;**&lt;/sup&gt; Coating/printing textile and non-textile based architectural materials</td>
<td>Expanding decorative as well as functional potential</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Thermoelectric harvesting of energy via differential of body and external temperatures</strong> Using piezoelectric ceramic fibres in combination with polyester to create fabrics which harvest mechanical energy&lt;sup&gt;**&lt;/sup&gt; Textile construction allows structural variations which could be explored from both functional and aesthetic perspectives</td>
<td></td>
<td>Possibilities for thermoelectric charge if integrated into textile products</td>
</tr>
<tr>
<td></td>
<td><strong>Flexible electronics</strong> Textile printing methods Integration of textile construction processes</td>
<td>Decorative and functional applications</td>
<td>Engagement with technology via the production of artworks</td>
</tr>
<tr>
<td></td>
<td><strong>Embedding solar cells into fabrics</strong> Considering integration with garments using textile methods including knit, crochet, weave etc. Colour and structure could be used to maximise solar gain&lt;sup&gt;**&lt;/sup&gt;</td>
<td></td>
<td>Investigating which areas of the body might capture most energy by using motion capture and CGI technology&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Maximising colour</strong>&lt;sup&gt;***&lt;/sup&gt;</td>
<td>Link to embedding energy harvesting technologies such as solar cells into materials and products</td>
<td></td>
<td>Highlighting energy through the use of colour within a material. Enhancing user engagement with energy issues</td>
</tr>
</tbody>
</table>
6. Analysis and discussion

As illustrated in Table 1, the networking event was successful in generating themes and concepts for future investigation and it is possible to see how these themes both relate to and are informed by aspects of textile practice which are underpinned by textile thinking. Here we reflect upon each of the networking methods used to facilitate this and how we might best move forward within the TTSM work.

The Pecha Kucha sessions from diverse disciplines provided concrete topics for subsequent conversation very early in the networking event as participants were able to identify those who had similar research interests or potential areas of overlap. Longer presentations later in the event provided a clear knowledge base for each themed strand prior to the world café style discussions but perhaps interrupted the flow of ideas. It may have been better to provide this valuable information for participants to review prior to the event.

The world café style discussions provided a good way to connect diverse perspectives. However, timing of this exercise, at the end of the long first day, meant participants were tired and perhaps not as engaged with the activity as they could have been. Difficulties in knowledge and language between the disciplines also became very apparent at this stage, but the informal setting meant that these could be overcome to some extent.

An element of documentation and analysis was built in as part of world café exercise. Tablecloth notes created by participants as the discussions progressed generated a written record of the topics discussed. The dot voting gave a further indication of those topics that were of key importance to the highest number of participants. In addition to written documentation, the world café (and interactive workshop) were video recorded.

The interactive participatory workshop using textile techniques to create electronic circuits changed the dynamic between the designers and scientists. This aspect of the event, led by Rose Sinclair from Goldsmiths University, was perhaps when the participants began to relax and interacted with each other in a very different way than when engaged in ‘world café’ discussions. The practical know-how of textile practitioners and the value of ‘thinking through making’ was given a context to emerge naturally rather than being formalised by presentation or verbalised through discussion. By connecting simple electronics and stitching tasks, participants from all areas were able to share skills and have much more informal discussion based on the practicalities at hand. In some ways the workshop engendered a working connection between participants. In reflection, we would use this type of activity to a much greater extent in future networking activities that seek to draw out and apply textile thinking, perhaps reversing the weighting between discussion-based and practical activities.

7. Conclusions and further work

In reflecting on the TSM project to date we can conclude that the interface between disciplines when explored and exploited by inter-disciplinary
practice provides the gap in which to situate original knowledge. By crossing disciplinary boundaries you remove yourself from familiar settings. Placing yourself in foreign territory enables a re-framing of information and output as well as an element of purposeful de-skilling. By investigating styles of thinking prevalent in other disciplines, in this case textile thinking, one is able to question one’s own habitual and cultural frameworks. Likewise practitioners scrutinising textiles from a position outside the discipline can offer new insight on routine textile practice.

From documenting and reflecting upon the networking TTSM event in May 2012 we can note that engaging collectively in practical activities that aim to stimulate and draw out thinking through making, in addition to more traditional forms of discussion, facilitates this re-framing of our own areas of expertise. The event has enabled us to begin to build several new interdisciplinary dialogues, which will draw on and apply textile thinking within the framework of sustainable design. Key emerging dialogues that have been identified include:

- Maximisation of colour
- Crafting composites
- Designing in degradation

In addition, collaborative work within sustainable textiles between The School of the Arts at Loughborough University and Professor Jinsong Shen from Team Research at De Montfort University has been further progressed via the purchase of fabrics for laser treatment. Advances made in both areas will provide a potential platform for publication and further work.

The outcomes of the work are being documented and disseminated via a project website ttsm.lboro.ac.uk/. The site will also serve as an on-going platform for networking and discussion within the TTSM area, creating a platform for further collaborative investigations and the dissemination of ideas. It is hoped that work emerging from the project, disseminated in this way, might mediate existing and emerging scientific advances in sustainable materials to a wider public, educational and commercial sphere, thereby influencing responses to new materials developments in terms of uptake and use, ultimately contributing to our ability to realise a more resilient future through the knowledge gained from engagement with the making and materiality of textiles.

8. References
Sheron King

Life of Things

This paper is an inquiry into the ‘life’ of objects/things and is written to provoke and challenge perception about things other than humans that often are discarded or thrown away or not valued ... resulting in possibly being buried in a landfill

When first considering objects, or things or matter, initially it is hard to imagine thinking about them in any other way than the literal, perhaps obvious ‘thereness’. However, this often accepted as common sense philosophy may be an assumption and has prompted new thinking about materiality.

The inquiry is a critical reflective exploration of some of the historical and contemporary perceptions/philosophies of materialism, agency and vibrancy of matter and the question of ‘do objects have life...do they have a voice...do they have power?’ The research sets the scene initially by a challenge to open our minds to a holistic sensorial way of perceiving, and proceeds to move from the concept of human versus object to the concept of objects and humans equally - to ‘thingyhoodness’. It is written in a generic and hopefully objective and questioning approach.

In a parallel fashion is the questioning, reflecting and examination of materiality, agency and vibrancy of objects within my own personal practice as a designer maker. As a designer-maker I surround myself with things which are integral to my practice - inspiring and informing what I do. I have come to have a far deeper appreciation for ‘things’. I can be enchanted and my agentic capacities become strengthened. I take often discarded things and repurpose, reinvent or upcycle them, breathing a new lease of life and a new appreciation and celebration.

The uniqueness of humanity is challenged through this research particularly by looking at the research of writer Jane Bennett - her explorations and examinations of shared affinities with other things, including non-human forces and flows, and the suggestion of an equality between all of these things. Bennett highlights inter-involvements and interdependencies and suggests a political goal of vital materialism with a polity that has ‘more channels of communication between members’ - therefore when or if equality happens things will not be simply discarded/ there will be less waste/ and maybe our world will be more friendly.
**Abstract**

This paper stems from my Master’s Dissertation and is an inquiry into the ‘life’ of objects/things and is written to provoke and challenge perception about things other than humans, that often are discarded, thrown away or not valued – resulting in the possibility of being buried in a landfill.

When first considering objects, or things or matter, initially it is hard to imagine thinking about it in any other way than the literal, perhaps obvious ‘thereness’. Although this may be an assumption it is often accepted as common-sense philosophy.

The inquiry is a critical reflective exploration of some of the historical and contemporary perceptions/philosophies of materialism, agency and vibrancy of matter and the question of ‘do objects have life ... do they have a voice ... do they have power?’

The research sets the scene initially by a challenge to open our minds to a holistic sensorial way of perceiving, and proceeds to move from the concept of human versus object to the concept of objects and humans equally – to ‘thingyhoodness’ taken from the concept of personhood but in relation to all things. It is written in a generic and hopefully objective and questioning approach.

The uniqueness of humanity is challenged through this research, particularly by looking at the research of political theorist Jane Bennett – her explorations and examinations of shared affinities with thin including non-human forces and flows, etc. There is a suggestion of equality between things. Bennett highlights inter-involvements and interdependencies and suggests a political goal of vital materialism with a polity that has more channels of communication between members – therefore when or if equality happens things will not be simply discarded / there will be less waste / and maybe our world will be more friendly.

A very important note, and to bring clarification: when referring to ‘things’ (although often I write objects/things as a reminder) I am referring in the broadest manner to all matter, substance, objects, things, animals and humans, whether seemingly dead or alive, formed or unformed, and inclusive of forces and flows – it is a something that is, or seems to be, one thing. It will have a biased human concept and perception as written by a human – I will endeavour to be objective and maintain an equal stance with ‘things’, but as my language is of human origin and things do not have a voice in the same manner as I do, this creates a problem that is difficult to overcome!

- Are they just there?
- Do they have a life?
- What is a life?
- What does life mean?
- Do they speak ... do they speak to me?
- What do they mean?
- Do they speak to each other?
- Do they affect each other?
- Do they stay the same?
- Can they change the world?
- Do they make me feel?
- What am I supposed to feel?
- Do I feel?
- What do they want?
- Do they have personality?
- What is personality?
- What do we want?

... Thingyhoodness ...

**Introduction**

When first considering objects, or things or matter, initially it is hard to imagine thinking about it in any other way than the literal, perhaps obvious ‘thereness’. However, this often accepted common-sense philosophy is perhaps an assumption, and there are other philosophies and research about materiality to consider.

Many of our ideas about materiality originate from Descartes in the seventeenth century, which led to the model of thinking that nature is a collection of objects, quantifiable and measurable, with objects being passive and ‘identifiably discrete’, only moving through an encounter with an external agent. In this
calculable natural world, there are solid objects that occupy space, whose movements are predictable, controllable and replicable by humans, with humans themselves occupying space at the top of the hierarchy, making sense of their human perceived world. This was the basis for Newtonian physics and Euclidian geometry and is thinking also referred to as Cartesian and Newtonian understanding (Coole and Frost 2010). Aristotle argued that the creation of things involved the bringing together of form and matter or form being imposed on matter, and this became known as the ‘Hylomorphic’ model. Today, theoretical physics and the understanding of matter suggests that we cannot simply rely on classical physics anymore, and understanding matter now is perceived to be far more complex, unstable, fragile and interactive (Coole and Frost 2010).

**Sensorial perceptions**

In order to begin to grasp and play with the idea of perceiving matter and materialism in an alternative way, we may need to first challenge our senses to new ways of thinking and approaches.

Architect and writer Juhani Pallasmaa explores the conscious exploration and perception of human senses. He suggests that we can better understand the world if we integrate all of our senses. He makes reference to James Gibson’s views of the senses as aggressively seeking mechanisms rather than passive receivers. Gibson categorises the senses into five sensory categories: visual, auditory, taste-smell, orienting and the haptic. Pallasmaa argues that if we separate our senses then we have lost a beauty – he portrays the skin-like touch and as being the oldest sense and parent sense to all other senses. Through the eyes, the body can imagine all the properties associated with the other senses, constantly creating a library of senses and understandings.

Pallasmaa wrote:

> My perception is (therefore) not a sum of visual, tactile and audible gives: I perceive in a total way with my whole being. (Pallasmaa cited in Odom 2011)

Our society has changed from an ocular-centric society to a visual-centric society. Change originated when written speech took over from oral communication, causing a shift from sound to visual space. Some scientists argue that up to 80 per cent of communication is not passed on verbally – therefore it is very necessary in design to use all phenomenological qualities for humans and objects to have a better relationship. Pallasmaa discusses a way of seeing that is ‘an athletic gaze’ which is all-inclusive to every sense, using vision to pull out the other senses, seeing through many standpoints and perspectives.

Our senses are complex and interwoven with each other. For example, the ear has the capacity to create visual volumes with sound and touch being able to validate the reality of something and its properties such as weight, resistance and texture. Surfaces such as a highly polished old object can cause certain emotions and be seductive to stroking, which points to an appreciation of the touch and the history that caused the polish. Here there is a concept of time in design and how a patina of wear and tear adds something that enriches with time the materiality of the materials (Odom 2011).

As Aristotle observed, memory will subtract from the thing observed and filter out certain happenings around the thing and therefore reverse the work of the senses – in this way the thing becomes blurred and throws a new understanding on perception, memory and the senses (Harman 2010).

Donald Schon, a philosopher who made a huge contribution to the theory of development of reflective practice and learning, discussed the designer’s reflective conversation with materials, with the focus being on the conversation with the medium and its ability to engage with all of our senses as well as being part of the exploratory thinking process (Schon 1987). Physical properties of materials that engage with our senses can be texture, geometry, spatial positioning in relation to other objects, material properties such as weight, and energy such as temperature and moisture. These things have an engaging capacity and beckon us to experience through seeing, touching, smelling, hearing, and are cues for engaging in a participation, intuitive response and manipulation (Jacucci and Wagner 2007).

Idea-generating properties of materials and our interactions with the physical properties of materials help not only the thinking process but also the communicating and engaging process. Bruno Latour takes the idea further and labels communication tools design representations, media and material used in the design process as ‘inscriptions’, such as drawings, print, diagrams, images, tables, journals, columns, log books, references, indexes, dictionaries, bibliographies, photographs, etc., that can be used to communicate and explore complex
ideas and groupings of ideas using metaphors, visualisations, narration and persuasion as well as evoking the sensorial spectrum (Latour 1983). Social anthropologist Tim Ingold suggests an ontology that focuses on the actual process of formation and transforming of materials, artefacts and things rather than the end product. This understanding begins to allow a more holistic approach, as they can perform multiple roles with a wide experience potential, by their communication, function and interaction experienced by the bodily, tactile, olfactory, auditory and visual senses (Ingold 2008). Paul Klee also insisted and demonstrated in his notebooks that the process of genesis and growth giving rise to things in our world is more important than the things themselves. He described form-giving as, movement, action and life (Klee 1973: 253). Whether those forms are already in the mind or already present as things, art makes visible by combining forces that bring form into being. Therefore a line grows from a point that has been set in motion. Klee said: Art does not reproduce the visible but makes visible (Klee 1973: 43, 253).

Influenced by Klee, philosophers Gilles Deleuze and Felix Guattari argued rhetorically about a way of perceiving ‘things’ – how they are made, used, their properties, how they mix and meld along with the forces of the Cosmos. There is fluidity in the process of life with a discharge and leakage and a propensity for matter to always exist. They insisted that whenever we encounter matter ‘it is matter in movement, in flux, in variation’ (Deleuze and Guattari 2004: 461).

American author, poet and philosopher Henry David Thoreau discussed the forces and dimensions of matter that added and altered things as being an out-side (Thoreau cited in Bennett 2010). Philosopher Hent de Vries similarly talks about ‘the absolute or intangible’ or imponderable recalcitrance – something detached from representation (Serres 2000). German sociologist and philosopher Theodor Adorno talked about the idea of a ‘non-identity’, an elusive force or presence and things that always leave a remainder, and life therefore surpasses our understanding and control (Adorno 1973). Seventeenth-century philosopher Benedict de Spinoza claimed that all things have a degree of animation. In theology this is believed to be a divine omnipotence (Bennett 2010).

Political philosopher and professor Thomas Dumm spoke about being surprised by what we see (Bennett 2010). French phenomenological philosopher Maurice Merleau-Ponty, in seeking to uproot traditional culturally fashioned perceptions of the world and things, used terms influenced by his travels to some amazing ‘breath-taking’ places, such as ‘the vertical world’ of ‘brute’ or ‘wild’ perception as it emerges (Coole and Frost 2010). Perceiving items, organic and inorganic, as vibratory, from a moment of being just dead stuff to having a live presence, to having a vitality of materiality – continuing even when discarded or unwanted. It is about entering another dimension of perceiving in our daily lives and occupations and allowing this to filter into life, into our environments, into the agency we have on the world around us. Merleau-Ponty described how our gaze can be influenced by the experience of our body to understanding things around us as having the miracle of expression (Merleau-Ponty 1981).

The voice … Thingyhoodness

So far we have looked at human perception because it is necessary to begin to open ourselves to a more holistic approach and move to this standpoint to ponder the possibility of human and object/things being equal – there is no hierarchy. This is contrary to the Hylomorphic model and theorists who stated that understanding and empathy come from what people do with objects.

‘We move from the concept of objects to the concept of “things” and the voice of things – human and non human’, writes W.J.T. Mitchell, Professor of English and Art History at the University of Chicago in his work on what pictures – when thinking of them as ‘things’ – mean and want. ‘Objects are the way things appear to a subject – that is, with a name, an identity, a gestalt or stereotypical template. … Things on the other hand …’ (Mitchell 2005: 71–82, 156–7).

He discusses how an image or thing seems to look or speaks back and creates a feeling in the subject, allowing the viewer to have a new direction as if the image/object has an intelligence and purpose. Mitchell cites the example of art historians and how they often refer to pictures as though the pictures have their own will, consciousness, agency and desire. He also mentions advertising media and how images can have a great effect on their recipients (Mitchell 2005). French philosopher Michel Foucault described this as being the metaphysics of an object (Bennett 2010).
Elizabeth Edwards wrote about photographs being ‘things/objects’ of memory. She suggested that the relationship between the thing/object (photograph) and the associated memory, along with the way in which it gains this position of privilege to channel memories, is refracted through the materiality of the photograph. The photograph and its materiality and the image and the object come together as one united form and belong to a class of forms/things that have been made specifically as an investment in a narrative, with links and traces to social biographies, values, and culture. By keeping them, it is an act of hope for the future. If a photograph is rejected and torn up or burnt, this is often seen as an act of violence, distress and hysteria and is indicative of personal wounds and hurts (Edwards 1999).

When considering an object per se, it tends to stand alone – *fait accompli*, or at best in its immediate vicinity. In contrast, when considering a thing and the voice of a thing it involves a perspective that involves a holistic visual perception, looking at all the processes and ‘goings on’ or ‘gatherings’ surrounding and involving the thing. It is like the gathering threads of ever-evolving life, involving many participants constantly connecting, participating, inhabiting, leaking, weaving, trailing and knotting together. Twentieth-century philosopher Martin Heidegger described the joining in with this gathering as ‘participating with the thing in its “thingness”’ (Heidegger 1971: 161–80).

Social anthropologist Tim Ingold argues that instead of occupying a world of formed objects, we inhabit a world by joining in the processes of the formation of materials in a world. We become part of the materiality of this world – part of the voice, part of the ‘thingyhoodness’. ‘There is a continuous permeability and binding of our surroundings and part of the continuous evolving processes of the formation of living things’ (Ingold 2008).

Foucault has a different emphasis from Heidegger and argues for moving from a focus on things to a focus on *selves* and how they became *subjects* – not *selves* as in ourselves always being understood as the subject but ‘selves’ as things (Rayner 2001).

A designer-maker may be affected by the agency and the voice of the things that are a part of the designer’s workspace. The things surrounding the designer may inspire, affect and have many facets of agency upon the designer to inform a piece or body of work. Not only do the things in themselves have agency but the whole assemblage (referred to later) of transient things, environment, temperature, mood, light, etc., feed into the process.

Political theorist Jane Bennett argues towards encouraging a more sustainable and intelligent engagement with ‘things’ and the voice of things. She refers to the vibrant and lively matter of things. Bennett explores the idea of non-human materials and an active role that these materials may play in life.

The idea of vibrant matter has a long philosophical history, with many claims and ideas from a variety of philosophers. Bennett makes reference to the active role of things as ‘thing power’ (Bennett 2010). Bennett suggests that if the capacity or vitality of things or voice of things, such as foods, commodities, storms and metals, were taken more seriously, which in turn had the power to block or hinder human will, as well as to be able to act as a force with its own dynamics, tendencies and trajectories, then perhaps public and political responses would be different. Bennett cites the example of patterns of consumption – would they change if instead of being faced with mounting landfill problems we were faced with an accumulating pile of lively and potentially dangerous matter (Bennett 2010: viii, 2–3)?

As Bennett describes when she saw some items over a storm drain on her way to work, firstly it could have been stuff to ignore, but then she realised that each item, as well as commanding attention in its own right outside of human activity, also could betoken human activity. Secondly, Bennett described the stuff as having ‘thing-power’ – it provoked thoughts and affects, not necessarily in a passive way but thoughts about the ability of the thing’s power to make things happen and to produce effects. Thinking about the reasons why she was caused to look at the things as a group of things (e.g. the glinting of the sun, etc.) normally conceived as being inert objects, Bennett describes the objects appearing as an assemblage of ‘things’ with an energetic vitality in and outside of human context (Bennett 2010: 4–5). Bennett describes the glimpse into ‘the culture of things’ when she perceived the materiality of all the things that she saw over the storm drain and the never-ending semiotics of this moment.

Windows into observations and perceptions concerned with the culture of things are open when we have an anticipatory readiness and an open awareness to perceiving and listening to things in this way.
Materiality, vitality and vibrancy of ‘things’

This inquiry is about the life of things which encompasses the materiality of things leading into a vibrancy and vitality of this materiality. Materialism is a view that everything that exists is either composed of matter or depends on matter for its existence. Materialism is generally contrasted with idealism, which holds that ideas are real and stresses the importance of the mind and soul. Materialists have generally believed that the only things that are real are the things that a person can perceive through his or her senses and that all events in the universe can be explained by scientific laws. There is a denial of the existence of a God who directs the universe and of the immortality of the individual soul.

Spinoza and French philosopher Henri Bergson, although referring to the human body, described a vitality that comes from a thing’s own power to preserve itself. Spinoza used the term ‘conatus’, being an ‘active impulse’ or ‘tendency to persist’, whilst Bergson called it ‘elan vital’, being ‘inner moments of duration’ and alluding to the evolutionary process of ‘becoming’. Scientist Stephen Gould, when considering non-human things, described them as having an ‘excruciating complexity and intractability’ (Bennett 2010). Could not this be equally applied to any matter, as all matter persists, if not in one life, then in another?

Bennett examines the idea of inorganic matter having an energy and potential for ‘self-organisation’. Writer, artist and philosopher Manuel De Landa discusses the idea of spontaneous structural generation, such as coherent waves called solitons that form in many different materials, such as ocean waters, where they are known as tsunamis, and unstable chemical systems which can be variable and creative (Bennett 2010).

French philosopher Gilles Deleuze, whose work has been influential in this type of ontology, described a vital materiality (referred to as difference) (vitalism being the philosophy that life is a vital principle distinct from physics and chemistry) as a persistent ‘hint of the animate in plants, and of the vegetable in animals’ (Bennett 2010: 8). New materialists often avoid the distinction between organic and inorganic matter, or animate and inanimate – discerning in both emergent, generative powers or agentic capacities (Bennett 2010).

Merleau-Ponty claimed a unique theme of philosophy to the nexus of ‘Nature’ – ‘Man’ – ‘God’. He wanted a new way to describe materiality without any assumptions or associations, ontological distinctions or theological presuppositions traditionally made. He wanted to ‘define being from within and not from without, where nature, life and man are perceived as diverse folds’, as in his account of folded reversible flesh (Coole and Frost 2010: 96–109). He describes the body as being ‘a hollow, a fold, which has been made and will be unmade’ and understanding life with ‘the softness of flies’. He also made references to coiling, labyrinths, hollows, watermarks, soft flesh and ortices, which indicates a rich and diverse sense of a ‘fold’. Jane Bennett similarly describes a materiality as ‘enchanted materialism’. Michael Saler wrote that enchantment since the Middle Ages has ‘signified a th [human] delight in wonderful things and the potential to be placed under their spell, to be beguiled’ (Saler 2004: 138). Coole and Frost use the term ‘indeterminate and complex choreography of matter’ (Coole and Frost 2010: 7–9).

There are the vital materialists such as Kafka, De Landa and Vernadsky, who recognise differences between humans and non-human materials but claim that there is no need to distinguish the vital materials of humans and therefore set a hierarchy (De Landa 1997). Others, such as British palaeontologist Richard Fortey, define humans as complex animals with an intellect (Rorty 1995). Bennett draws attention to the need for an ontological divide between persons and things as there would be no moral ground for differentiating between a germ and a person, and potentially this would give rise to exploitation.

Although working through philosophy we should not underestimate humanity and the power we have – this is our vital materiality. Do you conceive of yourself as being made up of materials that are alive and self-organising, or do you conceive of yourself as being under the influence of a non-material entity such as a soul or mind? Or could both be at work?

The agency of assemblages

A child’s world can be filled with all sorts of wonderful animate beings – human and non-human. This rhetoric of ‘thing-power’ highlights the acaciousness of objects outside of human meanings, designs or purposes. Is there power, force, energy in things and their materiality? Bennett terms this as an ‘outside’ or ‘incalculable non-identity’, pointing to vibrant materials. She also proposes to perceive ‘thing-power’ or ‘agency’ in a congregational way as it depends on many other forces and bodies. The concept of agency can be seen as things – non-
human and human – and as being actors and vital materialities. Things are continuously affected and affecting their bodies, as mentioned previously in the designer’s workspace. Spinoza describes this as things being a ‘mode’ rather than a subject or object, and modes being themselves assemblages of many bodies which can modify or be modified by others. Bennett argues for an ontologically ‘heterogeneous assemblage’ not restricted to humans and their bodies (Bennett 2010).

Merleau-Ponty drew attention to Cezanne who, through painting, used familiar things, suspending typical assumptions of these and allowing them to emerge perceptually.

We live in the midst of man-made objects, among tools, in houses, streets, cities, and most of the time we see them only through the human actions which put them to use. We become used to thinking that all this exists necessarily and unshakeably. Cezanne’s painting suspends these habits of thought and reveals the base of inhuman nature upon which man has installed himself. (Merleau-Ponty cited by Coole and Frost 2010: 103–4)

It is a counter-culture way of perceiving.

The landscape thinks itself in me and I am its consciousness. (Cezanne cited by Merleau-Ponty cited by Madison 1973: 83)

Merleau-Ponty quoted Cezanne to draw attention to the assemblage of the artist, the environment, the paints, the weather, the temperature, etc. This is like Merleau-Ponty’s folded flesh description with a blurring of beginnings and endings, expression or man, what sees and what is seen, what paints and what is painted. A ‘matter’ that is ‘pregnant with form’ (Coole and Frost 2010: 103–5).

Moving on from this rich picture of materialism and its vitality there is the notion of the power that comes with this vibrant materiality. French philosopher Bruno Latour rejects human-centred approaches and linguistic turns to philosophy and sees the world as being a network of actors, which have no need of being separated into natural or social groupings. Latour defines things in terms of their relations and discusses how the power of ‘things’ can be a source or instigator of action such as an object/thing used as evidence in a law court. Latour names this ‘real’ or ‘reality’ as being whatever simply resists any trials of strength and also as being an ‘actant’ or having ‘agentic capacity’. He paints a world in which things couple and uncouple their forces with some genuine independence which has the ability to resist and subvert the system (Harman 2010).

Alphonso Lingis writes about humans and an ‘other’ as an imperative with a face, with forces, with power, as a fetish, as an idol, etc., and questions: do we see this only within our own narrow confines as humans? With this interpretation of ‘imperative’, Lingis suggests applying the same structure to other organisms and, ultimately, matter. Lingis talks about the causality of things and how they have to coexist within fields of their possibilities. Harman in his commentary on Lingis’s essay summarises:

Charles Darwin and Bruno Latour, in their studies of worms, both make a case for worms as being vibrant material with accumulated effects that have far-reaching implications. From the worm mould, which makes the earth suitable for humans which makes possible human history including artefacts, rituals, plans and endeavours, worms participate in heterogeneous assemblages. If perceiving vital materialism with the element of anthropomorphism, it opens a huge dimension without a possible hierarchical system (Bennett 2010).

Philosopher Graham Harman cites Heidegger’s theory of things, and expands this to describe the life of things all around us in a global sense, as being a web of tool pieces which have an invisibility as they do their work unnoticed but also form part of a system of realities for the various entities that the ‘tool-beings’ encounter – causing the realities to be in a constant state of metabolism. His theory suggests that we rely on these tool-beings. Harman describes things as being complex and as events that are irreducible. Deleuze goes further to describe philosophy as a ‘creation of concepts’ – these concepts being independent forces traversing and apportioning realities, ‘watching over our activity, sustaining or resisting our efforts like transparent ghosts or angels. Each of these objects executes a specific effect amidst reality’ (Harman 2010: 24).
Alfred Whitehead's term is 'actual entities' or 'actual occasion'. No type of thing or force is excluded, and relations between entities are described as 'prehension', as all objects prehend one another and cause even the minutest effect, unlocking a continuous potentiality in the prehended thing and transforming the thing's energy. The result is 'eternal things' which behave like a theatre in which life takes its course (Whitehead cited by Harman 2010). Manuel De Landa has a theory of society that he labels 'assemblage theory', which suggests that 'every entity results from a mass of smaller fluctuating components that do not form a seamless whole' (De Landa cited by Harman 2010: 170).

We now live in a world of globalisation with dependencies, friction and confl ictions, and even this new event space can be termed an 'assemblage'.

Assemblages are ad hoc groupings of diverse elements, of vibrant materials of all sorts. Assemblages are living, throbbing confederations that are able to function despite the persistent presence of energies that confound them from within. ... The effects generated by an assemblage are, rather, emergent properties, emergent in that their ability to make something happen is distinct from the sum of the vital force of each materiality considered alone. (Bennett 2010: 23–4)

Bennett, Spinoza and others contend that the understanding of the power of agency and possible intentionalities, to make a difference that begs a response, is a power within humans and non-human bodies, and as well as this there is the notion of agency as a trajectory movement of direction and as a causality movement effecting and in using many levels and both being emergent – being shaped not only by external forces but also by its own receptive and self-organisational capacities according to the vitality of the materiality. Congregational agency is similar to shi in Chinese tradition. Shì helps describe a force that emerges from arrangements of things such as style, energy, vibes, propensity or trajectory and is vibratory in its ability to alter and with members that can alter (Bennett 2010).

Other strands of vitalism

Within vitalist philosophy there are different strands of vitalism. Christian thinkers such as Leon Kass are pro biblical creation with a hierarchy of matter at the bottom, organisms (Kass defines the e as being a material body infused with non-material, with life – life being the cause of metabolism) in the middle, and humans at the top. Kass argues that the human organism is specially endowed with life force as it is designed by God and has a soul. With this version of thinking there is a strong distinction between organic life and inorganic matter – the uniqueness of the human life force is the soul and is celebrated.

In contrast to this, Nietzsche and Thoreau argue that human and non-human bodies both possess a 'vital force', such as in the case of food productive power – they see the eating experience as an assemblage of human and non-human elements which all have agentic capacities encompassing the living world. Here, food is seen as an actant in an agentic assemblage including members such as one's metabolism, understanding and moral values. Perceiving matter as having the ability to self-transform or organise and not simply inert possibly disturbs the more traditional thinking that humans are the only agents with cognitive power to be able to rule nature. When humans are relocated in an environment with its own agentic capacities with a multitude of tiered unintended and unanticipated effects, materiality is vastly broadened (Bennett 2010).

Bennett suggests that if we perceive a bigger sense of the active vitality of matter all around us and in us, if environmentalism shifted to vital materialism, then perhaps current unsustainable living practices would change. There have been other attempts to name and give a philosophical voice to the active vitality or vital force in matter, and these I will now briefly describe.

Bildungstrieb

Immanuel Kant, taking influence from the work of Blumenbach, insisted that there is no such thing as spontaneity or life in matter. Kant did acknowledge, however, in the case of life and matter that his idea of materiality needed a supplement to become active. Kant conceived and labelled this a 'formative drive' or 'Bildungstrieb', as being the something that enlivens and attaches itself to crude, dead matter and gives material its organised and functioning quality. He named humans and humans with a will as being the highest version of this. Other eighteenth-century figures who had similar philosophies were Georges Buffon and Albrecht von Haller (Bennett 2010).

Entelechy

Hans Driesch was an embryologist and was also known as one of the first non-ews to be stripped of
his professorship by the Nazis due to his objections about the Nazis using the idea of vitalism to exterminate less vital peoples (Bennett 2010). Driesch believed in Kantian ideas about matter. He likened it to the seed of an embryo which is formed with certain predispositions and to there being an invisible presence which is neither mechanical nor soul-like, substance nor energy, performing jobs within an organism and having something like a gatekeeping role to the possibilities of emergences. Driesch described it as entelechy, being a self moving and altering power. Entelechy would be the qualitative difference, for instance, between a car park and a lawn, a human and a corpse. Driesch described it as an incalculable natural creativity (Driesch 1908: 169).

Elan vital

Bergson differentiated between life and matter as separate categories which live in conjunction and competition with each other and that can fix what he called ‘tendencies’ in the cosmic flow. Life, according to Bergson, has the propensity for activeness whilst matter he saw as being inert and passive with a tendency towards spatialisation (Bergson 1998). Bergson, through studies of organisms, concluded that there must be a non-mechanical agent or an inner directing principle. He maintained that ‘entelechy’ was a quality of ‘the tremendous push of life … the primitive impetus of the whole … the impetus that thrusts life into the world … shaking awake … matter and inserting into it a measure of surprise … passing from generation to generation’ (Bergson 1998: 132, 114, 26, 99). Whereas Driesch described entelechy as an intensive manifold with an impulse to maintain the whole, Bergson saw it as a process of self-diversification, disassociation and division, working towards a general goal, and to preserve this but in a transitional way – increasing the instability and indeterminate into material formations through their evolution. Bergson described life as a perpetual efflux essence of novelty (Deleuze 1991).

Life and conclusion

This inquiry has sought to open perceptive, sensorial, new ways of thinking and inquiring into the life of things. ‘Life’ has many descriptions: Bennett describes life as a restless activeness. A Thousand Plateaus points to life being a matter movement or matter energy – becoming – entering and leaving assemblages. When Deleuze and Guattari discuss life and material vitality their focus is on a vibratory efflux essence present before and after any arrangement (Bennett 2010). Friedrich Nietzsche wrote:

Do you know what Life is to me? A monster of energy … that does not expend itself but only transforms itself ... [A] play of forces and waves of forces, at the same time one and many ... a sea of forces flowing and rushing together eternally changing. (Nietzsche cited by Bennett 2010: 54)

About growth in relation to life Paul Klee wrote, ‘the relation to earth and atmosphere begets the capacity to grow … the seed strikes root, initially the line is directed earthwards, though not to dwell there, only to draw energy thence for reaching up into the air’ (Klee 1973: 29). And Heidegger wrote, ‘The earth and sky is interlocked and cannot be thought of without the other. Each partakes of the essence of the other’ (Heidegger 1971).

Bennett writes, ‘We at first may see only a world in our own image, but what appears next is a swarm of “talented” and vibrant materialities (including the seeing self)’ (Bennett 2010: 99). Bennett’s philosophy is one of thinking about ‘affec’, not just specific to humans but to non-human bodies as well, and
highlights involvements and interdependencies. She emphasises two main points – first, the agentic capacity of things, and, secondly, through being enchanted having strengthened agentic capacities.

When considering current concerns about environmental issues a more materialist approach would be to move from an environmentalist living ‘on earth’ approach to a vital materialist living ‘as earth’ approach, being far more in tune with materiality and the vying with agentic assemblages – being alert to the capacities and limitations of, say, the ‘jizz’ of worms, as Bennett describes. We as humans could be a material part of all other material parts and as we have considered matter to be vibrant, lively, full of energy, quivering – it changes a linear and determined perspective to a world governed by emergent causalities. Vital materiality also highlights our own bodies as not just being purely human but populated by many other foreigners – we are an array of bodies. We are an ‘affecti e’ body alongside ‘affecti e’ non-human bodies (Bennett 2010).

This inquiry points to a sense of everything being ‘alive’, creative and generative, whether it be a human, an animal, a plant or materials in a studio. Deleuze and Guattari stated that nature is a ‘pure plane of immanence … upon which unformed elements and materials dance’ (Deleuze and Guattari 2004: 255).

The subject of the vitality of matter or the life of things is easy to lose grasp of. Especially as humans we already have inf lencing cultural attachments to ideas of inanimate matter, of humans, and of God, and the agency of grammar does not lend itself to a language that can give voice to things. I feel that whether you resonate with this thinking or not, there is certainly room and challenges for new perceptions and respectfulness for the ‘vitality’ of things. Why can certain vitality not equally coexist with those who believe in a hierarchical model and belief in God who instructed us to have good stewardship of all creation?

References
This paper is based on work that explores relationships between language and craft practice. Language has its limitations, but these limitations can be articulated or bypassed differently by manipulating certain elements of language construction. Language offers many possibilities of expression and interpretation. However, it is difficult to think that meaning is the same for everyone, language is how we communicate primarily. Language needs a shared understanding. It is used to carry and convey any meaning, significance or sense. It also carries deep ingrained cultural and social codes within itself.

The practice of craft, through the artefacts shows a constant enquiry for questioning, a desire to find new ways of creating, articulating and interpreting materiality. The substance of the artefacts, the realities of the object in space, the things, produced, or thought about, are part of the result but also part of the questioning and of the process of enquiry. They are the start and the end.

Through literary devices the paper refers to the production of artefacts, to creative activity and thoughts. Figures of speech and literary techniques are used as a reference grid to allow to ‘read the practice’ meditated through the production of artefacts. These figures of speech and literary devices are: metaphors, similes, alliterations, metonymy and digressions.

The paper uses these techniques as a series of frames:

- To unlock a way to describe the working process, as well as a way to read it in conventional sense.
- To unlock how that process is structured and what it means as a ‘maker’.

The paper draws the conclusion that through these interpretations, through these figures of speech, the paper leads to some unseen paths and some surprising insights. The meaning of artefacts, situated, formed and understood through craft practice and their alluded relationships can then be rediscovered, unearthed, excavated and re-interpreted.
Abstract
This paper is based on work that explores relationships between language and craft practice. Language has its limitations, but these limitations can be articulated or bypassed differently by manipulating certain elements of language construction. Language offers many possibilities of expression and interpretation. However difficult it is to think that meaning is the same for everyone, language is how we communicate primarily. Language needs a shared understanding. It is used to carry and convey any meaning, significance or sense. It also carries deeply engrained cultural and social codes within itself.

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The paper uses these techniques as a series of frames: to unlock a way to describe the working process, as well as a way to read it in a conventional sense; to unlock how that process is structured and what it means as a ‘maker’. The paper draws the conclusion that through these interpretations, through these figures of speech, the meaning of artefacts, situated, formed and understood through craft practice and alluded to relationships, can then be rediscovered, unearthed, excavated and re-interpreted.

Introduction
The paper explores the relationships between language and craft practice; language is a subtle and wonderfully complex arrangement that offer many possibilities of expression and interpretation. Language also needs a shared understanding and carries deeply engrained cultural and social codes within itself – these elements are the backdrop to my work.

The paper refers to the production of artefacts, creative activity and design thinking. It uses literary devices, figures of speech and literary techniques as a reference point or grid to allow ‘a reading of the practice’. This is mediated through the production of artefacts.

The language and literary devices used are all linked as elements in my practice and are based on: parenthesis, metaphors, limitation, digressions, and alliteration. Each element will fulfil a function within the practical work and for the concerns expressed through this paper – the reader will find it embedded within the structure of the text itself. What follows is a list of the word topologies I use to construct works.

Parenthesis: providing a context and shared understanding for the reading.

Metaphors: because some things are more expressive and gain in substance when not directly mentioned. They open access to the realm of personal experience and feeling. They talk to the heart and to imagination, not to the rational.

Limitations: They are what create difference. Without limitations all would eventually end up as being the same. Limitation is inherent to creativity. Also, this is written (spatial limitation, use of language, formats, conventions).

Digressions: They allow for meandering, and exploration, to go back somewhere and bring reflection, as reflection is intimately bound up
with practice. Also they can be used as a way to link previously unrelated factors.

Alliteration: Physical repetition brings experiential knowledge. It is also useful in terms of understanding a similar experience (it allows exploration of nuance).

As well as the functions above, they are also used as a series of frames:

To unlock a way to describe the working process, as well as a way to read it in a conventional sense.

To unlock how that process is structured and what it means as a ‘maker’.

To put this into a context it is necessary to say a little about me. My practice is an embodied practice – it is who I am and thus impacts on what I do. What I make also changes me as new experiences add and alter my reality. The meaning of artefacts, situated, formed and understood through craft practice, has always had for me alluded relationships. They can then be rediscovered, unearthed, excavated and re-interpreted.

My personal life has had some bearing on what I make and how I think, so it’s important to detail what this has been and is. I was born in France from Catalan parents. My maternal language is Catalan – this was the language I spoke when at home. Being born in France, I spoke French at school. When visiting family in Spain during Franco’s regime, I spoke Spanish as Catalan was not allowed and not welcome in the streets. I learnt English when I came to live in England, and British Sign Language when working with deaf people. I do not see language as fixed and immutable. I can compare expressions and sayings from one language to the other.

As a child, I was taught tasks considered as feminine in society (such as sewing, embroidery, crocheting, knitting and cooking), but I was also taught how to use drills and saws from a very young age. My skills and use of tools, domestic or otherwise, were acquired for independence – this was crossing gender boundaries in a way that was unusual at the time.

My father was a shoemaker cobbler and my mother was a seamstress. They both used patterns, which needed assembling, to make and transform 2D planes into 3D forms, such as shoes and garments. They both were practical people and they gave me a practical education.

As a maker I have acquired an intimacy with certain processes and materials. I have developed a taste for a particular way of doing things. The things made, the thoughts produced, are part of the result and become in turn part of the process of enquiry; they are the start and the end.

In the early 1980s, Mezirow, Freire and others emphasised that at the centre of all learning lies the way we process experience, in particular our critical reflection of experience. For them, learning is ‘a cycle that begins with experience, continues with reflection and later leads to action, which itself becomes a concrete experience for reflection’ (Rogers 1960).

Artefacts are a concrete experience of reflection. They represent the result of a process of making and thinking. They also are the basis for future reflection as the outcome of the first object is going to have implications for how the next object is going to be negotiated. Making is a journey inwards as well as outwards. As a human being I also have acquired a social and historical context, a repertoire of ways of doing, ways of making, ways of being. This paper will endeavour to reveal and articulate my particular working process.

Was it the word?

Language has its limitations, but these limitations can be articulated or bypassed by manipulating certain elements of language. Language can create many worlds: it can be factual, it can be related to the world of fiction, the world of dreams, to hopes and futures. Hopes and futures start with a projection of oneself; what the words do is to fix the projection in utterances (to utter: from old French: ‘to carry to excess, to bring to life’; ‘object’: a tangible and visible thing: from Latin, objectus: ‘something thrown before the mind’).

Objects by their nature impact on how the space they inhabit is negotiated. They are present; like making, language is performative. Richardson (2000) says that writing ‘appears as a method that does not only reflect and shape the reality but produces it’, and Verbeek (2000) suggests that ‘artefacts and their mediation with the world allow us to realise ourselves and contextualise reality’. However ultimately it is to think that meaning is the same for everyone, language (a dominant means of communication in our culture) is how we communicate primarily.
In his seminars Lacan looks at the social structures and laws embodied by language, in the symbolic order. To relate to others, each subject must take up a place in the language of the symbolic order. Lacan talks about ‘a wall of language’ which joins and separates subjects; it joins them in that it enables them to communicate, but it separates them in that communication is never complete (Lacan 1988) – like islands separated but joined by the expanse of the sea.

The map

Through features of speech, imagery, poetry, and manipulation, language gains a way to present non-visible yet existent meaning. I use these elements to create and situate my practical work. I use them as way-finders to direct me to and from different materials, different connections and different glazes, configurations and assemblages. I use the same collections of words to align my thinking to process like a system, although these configure naturally. This next section details the understanding of the words I use and how I use them to find meaning within my practice.

Metaphors: Lakoff (2003) explains that: ‘The essence of metaphor is understanding and experiencing one kind of experience in terms of another.’ He continues by saying that metaphors are more than just a literary device. They are a fundamental mechanism of mind. They provide culturally defined interpretations, heightened imagery and routes for poetic licence (definition of poetry: from poietos, ‘made’, verbal adjective of poiein, ‘to make, create, compose’). Metaphors are transferences. Sometimes the transference is not made within the transformation of the object but with the re-situation of the object in a different context.

Marcel Duchamp’s ready-made is an example. He positioned his work outside the normal perception of the artefacts. He used metaphors for questioning, subverting and objecting to the socially-understood signs. He transformed the meaning associated with the object rather than the object itself. At a simple level this happens every time I take a jug, for example, out of display and put it back in my studio amidst the general chaos of the shelves for a few days before being packed away.

Metaphorical absence: In ‘Fidget Drawing’, Kenneth Goldsmith catalogues every movement made during thirteen hours on 16 June 1997. He only states the physical actions; he uses no adjectives, no adverbs, or any rhetorical device. The absence of these features makes the human condition, with its weaknesses and strengths, even more present and strongly felt. This is transferred to the finished object by the maker. They are the individual characteristics, the voice of the maker existing in the invisible ways and marks that make the work.

This transference can also be a digestion or an appropriation. Appropriation is a strategy to adapt to an environment. What appropriating does is to allow taking something foreign and making it one’s own through transformation.

Metaphorical subversion: Punks were very successful at transferring and subverting. They altered and impacted culture through the use of collage and assemblage. They cut and pasted to redefine their own identity and their own world, subverting traditional signs and symbols such as the English flag, ta tan, etc. They crafted, subverting the traditional signs of the ruling order by creating their own. This transference resulted in a cultural hijack, appropriation, and a détournement. Within my practice I transfer and appropriate processes from the realm of the domestic to the realm of a making studio, such as sewing, crocheting or cooking.

Figure 1.

Sylvia Llecha  |  Making Futures Journal Vol 3 ISSN 2042-1664
Neil Bronsword, the ‘Poet of Residue’, as he is called by Gallery Bresson, uses pieces found in the remains of the declining ceramic factories in Stoke-on-Trent. In doing so he creates new meaning and transforms pieces by putting them together, an assemblage of discarded and obsolete remains, an unwanted and decrepit part of history once alive with bustling and activity. Some form of poignancy comes through his creations. The absence is nearly felt, like the perfume remaining in a room long after the person wearing it has gone.

The transference and appropriation also happen as a necessity in cultures of scarcity (which links with limitations). The objects created develop a narrative structure in themselves, as demonstrated in Arkhipov (2006). These objects or their parts change, migrate from one use and assemblage to the next. The object is not seen as a whole finished thing but as a set of possibilities put together forming a ‘togetherness’, able to change and evolve with their usage. The resulting object or thought process is an assemblage, a deconstruction and a reconstruction and ‘un bricolage’. According to Lévi-Strauss in La Pensée sauvage (1962): ‘The bricoleur universe of instruments is closed and the rules of his game are always to make do with “whatever is at hand”, that is to say with a set of tools and materials which is always fini e’.

In my studio practice the usage of the tools and the resources I have change to accommodate my needs. My studio door lock can be a hairpin, a padlock, a spoon, a screwdriver. A hammer can be used to drive nails into wood but it can also be used as a weight, used as a stamp to imprint a shape or texture or as a marker for a reference point. What is available and at hand is a contributing factor of what I do. I was given an unwanted pack of round cards, which led me to make prototypes with cones. The fact that the set of tools or materials are fini e brings the limitation.

Limitations: As mentioned earlier, without limitation all would eventually end up being the same. It is a source of creativity. Resourcefulness is necessary when using limitations, imposed or not. The Oulipo (Ouvroir de littérature potentielle) was a gathering of writers and mathematicians which sought to create works using constrained writing techniques. They used restrictions as a path to creation. For example, Georges Perec wrote a book without using the letter ‘e’.

Practitioners also have to deal with limitations: limitation of resources, of time and of space. The size of my kiln limits the size of the pots I make (Figure 2). I also have limitations, which are part of my own make-up and culture. I use what I have and try to maximise the use of my tools and resources. This was true of the way I was raised, but also true of the British culture and society in the 1950s of the ‘make, do and mend’ generation, or as seen before in cultures of scarcity. The limitation brings creativity as it forces people to see things not as fixed in their use and form but capable of transformation, full of potential and possibilities. It is the ways of seeing which are important, not what is looked at.

As a maker I use, adapt and transform skills. The work based on crochet corresponds to a skill learned as a child that I transferred to another material (from cotton to copper wire), and another process and material is added (porcelain and firing).

De Certeau(1984) talks about the usage of artefacts, which he calls ‘ways of making, a way of thinking invested in a way of acting’, which links with the possibility to acquire knowledge through the ways of making. For De Certeau, these practices are an integral part of the everyday life experiences, and also that the way people represent their world can be found in the usage of these practices. My practices, my ways, form an integral part of my practice and impact on my preoccupations and making.

During my experimentation with glass I used an assemblage of techniques, some from the realm of domestic activity such as piping, sieving, grinding, mixing, others more technical such as plaster mould making, layering, and an assemblage of materials, recycled glass and copper wire, pigments.

I also, like my parents, use patterns and templates, in this case to make blue jugs (Figure 2). Each one
develops its own identity in the organic process of making. Each one becomes a representation of some possibilities. As well as being a transfer of skill, technique, it is also a part of personal, social history, a narrative, a response, where memory and everyday life reside. It is a place where artefacts emerge, splurge, happen, occur, and grow from the manipulation. Sometimes they are stumbled upon; artefacts are symptomatic of the making and of the thinking activity. This transference of skills, techniques, materials, allows revisiting past events, memories and history. They also provide opportunities for digression.

Digression (to digress; to depart from the main subject in speech or writing; to wander from one’s path or main direction, to drift; in French, *derive*). There is a reason for digression, wandering and *detournement* due to the connections, the appropriations, we make to comprehend the world. They are bridge-building equipment to link isolated lands; digressions are teleporting devices that transport us beyond matter from one place to another. Sometimes the digressions are foreign and not understood. The bridge is only experienced and walked on by ourselves and exists on the value of our personal experience. For me, digression allows me to revisit thing, events, artefacts, and review them in a different light. To make connections where there were none. They provide a jump, a leap.

In my practice, I digress often – *Je passe du coq a l’ane* (to jump from the cockerel to the donkey). One could think that my thoughts and my practice are non-sequitur and unlinked. This is perhaps due to the non-linear nature of the thought process, or to what Deleuze and Guattari (1972) refer when they identify *bricolage* as the characteristic mode of production of the schizophrenic producer. Although the thoughts and artefacts might seem non-sequitur, they are connected in the invisible similarities but also in the striking differences. Furthermore, I am the connector.

In my practice, the digression can also be a regression to the specific time and place. A revisitation. Geometric shapes are representative of it; they represent the higher thinking, the folding of space, the ordering and classification of thought: the rational world. Geometry is a regular occurrence in my making. The vessels made in the most basic way with all the marks of the making present, none of the features smoothed or hidden, are also occurrences. They represent the intent of making in its most basic form, without any use of tools. Sometimes the intent is defined and clear and sometimes the intent is just an exploration of possibility. My practice is a conversation between these two occurrences, a constant drift or a *flanerie* as described by Baudelaire. The Situationist International (SI) also created a ‘theory of the derive (‘drift’). For them, the derive was a strategic and calculated form of ‘reconnaissance’, survey, mapping, allowing the construction of situation where these experiences of living could happen. When I make, I use a haptic and intuitive approach to manipulation with what I would call trial and not errors but tribulations. They
are possibilities, which sometimes are odd, and sometimes exiting. This drift, deambulation, between the rational world, the intent and the primacy of making provides a situation where the experience of making can happen.

Through this meandering the excavation of places away from the main paths reveals new ground, past experiences and revived memories. It is not the mental memory which makes it powerful, it is the revival of the body’s memory. The memory of the gesture, of the movement. The body is the reference point by which we situate ourselves in the world; we are the physical 0.0 reference point, which is the base of our understanding. Merleau Ponty (1962: 170) states that ‘Bodily experiences force us to acknowledge an imposition of meaning which is not the work of a universal constituting consciousness ... My body is that meaningful core’. My body is a source of how I acquire some knowledge; by touching a pot I judge the thickness of the wall by the space in between my fingers. I judge the temperature of a fired pot by applying my tongue on it and feeling the moisture retention.

**Repetition and Alliteration**: Alliteration has more to do with prosody and rhythm than with the meaning of words in themselves. The meaning they provide is atmospheric. In my work, alliteration enables groups or families to be created. The processes used also facilitate the repetition. With the use of templates, the general form of the various pots is the same. Different possibilities are explored while the making and the assembling takes place. Some of the differences in the pots are going to be due to the limitation: a smaller clay slab might mean that the pot is going to be narrower or smaller. Sometimes it might be due to accidents – while rolling a handle the roll of clay might fall and the shape then might be something I would like to replicate. The pots within the same family are also finished with the same glaze. The relationships and the tension within these families can be observed through their apparent similarities, shape or process.

The yellow pots in Figure 4, as well as being done using concentric templates were a representation of how people navigated and interacted within a given landscape and with each other. This was inspired by a trip to Dartmoor.

![Figure 4. The moors provided a natural landscape where no paths are predetermined and everyone can make their own.](image)

The moors provided a natural landscape where no paths are predetermined and everyone can make their own. For de Certeau the everyday and its practices are also a place where humans can reclaim their spatial and social liberty. This is exemplified by punk, but also by the practice of parkour. Within the studio, makers do re-appropriate and adapt to fit their own individual practices and their preoccupations.

The process of template and slip cast is conducive to alliteration and repetition. Whereas when working with templates one can alter and change as the making goes along, the slip casting is different as the outcome is pre-determined as a mould is used. Alteration can be done after the casting, but the shape cast will remain. The context of the object is changed by its multiplicity.

When creating surface patterns I also use repetition. I take a single element and replicate it to create an ensemble, which becomes a unity itself. The original element is lost in the whole picture and represents a point of reference.

The repetition is also that of a physical action. This repetitive (and sometimes obsessive) manipulation is essential. The physical manipulation of a 2D plane, which is folded, organised, becomes a cognitive tool, a source of knowledge. ‘What is learned must go beyond merely doing things. Visual literacy and critical appreciation develop not as independent, abstract capacities, but out of direct experiences of actual doing’ (Salmon 1995). Repetition also transforms new things into common ground. The same action repeated day after day loses its experiential feeling when it becomes a habit. In the 1930s Tom Harrison conducted a mass observation survey on everyday life; a woman reported that even though she was doing the same things every day, on Tuesdays (the day she recorded her day) it all felt more important. It was of special significance – special because recorded.
The repetition also brings a Zen/meditative state, a zone where one's mind is open to possibilities and allowed to drift.

Figure 5.

As a maker, as a person, I am an assemblage of situations and experiences, of happening and interpretations. I use the activity of making/thinking as a dialogue with myself and with the materials encountered. When an artefact is finished it becomes autonomous. For me this is the end of a sentence with an opportunity to create other sentences, other chapters. The artefact also starts a new conversation with the people who use it, see it and feel it, independently of myself.

Concluding but not concluding

The circumstances of making are not always ideal. Being a maker is about finding new ways of doing, making and conversing, exploring new ways of evolving and being. Reflecting about and around making, this creates an insight into ways of operating. Makers are people who are expressing their personality and ethics in what they are making and how they are making it. Their responses are as different as they are different makers. This is expected from them. There are many occupations where one's individuality is not necessary or expected, only one's ability to achieve a task. In this respect makers are privileged as they use their voice in their work. This ability of voicing gives opportunity for an embodied practice to exist. What I do, how I think, what I am, how I operate is reflected in my practice. It is also part of my practice and it is part of me.

In a traditional sense, design ideas are often explained by a working model of a specific project, ways of communicating these ideas are generally with two and three-dimensional elements, such as drawings and models. Design also has a meta-narrative. It is simply less formal than the meta-narrative of research and enquiry, and it is nearly always located in the pragmatics of a specific project rather than in the inquiry of a broader context within which it is situated. This latter sentence underlines my approach; my objects also play a part, a role in research communication. Depending on what we research, how we do it and how we communicate, the inquiry process and result involve such objects and the relationship they have with words.

Words are necessary to exemplify or illustrate aspects of a research problem. Nevertheless, the act of research, the process of inquiry, the impulse for knowledge, takes place in the human mind. We use words to
communicate, what we think about anything from one human mind to another. For some kinds of thinking, we have explicit and unambiguous symbolic languages to communicate specific kinds of thoughts. We use words to explain how and why we came to focus on a problem. We use words to describe the work others have done on our problem. We use words to share states of mind, both abstract thought and emotional feeling. We use words to communicate how our thinking evolved, and to share the considerations we may have on any subject or matter.

Two-dimensional and three-dimensional artefacts can support communication by clarifying the objects of inquiry and the underlying ideas. When engaging in practice-based research, two-dimensional or three-dimensional artefacts can be part of the research process. But images and objects alone cannot communicate the mental acts of inquiry. Two-dimensional and three-dimensional artefacts cannot explicitly represent the complex range of events and issues involved in attempting to solve problems. Neither can they raise or address the wide range of issues involved in any project nor the layering of meaning behind the origins and the becoming of the project.

My practice requires and depends on narrative, explicitly my narrative or ‘petit recit’, as Lyotard would describe it. This is because I need words to narrate the enquiry of making in the bigger context. The immediate narrative, the ‘petit recit’, tells me about the project at hand. The metanarrative tells me how the project at hand functions and fits within the larger context of making and problem-solving (see Sevaldson 2010).

The world we have created is a product of our thinking. It cannot be changed without changing our thinking. (Albert Einstein)

References
Malcolm Martin

On Knowing the Unknown Craftsman

This abstract is primarily about the framing of my presentation, which itself will be more directly reflective of my practice as a maker. This is more the groundwork on which it will be built, taking further the practical approach I developed in my presentation at the last Making Futures: ‘Take a look at these Hands’.

For the last twenty years Soetsu Yanagi’s essay The ‘Buddhist Idea of Beauty’ has been both a constant inspiration and irritation for my work as a maker. It’s perhaps his most thorough treatment of ‘The Unknown Craftsman’, the closest he comes to giving us a theory of craft.

In the West, Yanagi’s championing of craft has been seen primarily in terms of Romanticism and the Primitive; where a Japanese context is acknowledged, it is as part of pre-WWII Japanese Nationalism.

This paper will argue that there is a far more sophisticated dialectic at work in this essay than has been generally recognised. It will explore this dialectic through the different (or not so different) voices of Buddhism and the workbench.

In his essay Yanagi compares the Way of the Artist and the Way of the Unknown Craftsman to Buddhist ideas of jiriki (reliance on Self Power), and tariki (reliance on Other Power). As he explicitly formulates the Unknown Craftsman as relying on the ‘Tradition’, then ‘Tradition’ itself is implicitly the ‘Other’ of the maker.

However, to understand the implications of this opposition, one has to take into account another Buddhist tool, the idea of annata, or ‘not-self’: that I, you and everyone and everything else have no fixed, permanent essence or self. Everything that I might invest in as a ‘self’ is ultimately ‘not I, not me, not mine.’ ‘Selfing’ hence be better seen as an action than an entity, creating identities that are always provisional and contingent.

So, contrary to the way in which these ideas have usually been understood, one is never simply on the side of ‘The Artist’ or ‘The Unknown Craftsman’, these are alternative strategies (as are jiriki and tariki) that one employs to create a relation of Self and Other, and to make objects in the world.

To take Yanagi’s analogy absolutely seriously: in a world where concepts of Self and Other cannot ultimately be sustained, but interdepend, what is the relation of ‘the Artist’ to ‘the Unknown Craftsman’? (Or Craftswoman, as so many are and always have been...) What is the relation, as a maker, of my own intention to ‘Tradition’, to the discipline in which I work?

And what has all this do do with ‘beauty’ as Yanagi approaches it?

In short, when I go to the bench: who carves? Who creates? And does it matter?

The presentation will contrast the different voices in a way still evolving: perhaps pre-recorded paragraphs and ‘live’ reflections on work at the bench, perhaps the soundtrack of the workshop itself. Definitely raw material and craft objects, definitely no Powerpoint...
Malcolm Martin

On Not Knowing the Unknown Craftsman

I
In the book *The Unknown Craftsman* (1989[1972]), Soetsu Yanagi sketches out an idea of craft perhaps more radical than any before or since. In a complete inversion of our normal hierarchy of values, he argues for the anonymous ‘crafts of the people’, or ‘mingei’, which he considers to be the healthiest, most vitally alive and spiritually deep products of a culture, products that provide a benchmark for other art and design. In contrast, he regarded the Western idea and practice of the fine artist as dangerously self-conscious, and the quest for individuality and self-expression in art and craft as totally misconceived.

I first read *The Unknown Craftsman* in the early 1990s, during my defection from sculpture to craft. It spoke to everything I found attractively different in the craft that excited me: a Dail Behennah basket, a Gordon Baldwin pot, a Mike Abbot greenwood chair. Of course only the last of these is in any way a ‘traditional’ craft product. The others sit very much within the new tradition of ‘studio crafts’, objects made by individuals in a context much closer to fine art than the economics of a peasant society. Yet all seem to embody the unique possibilities of the handmade, the encounter between maker and simple materials that is deeply human and, in some sense I could not quite define, spiritual.

In a deep sense, the last twenty years of my work have been an effort to clarify this paradox ... in what way can work made within the context of contemporary studio craft embody those qualities that allowed Yanagi to make such an extravagant claim for the ‘crafts of the people’, for mingei?

This paper is a personal attempt to answer the question. It will look at the Zen Buddhist practice that underpinned Yanagi’s ideas, and which has informed my own making. And it will be a reflection on that making. Fortuitously, or synchronistically, it was in the three months prior to presenting this paper, spent mainly during a residency in Philadelphia at the Center for Art in Wood, that I began to see more clearly the resolution of this paradox through making. So this paper will draw extensively on my experience of that time as a practical demonstration parallel to the more theoretical aspects.

II
Yanagi was born into the great modernisation of Japan that began at the end of the nineteenth century and that, in a generation, turned what had still been an essentially mediaeval society into a major modern power, the original Asian ‘tiger economy’. For the Japanese of the early twentieth century, modernity and the West were synonymous and, like other forward thinking intellectuals, Yanagi immersed himself in Western culture and ideas.

He was very familiar with the writing of Ruskin and Morris, and with contemporary developments in painting and sculpture.

This had led many writers on Yanagi into what could be argued to be an appalling act of cultural misappropriation, in seeing his significance only in terms of a wider dissemination of European arts and crafts ideas, a Japanese Morris, a footnote. Where Yanagi’s Japanese context is actually acknowledged, it is now common to link it to the development of nationalism and the militaristic colonialism of the 1930s, which had such disastrous consequences for the world. So it is safer, if we approve of Yanagi, to stay well clear of Japan.

But even if we agree with the recent scholarship that has challenged Yanagi’s assertions that his ideas on craft were both wholly original and wholly Asian in their origins, there has in fact been a serious neglect of the Buddhist context within which he explicitly framed his work. This was no simple use of an acknowledged Asian or Japanese background, but the result of a deep and sustained relationship with D.T. Suzuki, the Buddhist scholar whose writing and teaching were and remain pivotal in the spread of Zen Buddhism to America and Europe.

The West has recently become much more open to the contributions of ‘secularised’ Buddhist practices (such as mindfulness and meditation); what Yanagi proposes is that the making and using
of craft objects can be, and even normally has been, an unacknowledged spiritual practice. That the problem it addresses is, to use a phrase borrowed from Zen Buddhism, ‘the great matter of life and death’, or in terms more familiar in the West, that of ‘the human condition’.

In making his claims for the value of mingei, Yanagi was not arguing from a moral, sociological or political point of view, but from what he would have characterised as an aesthetic position, one absolutely engaged with our experience of the everyday world rather than with transcendental abstractions. His argument is about the material consequences that result from the different ways in which identity and a sense of self are formed by makers. It is in many ways a case study, looking at how these individual and collective identities are formed and operate, how makers approach and solve the problems raised by practising their craft, and how this is manifested in the objects they make.

The argument is based on a Buddhist analysis of the effects of the process by which we are all mutually and continuously creating identities and a sense of ‘self’. Our identities are inevitably partial, temporary and contingent, but we struggle to make them appear consistent, stable and enduring. This struggle limits the flexibility and appropriateness of response to any situation. The attempt to separate out a stable and coherent ‘self’, that in turn confronts a world seen as ‘outside’, brings about a distortion of perception, judgement and action, the inevitable consequence of which is experienced as ‘suffering’.

Our experience as ‘artists’ can be seen to be simply one instance of the whole problem of being human, our identities as artists a part of the fabrication of partial truths and fantasies that we all use to navigate our lives. Yanagi argues in effect that it is the nature of the identities constructed as ‘fine artists’ that limits the freedom and quality of their work, and that this is clearly visible in the vast bulk of what we call the ‘fine arts’. By contrast, it is the essential anonymity of the mingei makers, their failure or inability to function as uniquely defined individuals, that disrupts this process, paradoxically allowing them a more genuinely free and creative response, evident in the objects that they make.

In fact, as early as the sixteenth century, the first great tea masters of Japan, trained in Zen Buddhism, had begun to recognise the unique value of what Yanagi would come to call mingei. They had begun to use and value cheap Korean imports intended for holding rice as their tea bowls, the very centre and focus of the emerging tea ceremony. Tea caddies and flower vases might be found from similarly unregarded and repurposed objects. The tea masters had come to choose these simple everyday objects because they felt they embodied a different kind of beauty, ultimately a deeper and richer kind than could be found in the use of rare and exotic materials and the tour de force of skill and patient labour normally characteristic of courtly arts across the world.

Likewise for Yanagi, the attraction to the kind of objects he came to term ‘mingei’ was that he felt they were differently and more truly beautiful. And he came to believe that the important point about this beauty was that it could be found not only in individual examples, in a specific tea bowl for instance, but to some degree in each and every object produced within the people’s crafts. The origin of this beauty he traced to the way of making within the crafts, where the tradition itself provided a set of materials, designs and techniques that allowed makers to overcome their individual limitations and collectively produce work of the highest standard. For Yanagi it was the lack of the need for individualism and self-expression, the essential anonymity of their way of working, that allowed these men and women to work so well.

These are the heroes and heroines of mingei, the ‘unknown’ craftsmen and women. They usually had low social status, were poorly educated, often illiterate, and badly paid for their labour. Their working conditions might be difficult or even dangerous, their livelihood insecure. And these were the makers Yanagi proposed as in one sense the model for all creative work.

Interestingly though, and this has seemed hypocritical to Western critics, Yanagi also actively supported those contemporary artists working in what he saw as the mingei spirit, the spirit of those anonymous craftsmen and women, even when their work showed a high degree of originality and individuality. The printmaker Shiko Munakata, for example, became very famous and successful, his woodblock prints fitting comfortably alongside European expressionism, but his work is nevertheless included in the museum Yanagi founded, the mingeikan, the Museum of Japanese Folkcrafts.

But if this were not the case, then the work of those anonymous craftsmen and women would stand as nothing but a rebuke to those of us who are makers today; it would simply be an evocation of a lost
Golden Age, a past Utopia. And as Yanagi's writings made clear, he was very aware that the conditions under which the makers of mingei had worked, and were still working, were often harsh and unstable, no timeless rural idyll in any way. Our own conditions are different, and present new problems and opportunities, but the challenge that Yanagi made remains.

Contemporary makers practising studio crafts in the West are much more in the position of the fine artist than the maker of mingei. We rely on carefully constructed and cultivated artistic identities that co-determine our practice as makers, creating boundaries of which we are unaware, or perhaps even regard as axiomatic to our practice. We have lost our innocence, and our work may be the poorer for it.

This challenge is that if we take the crafts seriously, if we accept that a pot made by an anonymous, illiterate and probably exploited artisan might be deeper and more beautiful than almost any sculpture, then how far and in what ways is it helpful or harmful for us as makers to act or be treated as fine artists? How do we honour and live within the traditions of the crafts, both by allowing them to support and sustain us, and contributing to their further evolution?

III

What did Yanagi mean by ‘beauty’? To ignore, or not to take seriously Yanagi’s description of the specific beauty of craft, and its relation to Buddhist practice, is to betray completely the radical project of his thought.

Mention was made above of the tea masters who, from the sixteenth century on, influenced Japanese taste, to the extent that you can describe a Zen ‘style’. You can easily chart the stylistic shifts. But the development of tea was not originally about ‘style’ in any form but a way of seeing the world and a way of acting in it. It was absolutely ‘aesthetic’ in the sense of being about the direct perception of the object through the senses – primarily, of course, the eye and hand. It was absolutely not ‘aesthetic’ if by that we mean ‘what I like and what I don’t like’, or about style, or a ‘world of beauty’ divorced from everyday life.

The tea masters developed their practice in the spirit of Zen Buddhism. The aim of Zen (though the very idea of aim or goal is foreign to Zen) could be said to be simply to see the world as it is, and to ‘act appropriately’, that is to see the world without the layers of conceptualisation, categorising and judging through which we create our identity and sense of self. To step out of the box we label ‘I’. One useful image of meditation is that of muddy sediment settling in a glass of water. When the water is disturbed, the sediment clouds our vision but, as it settles, the water becomes clear.

The tea masters were looking for objects they could use in the tea ceremony – bowls, caddies, water jars, spoons, flower vases – that had a beauty about them that could not be categorised. A beauty that did not depend on costly or rare materials, on age or newness, on the virtuosity or hours of labour of the maker, or on their reputation. A beauty beyond the normal distinctions between beauty and ugliness. A bowl like this could become a fitting part of the active meditation that the tea ceremony should be. It was this beauty that Yanagi found in the objects he brought under the banner of mingei.

So, to avoid misunderstanding: Yanagi’s argument around the mingei, the ‘people’s crafts’, was in the first place about looking and using, about perceiving and acting. In recognising and writing about finding this beauty in the works made by common people rather than great artists – or even great artisans – there would inevitably be implications that were social, economic, political and philosophical. But primarily it is a recognition of a particular quality of practical beauty.

The ‘unknown craftsmen’ – the unnamed men and women who created these beautiful things – were by and large uneducated and poorly rewarded. But the tea masters who had appreciated their work, like Yanagi himself, were highly educated sophisticates, with many resources at their disposal. They used the particular beauty of these objects to refine their senses, to see the world as it is more clearly through direct perception. This is a hard and long practice, in fact it is interminable, with no end in sight. It’s a process, a sophisticated striving towards simplicity.

Yanagi felt that the contemporary artist is in a similar position to the tea master or Zen student. Needing to get ‘out of the box’ of knowledge, taste, opinion, career, identity, of self-expression, to move closer to the position of the makers of mingei.

IV

The influence of Zen Buddhism in Japan is well known, if still poorly understood in the West; the
most popular forms of Buddhism in Japan, the Pure Land Schools, and in particular Shin Buddhism, have barely been heard of. If Zen was influential within the nobility and the merchant classes, Shin became the practice of the poor.

Within the tradition of Shin stand the figures of the ‘myokonin’, the poor, ill-educated, naive followers whose great faith in the Buddha brings them eventually to a deeper spiritual understanding than the trained priests who are their teachers. Such a one from the last century was Saichi, a wooden clog-maker, a maker of mingei, unusual only in that he wrote down his thoughts as he worked on the long wood-shavings produced in his workshop, keeping up a spiritual journal in this way for over thirty years.

Saichi could represent all those makers of mingei. Shin followers recognise their own limitations, their own endless fallibility, and place their reliance on a power beyond themselves, personified as the uddha Amida. Yanagi argues that this is exactly analogous to the makers of mingei’s faith in their craft, their own tradition, to overcome their personal limitations. ‘True entrusting’ is one translation of this attitude. True entrusting for the maker involves a confidence in the tradition within which one works, combined with a humility about one’s own abilities, which is the opposite of a pride in one’s ‘self’.

So Yanagi is offering a choice of two complementary strategies: fine artists can choose to question their own identity, their own sense of self, as do diligent Zen students striving to cut through their personal perspective to see reality as it is. Makers of mingei, like the myokonin, rely on humble trust to overcome their personal limitations. An example, that perhaps has something of both: when asked why he was constructing his vast multi-chambered hillside kiln, the potter Shoji Hamada answered that he wanted less control over the firing process, trusting that this would produce more interesting results.

I think it is inescapable, unless we deliberately shut our eyes to it, that Yanagi is arguing that craft is capable of being much more than the making of useful things or things that are nice to look at. It is capable of being, and for much of its history has been, a deep spiritual practice, if by spiritual we don’t mean otherworldly, but the process of being and acting in this very world, the here and now. I believe strongly that this needs saying, and needs repeating in today’s world. To be clear, this is absolutely not to make the absurd suggestion that there is some spiritual essence of craft; ‘craft’ is not a thing at all, just a label we can use, it is always what we make it. But making in ways we can call craft clearly has the potential for a real and specific spiritual depth, or you could simply call it human depth. As makers, as viewers and users, as human beings, craft can help us get ‘out of the box’ of our preconceptions and fixations, and see and feel in new ways.

Equally though, there is no prescription for this. As a maker, like the myokonin, I have to accept that I’m deluded through and through. I like to think that there is an ‘I’ that is in control of my work, who is the author or lordly artist of it. The reality is somewhat different. I misunderstand what I’m doing, vanish down blind alleys, value the worthless elements in my work. I rely on a world I didn’t create to provide me with all I need: tools developed over thousands of years, hands evolved over millions of years, and a raw material, wood, evolved over hundreds of millions, on a small rock in a backwater of a minor galaxy. Without all of this I’m nothing. The myokonins’ answer to this is gratitude for what is given, and openness in accepting what is offered.

As a contemporary maker whose work provides some kind of living, I find that my livelihood depends exactly on using my training and imagination to develop an artistic personality, a ‘self’ which is the apparent sovereign of a body of work, an oeuvre, distinguishable from that of other makers. The work I make has to be always ‘new’, but still identifiably ‘mine’, in order to be understood and appreciated by my audience. But I don’t even get to construct this ‘self’, because in part it’s always constructed for me by galleries, curators, journalists and collectors, other makers ... I am only too aware of some of the limitations this places on me, and certainly entirely ignorant of others.

But this artistic self, no more than any other aspect of my ‘personality’, is never really fixed or consistent, and circumstances, the conditions under which work is made, can cause radical shifts that challenge who we think we are and how we work.

This summer I and my full-time collaborator, Gaynor Dowling, were lucky enough to be Resident Fellows at the Center for Art in Wood, in Philadelphia. For a full-time maker, the chance to make work away from commercial pressure for two whole months is wonderful, and the only brief was to ‘do something different’. We did. It was a real chance to question every aspect of how we work, and to let go of our
own and other people’s expectations of us and our work. We had originally applied and been selected for this residency several years ago, but were unable to take up the offer or family reasons. In retrospect, this actually had a very positive effect on us, bringing us to abandon self-imposed limitations. Allowing myself, for example, to have the option of working with templates and making simple jigs has been a revelation. It sounds stupidly simple, but this is the kind of decision from which dramatic change can be made.

We chose, inadvertently perhaps, to set ourselves a specific problem, which would transform what we make. That our heavy and (literally) solid vessels should now contain, if nothing else, space and light. They would acquire interiors. Gaynor’s training was in textiles and being able to use this within our collaborative work has been a long-time aspiration. So the obvious choice for us was to use stitch as a way of joining wood elements that might or might not be carved. It quickly became clear that we would not be able to find the large sections of seasoned hardwood we had always used at home. So we began to use plywood boards and veneer, not because we had chosen them, but because they were there, and in this sense chose us. We had no idea that this would lead us to using these (for us) new and unlikely materials for their structural properties, the different ways of using their tension itself as a way of shaping. Suddenly (and it did seem very sudden) our heavy and very earthy work became light as a feather, found wings, and took flight.

So we have changed our relationship to ‘woodwork’, and benefitted. The surprising conclusion of the residency is to see how easy it is, when you change the working conditions and context, for radically different work to appear. We have a certain range of skills and experience, but those can manifest themselves in infinitely varied forms, depending solely on the conditions. We have returned, I think, with different selves and a different way of working within our tradition.

And of course collaboration itself is always a challenge to self … are we one or are we two? This came up several times during the residency, and of course the answer is always, in good Zen terms, not one, not two ...

This residency was for us a chance to challenge our own and others’ assumptions about our selves both as people and as makers, of course you can’t really separate the two. It will take time to see what effect this has, what we think of our new work as it develops, and what others think of the changes in it and in us. This is, in the sense I have been talking about, practical spiritual work, the problem of how to make, and who it is who is making, anyway? Nothing special.

VI
There is no real conclusion to this paper … just more questions. Would Yanagi have agreed with my argument, or have recognised my image of his writing? I really can’t say, and that’s not really the point. His clear positions on the potential value of craft making as spiritual work, and the complexity of making valid work in modern society still stand and, a few worthy platitudes apart, are still largely unrecognised. Beyond that, my reading of him is a response from the workbench, a maker’s grateful thanks for the questions that still confront him in each day’s work.

Note
1. The Unknown Craftsman is a series of Yanagi’s essays and lectures assembled, translated and edited by Bernard Leach. The clearest statement of the argument is in the lecture ‘The Buddhist idea of beauty’, though Yanagi’s style is evocative and descriptive rather than analytic. The Suzuki book is a transcript of a series of lectures on Shin Buddhism given late in life by a Zen Buddhist who had grown up in a Shin community, and show the point at which Zen and Shin converge, and implicitly perhaps also where the mingei maker and the fine artist might meet.

References
The Center for Art in Wood website: www.centerforartinwood.org/
The blog for the Philadelphia Residency: http://internationalturningexchange.wordpress.com
Crafting with Digital Technologies

Convened by Peter Oakley, Research Leader, the School of Material, Royal College of Art.

In recent years digital deposition technologies have begun to colonise manufacturing accompanied by reports on how they will disrupt long-established methods of making: moreover, that these technologies could soon be present in every home enabling ‘prosumers’ to create bespoke objects on a whim. While it remains unclear whether digital manufacturing will lead to a utopia of instant making for all, or a further concentration of production in the hands of specialists, new communities of digital makers are assembling around the sharing of software and equipment. This workshop was convened to explore the phenomenon of digital manufacturing from a crafting perspective and to consider its impact today and for the future.
Peter Oakley

Royal College of Art

Crafting with Digital Technologies: issues in practice

Introduction

The workshop Crafting with digital Technologies took place in September 2013, as part of the Making Futures 3 conference. The following paper reflects on the development of that workshop, and the context it was convened in, in order to discuss why digital crafting is a subject worthy of particular investigation. Through a presentation of the rationale behind the workshop’s scope, this paper presents an outline of what the author sees as the current social trajectory of digitally-aided manufacturing technologies. It will also show how the workshop led to the identification of interesting commonalities which suggest further avenues for research across the range of digital manufacturing technologies.

Why Digital Crafting?

As with any academic event, one of the first tasks faced by the organisers of the workshops in Making Futures 3 was coming up with a relevant working title and an outline that encompassed the central idea behind the session, whilst also enticing potential participants. In this case the result: Crafting with Digital Technologies, could be claimed to be a success; the session attracted exactly the type, quality and range of submitted papers hoped for. Such an outcome was not guaranteed. Both the key terms employed – crafting and digital technologies – were nebulous in nature and open to different interpretations. Perhaps we were fortunate in running the workshop at a time when a body of coherent high profile manufacturing technologies, but the practitioners concerned were also recognising there was something distinctive about what they were doing, and, moreover, that they might gain something from trying to define this distinctiveness with others in the same situation. We were not the only people to notice these trends; the Institute of Making (based at University College London) convened a 3D Printing workshop in October 2013 to discuss some of the same issues. We were, however, the only group who chose to create the ideological space the conference ended up providing.

Which type of craft?

Electing the word craft in the title would always carry a risk of misinterpretation. As most readers will already know, the term has been used more often to describe a small group of defined activities and their outcomes than a particular approach to making. This restricted activity and outcomes approach was a key feature of the Arts and Crafts movement. Its leading lights assumed the mantle of arbiters, selecting the making practices that could be determined worthy of the appellation Craft. As time went on, this list became ever more exclusive (Livingstone 2005). For Arts and Crafts adherents, the selected activities carried a strong moral dimension; describing a practice as Craft, or claiming true appreciation of the Craft values the material results embodied, increasingly became shorthand for a particular way of being spiritually as much as a means of making. This perhaps reached its most coherent manifestation in Bernard Leach’s highly successful A Potter’s Book (1940), which could be considered as much a lifestyle guide as a workshop manual.

A similar approach - constructing a definition from a combination of materials and methods - has also underpinned more recent definitions. Peter Dormer (implicitly) and Greenhalgh (explicitly) chose to define contemporary Craft as a group of material-based disciplines sanctified by twentieth-century conventions (Dormer 1997; Greenhalgh 2002). In his evocation of Contemporary Craft practice as a Salon de Refusé, Dormer can also be seen as an inheritor of Arts and Crafts moral posturing. Though this valorisation may have been reassuring to the practitioners that were cannonised by these commentators, the underlying a-priori definitions being deployed (which were based on the apparently sanctified material and manufacturing methods) denied the possibility of any robust critical analysis or debate about the role of craft in the contemporary world. The result of this ossification was pop-up ‘alternative’ craft apppellations such as Stitch ‘n Bitch (Minahan and Cox 2007). An emphasis on the subversive and social dimensions to some making practices threw into sharp relief the staid conventions of mainstream Contemporary Craft.
In its sanctification of a limited group of manual practices and consequent inherent denigration of mechanisation, the Contemporary Craft approach could be seen as retaining another aspect of the Arts and Crafts movement: a rearguard action against the triumph of the machine and machine-made products.

As early as the 1960s attempts were made to contest this approach. In *The Nature and Art of Workmanship* (1968), David Pye not only took issue with the adoration of wobbly furniture promoted by Ruskin, he also fundamentally undermined the idea that the machine was the inevitable enemy of good craftsmanship. However, this perspective – that craftsmanship describes an approach to work, not a specific type of practice – has only recently gained a wider audience. The highest profile advocate of this school – Richard Sennett – began his book *The Craftsman* by painting word pictures of the carpenter, a laboratory technician and a musician at work (Sennett 2008). Sennett attributed the same potential craft sensibility to all makers (or re-makers and repairers) of all manner of tangible and intangible objects, including music, computer code and the human body.

Sennett’s argument has a clear overlap with other writers, including Crawford (2009) and Gauntlett (2011). In all these writers’ works there exists an idealism of dignity in labour and meaningful making. Rather than rail at the machine, they instead target the social forces that lead to the denigration of focusing on a making task for its own sake. The lack of any specification about what is being made, in order to prioritize this approach to making, does carry dangers. In its emphasis on inclusivity in order to acknowledge commonality, the craft-as-approach perspective risks ignoring possible fundamental differences between schools of practitioners (in terms of actions or beliefs) or underplaying unique situations within individual manufacturing disciplines. But it does have the merit of allowing social analysts (and I include here all those who want to consider their own making practices) the opportunity of being more reflective about their own engagement with making by considering practice and products in a new and less elitist way.

In the Crafting with Digital Technologies workshop the aim was to tend towards the idea of craft-as-approach, following Sennett et al., rather than rely on the cannon of disciplines preferred by Dormer and Greenhalgh. The only limitation was that case studies should be able to present practice in terms of a physical product or an examination of those making a physical product. This meant contributions were accepted from architects, fine artists and industrial fashion designers, as well as glass workers, ceramicists and jewellers. It also offered the opportunity to hear from the ethnographers of digital crafters.

**Welcome to the New Age of Mechanical Reproduction**

It is only in the last two decades that we have seen the same level of technological upheaval as that faced by writers such as Ruskin and Morris, an experience that coloured their views and fed through into their writing. Though steam engines, mechanical looms and mechanised lathes had existed for decades within specialist environments, it was during the mid-nineteenth century these spectacular and challenging objects began to colonise public environments, with events such as the Great Exhibition and the expansion of the railways acting as bridgeheads. The increasingly rapid proliferation of mechanical power in the wider world during the nineteenth century must have been astounding to witness.

Similarly, though computers are not a new technology, until the last decade of the twentieth century they were confined and treated as specialised equipment. Many people whose day is now dominated by the opportunities and demands of the laptop (me included) began our working lives in computer-bereft factories, laboratories and offices. In comparison with digitally-controlled apparatus, in most cases pre-digital automation was a somewhat rudimentary and unreliable affair that still needed careful monitoring. Machines were powerful and accurate but not smart. During the intervening decades, digital instruments and machines have suddenly appeared in place after place, situation after situation. They have either profoundly changed the nature of the work being done, or destroyed specific types of work – such as the typing pool – entirely.

In manufacturing, digitalisation has appeared in different forms. Sometimes, as with lathing, the machinery has hybridized: a computer-operated lathe looks in part very similar to a manually-operated one. It is only the large control box bolted on to the end or side of the machine and the absence of the handles needed by the operator to guide the cutting head that outwardly proclaims this is a machine of the digital age. In other situations, such as mechanical assembly lines, entirely new objects, including the robot arm, have come into being. But it has been the manifestation of a supposedly entirely new means of producing objects – the 3D printer – that...
has been the digital tipping point. 3D printers, it is now being claimed, will revolutionise manufacturing and usher in a new era of prosperity, if the anarchy that 3D printed guns will supposedly bring can be successfully averted.

Journalists’ claims that 3D printing is a novel technology are, however, disingenuous. The process - creating a physical form by adding layers of material - has been used by digitally controlled machines for decades. But until recently the objects being produced were conceptualised as models, masters or prototypes rather than end products; the process was initially christened ‘rapid prototyping’ (Küchler and Oakley 2013). I first encountered this type of rapid prototyping machine that made models out of wax in Birmingham’s Jewellery Quarter over a decade ago, and they were not new then.

What has happened in the interim is that the two main features of these machines: the digital software that defines the form and the methods of physically generating the object, have both been dramatically improved in terms of quality and range. Rather than being restricted to producing delicate wax or plastic objects, it is now possible (and financially viable) to 3D print a range of durable plastics and resins, ceramic, high-carat gold or titanium alloy. However, 3D printers that make objects from metal usually use laser sintering: the object is built by a selection, not a deposition, process. Resin printers do something similar, using lasers to selectively solidify parts of the bath of liquid resin. Rather than being a single manufacturing process, the term 3D printing actually covers a loose coalition of technologies. The only unifying factor is that every one of these technologies has proved amenable to utilisation by code generated from the same type of software.

Differentiation does not only surface in terms of type of process. Last October, Professor Richard Hague, in his lecture on 3D printing for the Institution of Engineering and Technology held at the Royal Institution, proposed that an alternative term - additive manufacturing – should be more widely adopted. This would describe situations where ‘serious’ production is involved (e.g. high-tolerance and high-material specification products for industrial or medical use). 3D printing could then be reserved for objects made by hobbyists on poor-tolerance thermoplastic depositing machines.

At the same time as Hague was attempting to reduce the reach of 3D printing, others were intent on expanding it further. Perhaps the most audacious example was the developer of a low-cost digital knitting machine, who chose to describe this well-established technology as a type of 3D printing.

“This like many 3D printers, Openknit is controlled by an Arduino Leonardo board, and just like a 3D printer it follows instructions from a digital file” (3DPI.TV 2013). This claim stretched the definition of 3D printing to include all object manufacturing process which worked from digital instructions.

The digital manufacturing landscape

I had some previous experience of these ‘other’ technologies with a digital aspect that were now being claimed by some 3D printing acolytes. Often this had come through contact with staff at the Royal College of Art (RCA) who used them in their practice. Amongst those working with textiles, the first round of digitisation was considered to have occurred with the Jacquard Loom; all later innovations were considered as incremental developments of the same technology. In comparison with other disciplines, I found those working with weaving and knitting astonishingly relaxed about the idea of coding; as one tutor explained, the programming aspect is not too far a jump from reading or writing a knitting pattern. Yet the digital knitting machines used by some of the staff could now be programmed to do unexpected and innovative things no hand knitter was likely to attempt. Meanwhile, the print tutor in ceramics had been using digital mapping technology to create surfaces for 3D object with a similar level of formal complexity. In addition, for a restoration project he was creating 3D printed models from scans that were mirror images of antique pieces.

So in order to be inclusive in our call and hopefully draw in this range of experience we chose to adopt the loose term digital technologies. This would allow anyone who felt they could gain from the exchange to take part, whether they considered themselves a member of the new revolution of 3D printing or working in a domain where digital technologies were so well established they seemed unremarkable. This, we anticipated, would avoid the closing down of debate that restrictive a priori definitions would entail.

How Distinctive is Digital Crafting?

Reflecting on this breadth of practice raised an interesting question. How similar are the different manufacturing processes that have a digital component? Or, to put it another way, should we consider digital knitting as comparable to selective sintering of gold alloys and the deposition of plastic
filament or are they fundamentally dissimilar? To go further, perhaps laser cutting, water blasting and designing ceramic transfers using graphics software might also exhibit the same similarities as practices, even if the results look patently different. If we were to follow Plato’s advice and carve nature at its joints in order to construct our categories, we needed to find where in this case the joints really were before wielding the knife.

These questions gave the planning of the workshop its focus. It would become an opportunity for practitioners to present their own experiences of using these technologies or observing or managing them being used by others. Through these presentations, questions asked of the other participants and further discussions as a group, the contributors would be able to situate what they were doing within the digital manufacturing landscape.

By offering this space, the workshop could also begin to address another interesting group of questions. Some of the presenters identified themselves as craftworkers. In most cases their education had taken place in institutions initially set up in order to promote Arts and Crafts ideals. Their craft training had been based around mastering a single type of material, the material they were generally still using in their digital adventures. So was the digital aspect of any real import in terms of their self-identity as makers? In addition, would this mature allegiance trump any possible solidarity with other makers? Other attendees had alternative educational influences, having been trained as designers or architects. Similarly, would these affiliations play a similar role in the way they related others and to the digital technologies they engaged with?

Managing Digital Crafting

For those actually engaged in making objects using any types of tools, digital or otherwise, these questions may seem irrelevant. Practitioners can be excused for a nagging feeling seeking the answers to such questions is a distraction and nothing more than an exercise in semantics. But in the longer term, how activities (and the practitioners who engage in it) become categorized can have an enormous effect on how they are perceived and supported (or not). Ultimately, a definition can nurture or cripple the activities it encompasses, becoming the reason they either thrive or fade into obscurity. It is only after a definition has been widely accepted that practitioners start to find certain avenues are opened or barred. At this point it is a herculean task to dislodge the entrenched notion of perceived limits; these now just seem to be common sense. All too frequently it is this type of common sense that informs the decisions of those who manage the resources for specific projects (and who may have little direct involvement with making per se).

At a previous Making Futures conference I presented a paper that discussed how definitions and practice interacted, in an attempt to uncover some of the practical implications of identifying as a Contemporary Craft practitioner (Oakley 2010). Key to this argument was the role of allegiances: which professional communities did makers believe they belonged to? And how did this affect the way they considered and approached making?

In the case studies there was a consistent factor. Such identities are not the result of the practitioners’ choice. The options available are related to often long-enduring social structures that have a profound influence on the representation of specific social identities and roles. Yet these do drift over time, as well as occasionally undergoing sudden shifts or ruptures in response to specific events. At certain moments, conditions may be right for the appearance of new roles, or the dramatic expansion or reconfiguration of existing ones. In these circumstances a single influential commentator can have a far-reaching and long-lasting impact. As an example, it is worth considering how Leach’s A Potter’s Book (re-)defined craft studio practice for the decades following its publication in 1940.

I believe we are currently experiencing a similar critical period with respect to digital making. 2013 could be claimed to be the year of 3D printing. It was a major task just to keep up with the new developments and attend the key events in one country. As well as Making Futures 3 there were 3D printing workshops at the Institute of Making and the Design Museum, as well as the lecture mentioned earlier at the Royal Institute. These came on top of the usual trade shows and a rash of new product launches.

At the same time, educational institutions (including my own) were grappling with the question of 3D printing provision. In our case, decisions were being made as to how far the institution should embrace and promote 3D printing as a technology or technologies, and where in the institution’s hierarchy it/they should be situated. We were faced with a slew of questions. Should 3D printing be considered an inevitable part of every taught...
Creating a Space for Dialogue

So the issues that were discussed at the workshop are potentially of enormous value to those charged with educating the next generation of makers as well as providing an opportunity for the attendees to reflect on their practice. The identification of some surprising commonalities in that practice — including the continued value of direct material engagement and the need to regularly materialise digital prototypes as objects-in-progress across all the disciplines represented — led to a clearer idea of what digital crafting actually meant for practitioners. The findings were at times at odds with some of the expectations of those promoting 3D printing as a teaching tool.

The presentations also had another thread, which only became apparent when comparing the work shown with that generally produced using 3D printers and reflecting on the comments about programming. The digital crafters were all focused on results, not the process in and of itself. Digital crafting appears to be very much a means to an end rather than just a demonstration of the machine’s technical virtuosity. Instead, results were expected to be innovative and to manifest an idea preconceived by the practitioner.

Conclusion

The Crafting with Digital Technologies workshop was conceived as a space for practitioners and ethnographers to review their own or observed digitally-related practice and reflect on how it related to the other presentations. It adopted a perspective on craft closer to that proposed by Sennett et al. than Contemporary Craft writers. In order not to restrict the types of computer-related making represented, the workshop took the term digital technologies as its subject.

The overarching questions that drove the workshop were: does digital crafting exist as a distinct activity and what common procedures and perspectives...
can we find amongst digital craft practitioners.

Two features emerged: practitioners used the processes of digital technologies for the results, rather than for a love of the process itself. In some cases practitioners even engaged with digital making technologies despite severe reservations regarding their capacity to sufficiently command the digital aspects. The second was that across all the practices represented there was a need to repeatedly re-engage with the physical object prior to the conclusion of making. Our makers felt they could not rely entirely on interaction with the virtual prototype. This led to the production of material tests and trials. The commonality of this behaviour came as a surprise (and in most cases, something of a relief) to the presenters, a fact I attribute to the general mythology of the sufficiency of the virtual design environment. These two aspects show that at the current time digital crafting appears to have a level of commonality across different digital technologies and also retains a strong measure of commonality with more traditional craft making processes. But how far the second is an artefact of the practitioners’ education rather than an inherent aspect of using digital manufacturing technologies remains an open question.

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Roderick Bamford

Crafting the Void: Trans-dimensionality in digital and analogue craft practice

This paper explores aspects of conception, methodology, and meaning associated with digitally-articulated craft. It examines the emergence of an 'abstracted' practice from the void established by the Arts & Crafts movement's dismissal of the 'machine' as a tool of 'non-visceral' predictability, and develops a case for a convergent, trans-dimensional design/craft.

Dialogue centres around two case studies which outline the adaptive use of digital technologies to enable the ideation and crafting of ceramic objects considered impossible to achieve by other means. Analysis of the case studies is followed by discussion of an emergent research trajectory seeking a purely digital ceramics practice, the outcome of which signals a trans-dimensional conceptual framework as the foundation of digitally informed contemporary craft.

The first case study outlines the development of a unique, non-destructive process originated in 2002 at Cone Nine Studios in Australia to translate imagery from one three-dimensional, polychrome glazed porcelain form to another via a combination of Computer Aided Design, 3D printing, photogrammetry, computer-mediated pattern generation, slip casting and screen-printed water slide decals. Case study two recounts a ‘digital bricolage' methodology developed in 2007 to visualise and generate novel ceramic forms from captured sonic data and its intersection with the ‘craft' practices of industrial bone china. Further development and potential of the discoveries are discussed, including the disruption of orthodox making systems, the re-adaption of resulting ‘crafted’ (hacked) technologies for the ceramics manufacturing industry, and the convergence of craft and design strategies to describe a bespoke, hybridised ceramics practice.

A discussion of questions raised through the projects links commercial and aesthetic concerns with technical, legal and ethical issues associated with devolved technologies and practices, particularly those concerned with the democratisation of ideas, technology and making through ‘open source' internet networks. The central discourse emphasises a need for reconsidering the evaluation of meaning arising from an expanded characterisation of ‘craft' under such project conditions, in particular a phenomenological evaluation of hand and machine languages. The paper concludes with a discussion of the character of thinking and problem solving associated with digitally mediated craft practice and points of convergence between craft, design and manufacturing, framed by Malcolm McCullough’s idea of an ‘abstracted’ craft practice operating within the computational medium and the working context of image culture.

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This paper explores the place of abstracted practice in craft – made possible by occupying a void left by the Arts & Crafts movement's disenchantment with the machine – by outlining some recent computational practices, notably in digital visualisation, design, fabrication and materials engineering.

The dialogue addresses the interaction of different media and technologies on craft practices in the studio and the factory through case studies that explore both the imitative and adaptive use of digital technologies to instigate and craft ceramic objects, some considered impossible to achieve by other means. An analysis of case studies accompanies a discussion of an emergent research informing a hybrid ceramics practice, signalling a trans-dimensional conceptual framework as the foundation for a digitally augmented future for craft.

The first case study outlines the development of a unique, non-destructive image capture process used to translate complex imagery from an existing porcelain vase to a new form via a two-dimensional image using digital and analogue ceramic studio techniques. The second recounts a ‘digital bricolage’ methodology used to visualise and generate novel ceramic forms from sonic data via an intersection of ‘craft’ practices and industrial bone china. Analysis of these and other examples leads to a discussion of the disruption of orthodox craft and manufacturing systems, the reappropriation of technologies during exchange between the studio and the factory, and the convergence of craft and design strategies as a bespoke hybridised practice described by the idea of trans-dimensionality.

The central discourse raises questions of place and meaning in an expanded characterisation of craft’s dimensionality, through phenomenological observations of media languages, practices and technologies. The paper concludes with a short discussion of the character of thinking and problem solving associated with digitally mediated craft practice and points to a convergence between craft, design and manufacturing, framed by Malcolm McCullough’s (1996) idea of an ‘abstracted’ craft practice operating in a digitally mediated world.

ReCrafting
What can be made of the renewed recent interest in craft? Whether in art, design, environmental sustainability or the growing ‘maker’s faire’ movement, some of the dirt appears to have washed off. Craft work has recently qualified as award winning conceptual art (Dammann 2005), rekindled experiential perspectives in user-centred design, become a symbol for sustainability through parsimonial reclamation and upcycling of materials, emotional attachment and time, and become abstracted as a metaphor for digital creativity.

This broad coalescence may signal the emergence of a type of ‘trans-dimensionality’ in craft, and perhaps a redefinition of craft’s familiar role in an evolved hierarchy of information/knowledge capital. This paper uses an interpretive examination of craft projects and relevant historical examples to develop the idea of ‘trans-dimensionality’ and how it comes about.

The ‘instrument’ takes a central position in this appraisal. Craft can be defined in relationship to its tools, as they physically extend the capacity of the human body, essential to the translation of cognitive and visceral expression into form. Through tools of various kinds, the labours of craft connect work, time, material and beauty.

Tools of God
Craft has historically seen Satan, rather than God, in the machine. Prior to the arrival of industrial machines, the pages of Diderot and D’Alembert’s 35-volume, ‘Encyclopedia’, (2002 [1751]) were filled with beautifully engraved illustrations of tools used in the making and doing of things. The depictions of craft activities are presented in a visually instructional manner, the ‘makers’ presented along with tools in hand. The authors describe craftworkers from an enlightened perspective, developing rational arguments for
the virtue of their capabilities and achievements creating what McCullough (1996: 12) describes as 'one of the best definitions of craft available'. In the book, countless illustrations help overcome the difficulties of describing the complexities of highly skilled eighteenth-century craft workshops by visually detailing the range of tools and techniques used to produce the finished artifacts (d’Alembert 2009[1751]).

Tools are the physical connection between the hand and material and, by extension, the material interface of process and ideas. Debates concerning both aesthetic and social dimensions of craft and the attributes of craft product quality have persistently addressed the proximity of tool relationships, such as in Volume 1 of Capital, where Marx defines the machine as a tool distant from the body, and describes how power is wrested from craft in the factory: 'In handcrafts and manufacture, the workman makes use of the tool, in the factory, the machine makes use of him' (Marx 1996[1887]: 281).

Ruskin also develops a critical social argument around this reversal, situating it as a euphemism for reduced human freedom and non-artistic endeavour (Ruskin 1892[1853]: 20). While Marx acknowledges machinery's threat to craft and other work (Marx 1996: 285), his other observations differentiate between labour-power in manufacture and the instruments of labour in industry, building the idea of a compounding, connected use of apparatus and automation in complex machine systems. In comparing machine and hand tools, Marx's writing points to an emerging 'machine language' in contrast to that of the hand. For both Ruskin and Marx, the machine is equated with perfection and power, but Marx's observations of it are largely developed within an economic and social framework in Capital, while Ruskin's rebuttal of mechanised perfection is founded upon a belief that it threatens the 'imperfection' of hand work that he sees as valorising human expression.

For Ruskin (p. 32), the best work, beautiful work, is imperfect for two reasons. Firstly because the primacy of the conceptual will always trump the individual's capacity to physically create it, and secondly for a moral truth drawn from imperfection embodied in the nature of existence, an 'aesthetic' of the natural world that is constantly in a state of flux. Ruskin renders the imperfect object more valuable than the concept it could embody, privileging spirited practice over a more intellectual or abstracted craft that is characterised by work made to a considered or designed plan.

Although visual variations or surface variegation may be acceptable in crafted products, even revered as attributes of the 'hand made', there is rarely a place for such language in Queen's Ware, Wedgwood's Portland Vase or the industrial ceramics legacy it founded. By the time his new Etruria factory was built in the 1770s, Wedgwood had grafted a language of technical and mechanical refinement on to that of his own traditional ceramic craft. The 1789 Portland Vase, Wedgwood's neoclassical imitation of the Barberini glass original was the result of experimentation with new hybrid methods of ceramic production. The vase shape is wheel-thrown by hand, refined on a lathe and the characteristic bas relief cameo scenes applied by hand, using moulded components. Wedgwood's approach leveraged highly skilled operators working with both handcraft and machine processes informed by scientific method, a strategic synchronisation that created new standards in everyday wares and positioned manufactured product as 'art' in the Victorian marketplace. Conceptually, the transitional design and manufacturing model Wedgwood established has changed little since that time.

During the 1950s, Norman Lindsay, a renowned Australian artist, extended his prolific oeuvre to include three vases painted with scenes of Balinese women depicted in a variety of suggestive poses. In 2002, the National Trust of Australia approached Roderick Bamford to assess one of the vases which had badly deteriorated, with a view to its conservation. The paintings, executed on porcelain of German origin apparently purchased from Sydney department stores, were painted in a direct, confident, and highly skilled manner on the difficult glassy surface. A feasibility study for the project revealed that the painting comprised a mixture of pigment types, including low temperature metal enamels and oil-based enamel paints, forming an attractive but technically flawed, impermanent surface. Incompatibilities between painted and glazed surfaces resulted in poor adhesion and peeling, creating conditions which precluded the possibility of successful conservation. Consequently, alternative solutions were discussed, and a decision taken to develop a rendition of the original vase, with developmental research costs off-set against the commercial sales of an edition of 300 vases (Bamford 2013a: 2). The research investigations led to the development of a unique process enabling the transfer of imagery from the original vase surface to a newly created vase via a two-dimensional print (see Figure 1). The solution employed Computer Aided Design, 3D printing, photogrammetry, computer...
mediated pattern generation, slip casting and screen printed water slide decals. Following the success of the first Linday vase, the re-creation of a second, named ‘Sea Sprites’, was commissioned by the National Trust in 2004. Both vases were created as a limited edition of 300, with the aim to faithfully represent both the quality and the spirit of the original piece. In both editions, vases are hand numbered and accompanied by a Certificate of Authenticity authorised by the copyright holders and trustees, H & E Glad.

Involvement with the Lindsay vase project grew from an interest in using creative strategies to integrate studio and industrial ceramic techniques, in particular the relationship between photographic imagery and ceramic forms. Research led to the consolidation of a novel mapping process for accurately exchanging detailed digital imagery between two- and three-dimensional media, in both virtual and physical form, using the printing process. Although the extent to which trans-dimensional printing may be applied to ceramic form is currently limited by the elasticity of decal required to fit a compound curve, the process was successfully developed for a commercial application in 2004 through a collaboration between Roderick Bamford, the artist Reg Mombassa and the Australian company Manfredi Enterprises. Reg Mombassa’s painting was mapped to a decal and applied to a cup designed by Roderick Bamford. The 1000-piece edition of the cup and saucer set ‘South Coast Cottages’ was manufactured by Monno ceramics in Dhaka, Bangladesh in 2005 and distributed in Australia by Manfredi Enterprises. Examples, exhibited in the 2007 exhibition Smart Works at the Powerhouse Museum, were acquired by the institution. This influential survey exhibition showcased the place and meaning of the ‘handmade’ and ‘industry’ in design and relationships between individuals and partnerships, nationally and internationally.

The third Lindsay vase project, currently underway in the studio, employs advances on the original method. The separate tasks of measuring a form and photographically extracting its surface imagery can now be integrated using a novel white light scanning process using Photoscan software and an SLR digital camera to capture multiple high resolution images of the vase from overlapping viewpoints. The photographs are post processed in Photoscan, where different settings are manipulated to resolve the camera’s lens data allowing the user to arrive at a topologically accurate, three-dimensional computer model with integrated surface imagery (see Figure 2).

Figure 1 Norman Lindsay Vase 1 (2003). Completed reproduction. Cone Nine Studios. 250 x 200 x 200 mm. Porcelain and polychrome decals: Photograph: © Roderick Bamford.

Figure 2 Norman Lindsay Vase 3 (2013). Rendered vase image reconstructed from Photoscan data. Photograph: © Peter Murphy. Digital render Roderick Bamford. 330 x 180 x 180 mm.
Advances in digital colour reproduction technology for ceramic printing prompted its reinvestigation as a way of overcoming a substantial difficulty experienced in the colour screening printing of the first two vases (Bamford 2013a: 4) and, after successful trials, a digital ceramic printer was commissioned from the German company, INEQS. The digital ceramic printer has enabled a more intimate, in-house understanding and refinement of colour and glaze surface qualities delivering both quality and cost advantages to the project.

It is common in ceramic tableware manufacture for large development and tooling investments in shape to be ameliorated over time using surface decorations to refresh the tableware 'line'. Due to the large volume of printing required for this crude 'mass customisation', screen or lithographic methods of printing are likely to remain the status quo.

Digital ceramic printing is the technology of choice in certain applications, due to the speed, quality and flexibility of image making, affording a highly customisable printing, and creative opportunities particular to the digital environment. Examples of the latter include the sensitive representation of photographic qualities, fine tonal graduations and colour blends that are characteristically exploited in graphic design software, all of which are challenging to achieve using indirect ceramic print processes.

These trans-dimensional printed ceramic works are cross-disciplinary by nature, incorporating painting, product design, computer modelling, printing and manufacturing. With the exception of cup manufacture and packaging, all other elements of the project evidence coordinated craft processes. Arguably, the majority of skilled ceramic factory processes employed could also be classified as a type of organised craft.

The difficulties of specialisation are highlighted in craft practices that extend beyond the traditional forms of media and are apparent in the minority representation of multi-media craft. Challenges exist not just in the particularities of specific mediums and their integration in finished work, but in the successful integration of craft language. Such complexity is attenuated through the process of design, whereby abstracted instructions, presented through a common methodology (itself another language), organise and articulate the various different stages of product specification and production. But in the process, design often plays the tune for craft, and tool language is highly simplified.

As we have seen, the abstracted planning and control of design have been criticised as a barrier to the rich, tacit expression resulting from fluid cohesive practices of traditional craft.

**Machines at war**

Whilst imperfection is largely at odds with the aesthetics of manufactured products, simplicity has been a more useful criteria, becoming a mantra of the modern movement that lured artistic intent towards the functional and the conceptual, further separating craft from art and the emerging design. Around the turn of the twentieth century, the ideals of the Arts & Crafts movement were kept alive in Europe and America by two architects with different perspectives on simplification. Frank Lloyd Wright, who designed buildings, furniture and other objects, reinforced the Arts & Crafts movement's integrity of spirit, aligning simplicity with completeness but, unlike the Arts & Crafts followers, he believed the future lay in the machine revealing it (Wright 1901: 87). Here tools were used to reveal the beauty and essence of materials, such as that in the grain of timber.

For Hermann Muthesius, a leading figure in the establishment of the Deutscher Werkbund, precursor to the Bauhaus, machine language characteristically imitated handcraft precedents before finding its own voice. Muthesius saw the greatest authenticity in the forms made possible only by machine technologies, such as the bicycle, but also recognised that an emergence of a new eye to embrace this new purity of a machine aesthetic was necessary (Muthesius 2010: 113). Whilst modernism and its ideology favoured machine aesthetic, this was not an isolated case. The arrival of Dada confronted fascist ideology and the machinery of war. Dada artists legitimised the experimental accident and rejected progressive utility in favour of the contemplation of uselessness.

Benjamin saw the Dadaist collages as ‘instruments of ballistics’ (Benjamin 1968: 229), denying contemplation by confronting the viewer with an art that destroys their aura and our expectations of their materiality and comprehension. Hannah Hoch's photomontage, *Das Schone Madchen/The Beautiful Girl*, 1920, exemplifies how the new method satirically juxtaposed relationships of gender, industry and power politics within the hybrid cybernetic imagery. It slices viewers’ ideas of how things really are.

The work of artists such as John Heartfield later developed the technique as powerful forms of graphic design propaganda.
Benjamin's comments ring true in marking Dada as a turning point in the way we might look at craft. In exploding the requirement for holistic perception of artefacts based on a continuity, Dada opened new possibilities for understanding and creating art, design and craft that remain critically important almost a century later, particularly in digital culture. The characteristic cut and paste collages opened a highly effective abstracted route for combining conceptual and visual thinking in the art and design fields, a procedural precursor for the crafting of postmodernism.

Cut, paste and morph enabled the association of ideas, materials and gestures from differing sources in comparative and combinative ways, a structural framework that would later become a metaphor for both the digital interface and architecture in contemporary computational environments.

The accelerating evolution and distribution of computers in the 1980s and 1990s saw the proliferation of inexpensive computer workstations running a range of graphic design, moving image, animation and 3D modelling /CAD software. Desktop publishing and the arrival of the internet accelerated the penetration of digital information technologies and the widespread use of digital languages across a growing array of machines began. Professionals could explore software used in other disciplines as well as their own, and adapt useful features to their own needs, for example in the adoption of graphic visualisation software by architects and the use of 3D modelling programs by animators. The cross-fertilisation of ideas between professionals and the subsequent response of software developers gave rise to a hybridity of both tools and practices.

**Collected fragments**

The emergence of accessible digital fabrication in the 1990s, such as rapid prototyping, have enabled physical objects to be fabricated from abstract three-dimensional models drawn in computer programs. Following positive encounters with the technology as a communication tool for product design, I began a series of experimental projects exploring the use of rapid prototyping and 3D printing in the crafting of ceramics. Sonic Loop, a slip cast porcelain basket, was initially conceived as a response to the procedural adoption of digital technologies in mass production, where their impact on object ‘meaning’ remains largely unexamined. However, initial explorations revealed more interesting possibilities to discover how the technologies could facilitate the translation of ‘felt’ experience into tangible, physical forms. Using digital sensing, prototyping and fabrication technologies, the project explored the idea that a song could be embodied in ceramic form. Sonic information from an oscilloscope was translated into digital data and reconfigured as a three-dimensional wave pattern, swept to shape a sinuous ribbed form. Its dynamics were manipulated to configure the ribbon-like basket with properties that would allow eventual ceramic fabrication using studio tools and methods. To physically realise the form, a rapid prototype of the primary tessellating geometric element was 3D printed, recast to create fine plaster copies that were subsequently assembled into the final working prototype. Plaster moulding technologies complete the transformation of gestural and musical intentions into physical form via the slip casting process.

Taking care to avoid warping during the drying stage, foam cradles are used for support, replaced by a slip cast refractory cradle (setter) which supports the object through the firing, shrinking at exactly the same rate to ensure the object holds its form. This support system was adapted from the Bone China manufacturing processes where setters are similarly used to prevent the deformation of pyroplastic clay. This strong visual dynamic of this visually simple, yet complex work defies orthodox ceramic archetypes, appearing as a rhythmic suggestion of harmonic frequency, yet it complies with the requirements of a functioning container able to secure a range of objects from the scale of an egg to a pineapple.

The visible tension in Sonic Loop is expressed through material uncertainty (how could this be porcelain) and additional unexpected qualities, for example, the strange ‘un-ceramic’ flexibility of the shape and the resonant musical tone it emits when struck. Research for this project was funded through an Australia Council Special Projects Grant, MMM, in 2005, and the works were developed in collaboration with Australian companies Petch Printing and Arptech. Sonic Loop was selected for exhibition at the Australian Pavilion at Expo 2010, Shanghai, and acquired for the permanent Collection of the Today Museum in Beijing later that year (see Figure 3).
Sonic Loop explores a hybrid conceptual territory between virtual and tangible form, mapping unseen musical sound onto three-dimensional coordinate space, then making it visible in the ceramic dimension. In doing so, it suggests a model for trans-dimensionality in craft, adopting collage strategies typical of the digital environment. By making the ‘heard’ tangibly physical, Sonic Loop creates a new sensorial identity, evidencing a hybrid convergence of the natural and technological relationships continually negotiated in contemporary society.

‘Collage’ has become a paradigmatic computer design methodology, typically expressed since the 1970s as remix culture (Manovich 2007: 7) where ‘pure’ media works such as music are not only recombined within their own genre but across other common digital computer mediums such as film, typography, graphic design and animation. Despite the origin of ‘chance’ in remixing, the critic and academic Lev Manovich suggests that a crafting of its hybridity does occur, through ‘fundamental techniques, working methods, and ways of representation and expression’.

The extent and cultural importance of ‘remix culture’ expand beyond the computer and internet to embody much of contemporary cultural practice. Manovich extends the notion of hybridity to a ‘deep remixing’ of previously separate media techniques and media languages. Although being situated predominantly in sonic, lens and screen based practices, the inherent mutability of underlying binary data suggests that digital media open architecture creates a real possibility for hybridity to cross dimensional boundaries.

Two signatures in particular emerge from the space of hybrid methods. The first is the effect of continuity reflected by Muthesius, where the regular use of affordable, imitative software tools creates a fake representation of the montage, such as can be found in the cheapest junk mail folder, that exploits bitmapped imagery and fonts habitually harvested from commercial software clip art. The second, more innovative signature is one that is difficult to visually capture, but emerges from a practiced knowledge of design software applied in more critical ways. Without the embodied ‘nuance’ of variation arising from craft processes, the latter is not critical. Both analogue and digital machines can operate in an environment of invariable, pre-coded possibilities. For analogue machines, this condition is usually commensurate with its design. But for digital machines, with their embedded and connected computers, it is just a logical starting point for variation due to the array of possibilities which can be manually changed by a user through software or mapped using an algorithmic application of known processes.

The first 3D printers, conceived by Chuck Hull and 3D systems in the 1980s, were conceived as industrial tools with the logic of an analogue machine. However it was the experimental, hybrid approach to exploring software and hardware possibilities in the open source community that expanded its accessibility and applications (Bamford 2013b: 61). ‘Reprap’ 3D printers exemplify the type of remixing that can foster trans-dimensional activities, particularly in craft. Members of large creative online communities and through software tools creates a fake representation of the montage, such as can be found in the cheapest junk mail folder, that exploits bitmapped imagery and fonts habitually harvested from commercial software clip art. The second, more innovative signature is one that is difficult to visually capture, but emerges from a practiced knowledge of design software applied in more critical ways. Without the embodied ‘nuance’ of variation arising from craft processes, the latter is not critical. Both analogue and digital machines can operate in an environment of invariable, pre-coded possibilities. For analogue machines, this condition is usually commensurate with its design. But for digital machines, with their embedded and connected computers, it is just a logical starting point for variation due to the array of possibilities which can be manually changed by a user through software or mapped using an algorithmic application of known processes.

3D printers (open source machines in particular) offer a route for digital information to escape its two- and four-dimensional frameworks and, in doing so, connect the three-dimensional sphere. In the context of the networked world, it becomes a model for the trans-dimensional tool. Behind these simple Cartesian robotic structures sits a mutable digital environment in which data can be captured, mixed, processed, processed by tools (in different sequences) and output in various ways. It is tempting to think that the 3D printer may be to artefacts what the Gutenberg press was to publishing or the smartphone/tablet to communication.
One way of thinking about dimensionality in craft is to consider what McCullough calls the ‘notional density of media’ (McCullough 1996: 211). Historically, the physical dimensions of craft are commonly defined by a particular medium and a relatively simple framework of hand tools and processes. This complexity, particularly prevalent in high technology, clouds the difference between the tool and the medium, but he is optimistic that ‘under skilled practice, even these tools become transparent, and a sense of medium emerges’ (p. 194).

This observation highlights a challenge in computational design and digital fabrication to digest the fundamental intimacies of craft. The haptic sensitivity experienced in the operation of complex machine tools cannot easily match the resistance of media felt by a bare hand or through a simple tool. However, when comprehending the link between material structures and the residual appearance of forces acting on them, we can also gain a visible sense of a medium. A good example of this relationship arises in 3D computer modelling, where the number of points or knots on a nurbs curve can be equated with a particular curvature that is comparably achieved by applying finger pressure at particular points to a sheet of clay. The knowledge required to make this comparison is tacit, gained over countless hours spent with clay and a computer mouse. In the computing environment, the mediation of action by material is more crudely, for example through haptic feedback devices, or indirectly implemented; nevertheless, it can be effective.

But what occurs when the familiar properties of medium change?

The shape of mineral structures in clay determine a range of finished properties, including plasticity, shrinkage, strength, colour and density. Highly absorbent, curled montmorillonitic plates form clays which are too sticky to be easily formed and crack readily upon drying, yet they are useful in small amounts to suspend pigments and in makeup. The upcycled ceramic tableware developed by the GL21 organisation in Japan has been engineered to include 50 per cent of reused tableware from households and dining halls, yet perform well in standard tableware production processes. The recycled clay body fires at a lower temperature and is stronger than a clay made of virgin materials. Recent technical refinements use up to 70 per cent of recycled ceramic in the clay body; however, the subsequent reduction in plasticity will require new manufacturing methods to process it into tableware items. In 2010, inspired by conversations on the issue with a researcher at the Gifu Institute, Yoshikasu Hasegawa, I developed a dispensing head for a reprap 3D printer capable of directly printing a ceramic paste that simulated the newer Japanese recycled body. Despite conceptual success, any ideas I may have had for industry applications were a long way off. Josiah Wedgwood had far more success with experimental scientific methods, systematically testing hundreds of clay mineral and pigment formulations in arriving at the formula for Jasper and Basalt ware. It established a new aesthetic direction in the ceramic medium that spoke of the refined medium and its required new tools, such as the turning lathe, adapted from wood working, to work the clay body. My own experiments did reveal a language of contours that recalled miniature clay coiling, and also a similarity to the layered clay nests extruded by the mud wasp’s abdomen. These ideas were developed in a range exploring the language of contours characteristic of the process Fuddling Manoeuvre, a series of 3D printed and cast works for the Australian touring exhibition Hyperclay (2011–14), including the work Fuddling Manoeuvre (see Figure 4), created by purely digital workflows using 3D scanning and direct 3D printing.

Figure 4 Fuddling Manoeuvre. Roderick Bamford (2011). 3D printed clay & glaze waste, 140 x 100 x 100 mm. Photograph: © Ian Hobbs.

Since the IBM logo was written with Xenon atoms, the artificiality of materials has garnered increasing interest as the focus on structure and its manipulation...
becomes ever smaller. Neither the execution of Feynman's experiment nor a scientific proof of the event could be established without electron microscopy. Such changes to our understanding of materiality bring into focus the relationships between media and medium that form another dimensionality for craft in the abstracted sense. It also announces a privileging of the visual over other human senses.

By categorically dimensioning a medium into its material structures, tools, skills and procedures, a componentry emerges which is akin to the metaphor of ‘bits and atoms’, the name for MIT’s centre for ‘creating almost anything’. In Neil Gershenfeld’s reductive model (2012), bits are analogous to the tool, the atoms to material. The questions of skill and procedure come later and the notion of ‘medium’ becomes foggy. Yet, perhaps ironically, the centre for Bits and Atoms has become a type of ‘stem’ for new craft, spawning ‘Fab Labs’ across the world where ‘makers’ explore a multidimensional array of digital and analogue processes, particularly in digital fabrication.

Remix culture is now clearly impacting on the object through an abstracted, formulated materiality. The variety of 3D print media is expanding beyond a fantastic array of properties engineered for style, function and performance, to include organic media for 3D printing of living tissue. Although Gershenfeld claims that digitisation has existed since the age of the ribosome (p. 49), it remains difficult to comprehend that digitally created matter, with its array of distributed form and mutability of content, is anything but a new or newly imagined phenomena.

All craft and design objects (even hybrid ones) reflect conditions in technological society where everyday reality is increasingly interpreted through technological artefacts. The view from an airplane window alters our ground-based interpretation of the environment, the camera and the screen bring to us images unavailable to the naked eye. Other images are digitally manipulated for particular purposes. The latter type of image exemplifies what Manovich calls the ‘invisible effect’ (Manovich 2007: 1) of deep remixing where authentic representational origins dissolve. Smart phones mediate the ways people, objects and events connect, and online shopping decisions are based on a set of sensory experiences (currently) limited to sight and sound.

For Don Ihde, such conditions describe a reality ‘prepared’ by instruments in order to be studied by scientists (Ihde 1999: 150). His philosophical argument for an expanded ‘hermeneutics’ provides a useful framework for contextualising the language of technological objects and their instrumentality that increasingly mediates day-to-day experience. His hermeneutics reaches across the traditional humanities/science boundaries, removing one barrier to a phenomenological discussion of ‘instruments’ and their impact on human perception potentially reinvigorating a space for the serious study of conditions that could be described as trans-dimensional, or at least the more personal relationships between body, mind, machine and the objects they conspire to create.

**Mixed blessings**

This paper has introduced some of the ways digital technologies may be blended with analogue processes to develop the idea of trans-dimensionality in craft, but any inference that digital processes are a panacea for craft would be far from true. Whilst the examples represent encouraging explorations into the potential of digital technologies, they do so on the back of challenges that address current tensions between the craft, industrial processes and the desire to solve problems or express particular ideas.

In exposing some limitations and opportunities of both new and old technologies, the concept of trans-dimensionality may contribute something to Adamson’s (2007) idea of ‘thinking through craft’ as a creative, problem-solving tool. Akin to the Deleuzeian interpretation of folding in the Baroque, and the agency in objects described by Latour, the character of trans-dimensionality in craft could be seen as a consequence of deep remixing, suggesting relational quality associated with its constituents, and how they mix or fold in physical and social ways.

The trajectory leaves open the question of whether the character of craft is expanding or being consumed by the extreme abstraction of deep remixing, but the concluding remark is left for the honourable hand in craft, and its persistence. Through the numerous, time-consuming explorations, computer code barriers and transitional complexities aligning digital and physical materials encountered in the examples discussed, the essential procedural steps needed to be articulated by thinking and acting through hand skills. Perhaps this thinking remains a barrier for craft, but it comes with some comfort knowing that Charles Babbage, ‘founder
of the computer’ experienced difficulties in craft fabrication, not theory or maths (Adamson 2010: 48)!

Notes
1. Notes undertaken at the Wedgewood Museum, Barlaston, 1 October 2013.
2. Observations made at the Norman Lindsay gallery, Springwood, NSW during inspection of the vase and studio, documented in the report to the Norman Lindsay Gallery, November 2002.
4. During the late 1990s, rapid prototypes of tableware designs were used to successfully resolve problems arising from offsho e manufacturers misinterpreting specification drawings.
5. Nurbs: Non Uniform Rational B-Splines, a type of parametric curve commonly used in CAD and 3D modelling.
6. In craft practice, greater variations in material availability, refinement and range of techniques contribute to physical and visual diversity in completed work, regardless of differences in skill levels of the individual craftsperson, the machine operator or designer using computer software.
9. GL21:GreenLife 21 is affiliated with the Gifu Prefectural Ceramics Research Institute, Tajimi, Japan.

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FabLabs, Hackerspaces, Makerspaces: How new creative fields may be redefining social and political relations through and around technology

FabLabs, hackerspaces and makerspaces are multiplying in the world with a common ideal of shared technical know-how. My research draws on anthropology, aesthetics and digital design. I will present an international field survey that explores how the history of those “third places” (tiers-lieux) redefines the field of action of design combined with open source, parametered design, so-called “bottom-up” decentralized innovation within new creative, technological and industrial boundaries that have not, so far, been much theorized. During this first year of my PhD in Aesthetics I conducted an international survey and a comparative analysis of different places and practices.

In the trail of the Maker movement, FabLabs enjoy great media coverage. They are said to be places of self-production representative of the third industrial revolution in which the 3D printer is often hailed as a symbol. There is, to this day, no critical literature about FabLabs, which appears like an un-theorised practice to which respond a number of symptomatic publications of activist promotion. I adopted a direct approach and have conducted a close observation research within several groups with asymmetrical technological knowledge and practices: amateurs, artists, squatters, designers, engineers, architects, students, retired people… I have visited several places in France and abroad: FacLab next to Paris, la Nouvelle Fabrique in Paris, FabLab Barcelona, FabLab Norway, TechShop San Francisco, FabLab Japan Kamakura, FabLab Waag Amsterdam, but also hackerspaces or makerspaces such as /tmp/lab and Blackboxe in Paris, Noisebridge, The Crucible, ACE Monster Toys and Hackermoms in San Francisco.

Having framed this research project, I spent three months in immersion at the FacLab, a FabLab located in the suburbs of Paris since February 2012. I was able to observe mainly initiation sessions to machines: programming of Arduino captors, making of 3D printed things, fixing of various objects, creation of furniture, as well as sewing and cooking. As a common space for users to share and talk with one another, machines gather a community of people. I have documented the verbal interaction around machines, paying particular attention to the way people define them selves and formulate the various steps of their manipulations. Many recordings, interviews and sketches have been collected. Through full integration and participation in the group, I was able to immediately observe practices, techniques as well as modes of organisation: implicit rules, taboos, rituals, values and social facts. Practices of “bricolage” or do it yourself develop among experiments and high/low tech inventions.

These practices, often presented as a new kind of local competition to global industry, are not so much an alternative rather than a place of experiment with an almost artisanal relation to technology linked with a form of creative thinking and doing, hacking like digital “bricolage” (Lévi-Strauss), a sort of “braconnage” or daily poaching (Michel de Certeau) on the fringes of industry and traditional production. A democratisation of the technical sphere is at stake, staging “open machines” (Simondon), that contribute to integrate technology into the field of culture. Machines are not autonomous and the designer or amateur is faced with what appears as a “permanent organiser”, a “living interpreter of machines playing against one another”. A creative field is thus redefined, but also social and political relations to, through and around technology.

makehackfab.tumblr.com
FabLabs, hackerspaces, makerspaces: Between social invention and industrial redefinition

Abstract
FabLabs, hackerspaces and makerspaces are multiplying throughout the world with a common ideal of shared technical know-how. My research draws on anthropology, aesthetics and digital design, based on a one-year international field survey that explores how the history of those ‘third places’ (Oldenburg 1989) redefines the field of action of design combined with open source design within parameters, so-called ‘bottom-up’ decentralized innovation within new creative, technological and industrial boundaries that, so far, have not been much theorized.

The main aim of this paper is to show that these practices, often presented as a new kind of local competition to global industry (Rifkin 2011) are not so much an alternative but rather a place of experiment with an almost artisanal relation to technology, linked to a form of creative thinking and doing, hacking or digital ‘bricolage’ (Lévi-Strauss 1962), a sort of ‘braconnage’ (or illegal poaching) (De Certeau 1980) on the fringes of industry and traditional production. A democratisation of the technical sphere is involved, staging ‘open machines’ (Simondon 1958) that contribute to integrating technology into the field of culture.

By focusing on a few case studies (Noisebridge, FacLab, FabLab MIT Norway), this paper will explore how FabLabs, hackerspaces and makerspaces contribute to a new definition of social and political relations to, through and around technology.

The last section of the paper will examine two other places (La Nouvelle Fabrique and the Paris design school ENSCI – Les Ateliers) to provoke thoughts on the way digital fabrication places are also redefining possible roles for designers involved in classical industrial production.

Introduction
In the wake of the maker movement (Anderson, 2012), FabLabs, hackerspaces and makerspaces enjoy a lot of media coverage. They are said to be places of self-production representative of the third industrial revolution (Markillie 2012) in which 3D printers are often hailed as their symbol. There is currently no critical literature about FabLabs, which appear to represent a form of untheorized practice that has evoked a response from a number of typical publications of activist promotion.

For this paper, my observations are based on a year’s international survey and comparative analysis of different places where I was based and practices that I led over that year. During that time, I adopted a direct approach and conducted close observation research within several groups with asymmetrical technological knowledge and practices: amateurs, artists, squatters, designers, engineers, architects, students, retired people, etc.

I visited several places in France and other countries: FacLab next to Paris, la Nouvelle Fabrique in Paris, FabLab Barcelona, FabLab MIT Norway, TechShop San Francisco, FabLab Japan Kamakura, FabLab Waag Amsterdam, but also hackerspaces or makerspaces such as /tmp/lab and Blackboxe in Paris, Noisebridge, The Crucible, ACE Monster Toys and Hackermoms in San Francisco. During that year, I followed many collective events such as FAB9 in Japan (the international annual meeting for FabLabs), OHM festival (Observe, Hack, Make) in Amsterdam and Maker Faire Rome.

I also spent three months in complete immersion at FacLab, a FabLab located in the suburbs of Paris since February 2012. There, my main observations were initiation sessions on various machines: programming of Arduino captors, making of 3D printed artefacts, fixing of various objects, creation of furniture, as well as sewing and cooking. As a common space for users to share and talk to each other, machines gather round them a community of people.

At FacLab, as well as in all the places that I visited, I documented the verbal interaction around machines, paying particular attention to the way people define themselves and formulate the various steps of their manipulations. I also collected many recordings, interviews and sketches.
Practices of ‘bricolage’ or ‘do it yourself’ (DIY) develop through experiments and high/low tech inventions. Machines are not autonomous and the designers or amateurs who use them appear to be ‘permanent organisers’, ‘living interpreters of machines playing against one another’ (Simondon 1958). Through full integration and participation in the group, I was able to observe at close hand practices and techniques, as well as modes of organisation: implicit rules, taboos, rituals, values and social facts.

‘Participation’ and research

Before presenting my analysis of some places that I visited and where I studied, I will explain the methods that I used while being in the field. As an amateur ethnologist, I conducted empirical research that was, in fact, closely linked to my background as a designer, in places and workshops where the machines, projects and practices are very similar to my own cultural field.

Being in a FabLab – or any hacker/makerspace – is not easy if it’s only to observe without making anything. Some places may have, as a tacit or explicit internal rule, an injunction to ‘participation’, which might be also a way to prevent them from having too many journalists (or researchers) in the workshop. To find my specific place in all these spaces, I have been drawing a lot, experimenting in my own way, spending some time with all the people involved while chatting and discussing informally the makerspace’s habits and values.

Creating my own rules for a ‘participant observation’, drawing appeared to be an activity that allowed me to stay a bit longer in those places (see Figure 1), a way to ‘make’ something while I was sitting next to somebody who was actually indeed making something.

During my field observation, I also created a blog where I uploaded my data, interviews, personal notes on events or visits. This blog (www.makehackfab.tumblr.com), although in French, soon became a source of information for the people I was meeting, my observations infusing with their ideas and thoughts, influencing the reflexive discourse of my own field in a way that I had not anticipated.

Jeanne Favret-Saada is an ethnologist who conducted some research on witchcraft in a rural part of France. After spending many months in the villages where she was observing practices of witchcraft, she explained that at one point she had to ‘believe’ (Favret-Saada 2009), commit and personally engage herself to really understand and experience all the different elements so that she could achieve a deeper insight into what was happening.

As far as my research is concerned and on a very different topic, not only was I asked to ‘participate’ but also to promote the places that I was studying, and produce some critical discourse for them, which sometimes made my position, as a researcher, a bit confused. I accepted it anyway, and took this ‘echo’ effect as an important part of my field observations as well.

Now that I have explained my methods, my main goal is to demonstrate how things proceed in a place where design practices are carried out mainly without designers, on the fringes of industry and traditional production.

Noisebridge: Where anarchy meets new collective rules

For some aspects of my research, I became very interested in a famous hackerspace based in San Francisco, called Noisebridge (see Figures 2 and 3). Every hackerspace has its own rules and I visited many different ones in several countries for my research, but Noisebridge is a very rich example of the new enthusiasm around the maker movement and digital fabrication. For two weeks, I spent many hours at Noisebridge, day and night, trying to understand as much as possible how the place was organised and structured. I observed, participated, talked to some people and spent some time drawing all the things around me. I was able to observe the rituals and implications of the community life, carry out interviews and have informal discussions in the group. I came to Noisebridge with the very basic intention of meeting the hackers there, understanding and analysing what they were making,
and why. Who is hacking, and why are the people there making things?

Figure 2 Noisebridge, May 2013.

Noisebridge opened in 2007 and is based on anarchist philosophy. It's located in the hispanic area of San Francisco, on a lively street next to a small grocery store. It's open 24/7, based on doocracy and consensus and anyone can go there to work and play, night and day. The implications of doocracy are detailed on Noisebridge's wiki with a clear example:

If you want something done, do it, but remember to be considerate to each other when doing so.

The short version:

1. Dick asks around if anyone would feel negatively about the bike shed being pink. No one does.
2. Dick paints the bike shed pink.

The being considerate to each other version:

1. Dick paints the bike shed pink.
2. Jane becomes unhappy about the fact that the bike shed she helped build is now pink.
3. Jane politely engages Dick in discussion about why he thought this was OK. Dick realized that other people he shares the space with have feelings too.
4. Jane and Dick decide to repaint the bike shed blue.

Figure 3 Noisebridge, May 2013.

Noisebridge is like a mirror of society, a place for counterculture where conventional rules are constantly redefined within the limits of the space. It's non-hierarchical, collective and messy. If someone wants something to change here, the idea is simple 'Just do it. Don't ask.' The only rule, apart from not sleeping here, is: 'Be excellent to each other', which applies as a real law for anything. Noisebridge is a very organic place, always being moved around and rearranging itself. The users are constantly discussing rules. This is very obvious on the mailing list, where most of the topics are about daily events and debates in the group. Dos and don'ts and the social negotiations in the place are the main topics mentioned by the people that I interviewed.

Machines and tools are, in the midst of all that, a kind of invisible link that people can use but they are mostly not well taken care of, in the messy spirit of the whole place. This non-hierarchical and self-organized place is a good example of a ‘third place’ as Oldenburg (1989) defines it: it is indeed a democratic place for civic commitment and community building.
It's free, accessible, people come here often, both regular visitors and new ones can be found there any time, and there is a kitchen with food to be shared (see Figure 4).

Noisebridge can also be seen, in many ways, as a ‘heterotopia’ (Foucault 2009[1967]). It's a place where most of the people are somewhat in crisis. On the edge of conventional society, at the margin. Lots of homeless people, punks, retired people come here to find solutions or even shelter. It's a place where different activities and functionalities are put together: cooking, soldering, programming, sewing, reading (see Figure 5). It's a place where time does not count: indeed, you can push the door open at two in the morning and the atmosphere will be roughly the same as if you had come in the middle of the afternoon. Heterotopias are described by Foucault as open but not so open places. Noisebridge is exactly based on that principle: you can come in, but you are not greeted by anybody. People are ‘alone together’ (Turkle 2011), each person is in the midst of others who don’t really care about who is who and the fact that somebody new just came through the door.

Noisebridge is a good example of a hackerspace. It can be defined as a mixed experience, a real physical social experience placed a little apart from the world outside. An interesting point is that when I visited other hackerspaces in the San Francisco Bay area, or even in France, people often both admired and criticised Noisebridge a lot, as an extreme example.

Figure 4 Noisebridge, May 2013.

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Despite that fact, we always find approximately ten or fifteen persons at the same time in the FacLab (see Figure 6), and most of them do not live in the area.

Figure 6 FacLab, March 2013.

FacLab consists of five rooms: the first one uses 3D printers, various objects that have been created here, a big old couch, a huge table with many chairs, coffee machines, a fridge and tea bags. Olivier, the FabManager, is sitting in the corner of the room, behind a desk where a computer has been placed for him to register any new visitor and answer emails.

The second room is a space where many tools can be found, all very carefully organized, with labels and instructions. Several tables are in the middle of the room, and pieces of various objects are lying around in a fair amount of disorder. The third room includes a few machines such as a laser-cutter. On the other side of the corridor is a room for sewing, electronics and soldering. Another big classroom is devoted to 3D printers that are being built here by the users themselves. Some of them are not working, and many 3D printer pieces are spread everywhere on the tables, together with other broken or prototyped objects.

The life of the 'community' here is based on many rituals and shared moments: teaching, meetings, shared meals ... As a place inside an institution but representing other values, FacLab is based on a really strong common life within the users group. In that way, people who come here just to use the laser-cutter for a personal project without participating in the group life are very often considered to be parasites.

FacLab has very strong rules: ‘documenter, participer, partager’ (document, participate, share). When people first come to the Lab they are introduced to what are described as ‘moral conditions’ and everyone is constantly repeating the rules to each other. It appears that behind the obligation to ‘document’ their project online before they can access the tools is in fact a solution to prevent non-participation in the group.

People can share what they want – knowledge, food, time – but they have to be involved in the community in order to respect the FabLab environment. This explains why all the architecture students coming here to use the machines for prototypes are very often asked to leave if they spend too much time on the machines. The community is really mixed: young, old, freelancers, retired people, engineers, etc.
FacLab reveals a kind of non-challenging conception of technology. People are allowed to come and print what they want on the 3D printers just to try it, they can laser cut their names, create small useless stuff. About 90 per cent of the FacLab activity is focused on basic and grassroots initiation to digital fabrication. Some people are using sewing machines, some are growing plants. No judgement is made on what people are making or hacking. FacLab can be described as a kind of open place for any kind of patch-up job.

FabLab MIT Norway: A ‘community center’

FabLab MIT Norway was one of the first official FabLabs (see Figures 8 and 9). I travelled up to the Arctic circle to meet Haakon Karlsen, one of the first local ‘growing inventors’ (Gershenfeld 2005), who were then linked to MIT, to establish the very first FabLab in the world. It’s located in a very rural place, next to a magnificent fjord. The story of FabLab MIT Norway began before 2000. Haakon is an engineer, but also a shepherd and farmer. He was asked by the local government to help find a way to inseminate sheep and reindeer because at that time they were succumbing to many diseases.

Together with local shepherds, he invented an electronic program that measured the temperatures of the female sheep and sent a text message to the shepherd to say that the time had come for their insemination. This led them to consider other local applications and they finally invented, in collaboration with MIT, a ‘sheep phone’ called Electronic Shepherd, a kind of GPS-linked device that was used by the shepherds to know exactly where the sheep were in the mountains, and protect them from dangers such as wolves or avalanches.
This project is one of the examples that Neil Gershenfeld from the Center for Bits and Atoms at MIT depicts in Fab (2005), where he tells the story of the FabLab movement. Following on from the Electronic Shepherd project, FabLab MIT Norway was started up in a huge wooden house filled with high-quality machines all provided by MIT.

Ten years later, when I met Haakon Karlse in May 2013, he told me that ‘FabLabs are more about people than machines’. To him, his FabLab is nowadays more like ‘a community centre in Lyngen’. They have been celebrating a wedding there. People come there to have a cup of coffee, eat dinner or discuss various topics. Haakon Karlse is speaking of ‘social fabrication’, rather than ‘digital fabrication’.

Even though they might be well equipped with machines, some labs are more involved with organising daily activities for their communities rather than serious making. FabLab MIT Norway is the perfect example of this kind of unoficial switch in the project of the FabLabs network: what was intended to be a very powerful tool for local innovation equipped with efficient machines became more of an annex for the MIT engineers or FabLab leaders when they wanted to gather in a quiet place for dedicated prototyping rather than a place where the local community is making and innovating.
**Labs where designers are ‘obeying the commands’**

There is a place in Paris called La Nouvelle Fabrique (see Figure 10). It’s a small room in a big art centre in a fairly poor area of the city. It does not claim to be a FabLab but a makerspace and has a huge CNC milling machine and a 3D printer. It operates as a fabrication place for designers, artists and architects who bring in their files or producing their things. But the lab also runs very interesting workshops for adults and children, where designers are lead a day of production on the CNC machine.

There is one specific workshop that I have been following where they worked with Emmaüs, a shop next door that sells old furniture. The team of designers were given some pieces of furniture that the shop was not going to able to sell because they were damaged. The purpose of the workshop was to help the participants create new parts to repair those pieces of furniture. In this example, the workshop was to help the participants create new parts to repair those pieces of furniture. In this example, the designers were at the interface between machines and people, directing ideas and controlling each step of the process.

In this workshop, people were not able to have direct use of the CNC machine without the designer ‘translating’ its functions to them. All the pieces of furniture were already modelled in 3D so that each participant could choose what piece they would build and customize. Everything went very smoothly but without any real link between the participants and the technical aspect. It seemed that the aim of this project was to make with someone but not to make it yourself. There is some element of limitation in the initiation to the machine: designers clearly don’t want to share their skills and leave the participants in control. Indeed, not everybody can be a designer. One interesting thing here is that people can see and participate, but the machine is more there to be admired than to be experienced.

In these kinds of projects, parametric design raises important questions. The democratisation of the technical sphere and the appropriation of technologies may or may not operate without any filter.

**ENSCI – Les Ateliers, Paris**

As a design researcher, I have also been following some projects at ENSCI – Les Ateliers, a famous design school in Paris. There, students can attend a course that used to be called ‘FabLab’ but is now called ‘Fabrication Flexible’. It is actually a special workshop where they have to learn about digital fabrication and programing. Most of the projects they are working on involve Microsoft Kinect. The most recent projects were made with a robotic arm and aimed at collecting movements and translate them into a program that would help users to change and act upon the qualities of the object they want to design and produce.

In this kind of scenario, the designers are defining the boundaries of the project that they are offering to the users. Personalisation, production on demand and flexible fabrication are therefore involved at ENSCI – Les Ateliers for the future designers to explore.

![Figure 10 La Nouvelle Fabrique, May 2013.](image)

![Figure 11 ENSCI - Les Ateliers, November 2012.](image)
Conclusion

By focusing on some places that I have visited and where I spent some time, my goal was to demonstrate the challenge of various social factors in collective places where digital fabrication is experienced. As common spaces, FabLabs, hackerspaces and makerspaces appear to be very opposite places for redefining social interactions. Noisebridge can be seen like a ‘third place’ where political rules and rituals are discussed, whereas FacLab and FabLab MIT Norway are based more on human communication, possibly more than on active working or prototyping, despite the common discourses that are being held on the subject.

The last section of this paper raised the issue that, in places where fabrication is usually put in the hands of amateurs, the role played by professional designers can also be very important, either as intermediaries between machines and inexperienced users (La Nouvelle Fabrique) or as initiators of the actual project, fixing the boundaries and ground rules for the making of objects. This is a new concept for designers where some choices or actions can be programmed for the consumer. In that sense, digital manufacturing methods, online marketplaces, open source design and social networking sites are slowly blurring the boundaries between designer, user and maker.

Personal digital fabrication, FabLabs, hackerspaces and makerspaces are often viewed in terms of desktop manufacturing and DIY. The main aim of this paper was to demonstrate that, while they define new rules for social interaction outside institutional codes, they also have an original impact on more industrial production, where mass production might be improved with a wider diversity of manufacturing.

References


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Steve Brown

New Technologies for Restoration: The Meissen Fountain Project

This paper describes the practicalities and key theoretical issues relating to the restoration of a historically-significant, mid-eighteenth century porcelain table fountain. The fountain was hand modelled by Johann Joachim Kaendler, from which complex moulds were cast to allow for the many elements to be press moulded at the Meissen manufactory in the mid-eighteenth century. When the fountain was acquired by the Victoria and Albert Museum in 1870 it had eleven missing elements; these are now being recreated by staff at The Royal College of Art with support from members of the conservation team at the V&A. The fully restored fountain will be a centrepiece of the V&A’s “New Europe 1600-1800” Galleries scheduled to open in 2014.

The V&A’s staff decided that the authenticity of the restoration would partially rest on material properties: the reconstructed elements should be made of porcelain. This decision entailed significant practical issues, including matching the clay body and glazes and the problem of shrinkage during firing. Whilst the material was to be closely duplicated, the processes of production were not; in contrast to the hand modelling of the extant elements, 3D scanning and printing technologies were employed to map the spaces and comparable surfaces in order to create the missing pieces. This approach offered extreme flexibility of scaling, countering the shrinkage problems.

The deployment of these new technologies entailed new issues relating to replication and authenticity on top of recognised ones. The level of detail the digital processes could capture and retain blurred the line between original and copy in unexpected ways, with Kaendler’s original hand modelling replicated in the new replacement elements. By considering how such digital technologies disrupt conventional restoration practices and approaches by challenging established conventions and the expectations of those involved, the paper offers a distinctive contribution to on-going debates over authenticity, the notion of the original artwork and the value(s) of craft practice in the wider sense.
Dr Steve Brown

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The Meissen Fountain Project: Restoration in the age of digital reproduction

On 4 February 1748 Sir Charles Hanbury Williams, the British envoy at the court at Dresden, wrote a letter home recounting his impressions of a lavish dinner party that he was invited to. Central to this enthusiastic impression of his evening was a porcelain table fountain:

I was once at a Dinner where we sat down at one table two hundred and six People (twas at Count Brühl’s) when the Desert was set on, I thought it was the most wonderful thing I ever beheld. I fancied myself either in a Garden or at an Opera, But I could not imagine that I was at Dinner. In the middle of the Table was the Fountain of the Piazza Navona at Rome, at least eight foot high, which ran all the while with Rose-water, and tis said that Piece alone cost six thousand Dollars. (Gleeson 1999)

In 1870 the Victoria and Albert Museum in London acquired a large number of porcelain objects. Amongst this hoard of objects in a fragmentary and ‘much shattered’ state, with no accompanying information, was the table fountain that Hanbury Williams described: Von Brühl’s fountain, made by Meissen only around thirty years after they had invented European porcelain.

With no clear vision of how this group should be configured, it has been displayed since this time in the Jones Galleries using only the main figural pieces. While the fountain has been included over the years in some specialist publications, with its original provenance lost and little information available, the fountain has been only mentioned in a cursory manner.

Rethinking the restoration and representation of the fountain

As part of the Museum’s constant renewal plans the display of ceramics has undergone large changes in recent years, with the Ceramics Galleries being entirely restructured four years ago. One of the current major renewal projects is the European Galleries 1600–1800, where the Meissen fountain will be displayed. It is Reino Liefkes’ vision that the fountain, which at 1.5 x 4 m is the largest single Meissen porcelain figural group in existence, should be restored to the position of prominence that it deserves and will be a central part of the New European Galleries when they open in 2014. Reino’s challenge has been to try to restore the fountain as faithfully as possible to the original that Von Brühl commissioned in 1745. With very little extant information this has involved extensive multi-disciplinary research in order to evaluate just what that original fountain looked like.

In this article I shall discuss some of the new methods, issues and much discussed approach that has been applied to this restoration, in the context of the age of digital reproduction and in the search for new types of authenticity.

Reino began by inspecting the additional objects from the original acquisition, held in the V&A stores, and it soon became very clear that there were many more fragments amongst various other Meissen groups that belong to the fountain. But making decisions as to how these sections fit into the larger plan was problematic and he needed to gather more information and generate a better understanding of the original construction. There had been some research that gave the inspiration of the porcelain group as a monumental fountain in the grounds of Von Brühl’s pleasure palace. A recent publication was found relating to the restoration of what is known as the Mattielli fountain, after the original architect, alongside architectural plans of how this would look. Having found visual information to relate to, it was clear to Reino that there were a number of fragments in the V&A stores that could be utilized in the reconstruction, but that this would still leave a large number of pieces missing, mostly from the main central section.
The next step was for Reino to visit Dresden to see if there was any further information that could be gleaned by observing the monumental fountain, or talking to experts at the Meissen factory or in the archives held at the Dresden Museum. He was shown a number of architectural drawings made over 150 years relating to the building of Von Brühl’s garden fountain, which it was now clear was indeed the inspiration for the table objects. Knowing that the large fountain in the palace grounds was the key to understanding the V&A objects, Rieno brought with him specialist photographic equipment and Carlos Jimenez to provide specialist support in recording every detail of the fountain.

Whilst visiting the store-rooms of the Dresden Museum another major discovery allowed the project to leap forward as Reino was shown a nineteenth-century fountain which, apart from also being incomplete and finished with polychrome painting, was the exact copy of the original. This smaller edited group of objects was produced from the original moulds from the mid eighteenth century and, as fortune would have it, this copy had almost all of the parts missing from the original at the V&A.

Reino now had very good visual guidance relating to the overall composition of the fountain and he also had the possibility of accessing all the missing parts, either from the V&A store of fragments or from the stores of the museum at Dresden. The information was tantalizingly to hand to make the fountain complete again. Conservation could restore the broken fragments from the V&A stores and the exact missing parts made from the same original moulds were in the Dresden stores. But the question was: how could these parts play a role in the restored version?

Reino began to formulate a new plan to restore the fountain, and he made a second visit to Dresden with Carlos. On this occasion they brought with them a high-end 3D scanner to visually capture the missing objects. With the newly discovered information and the help of new technology, Reino decided to attempt a complete restoration of the fountain as close to its original state as possible. This meant a conventional restoration of the fragmented parts and reproduction of the missing objects using the 3D files. On his return to London Reino contacted Professor Martin Smith, who heads up the Ceramics and Glass programme at the RCA, and proposed to work with us to recreate the missing elements.

### Curation, conservation and creativity: Searching for the authentic copy

This is a very new approach for the museum to take in the restoration and display of an exhibit, and a new approach inevitably provokes discussions concerned with making the most appropriate decisions. The many discussions that I have had at each of the stages in realising the project have been three-way between Reino Liefkes, curator, Hanneke Ramakers, conservator, and myself as maker. The aim of these discussions is to arrive at a consensus of opinion relating to the methodological direction of the restoration project.

These discussions inevitably relate to authenticity: there are old parts and we aim to make new parts, but how do these new versions fit in a museum collection? A display of partial elements, such as the fountain, has often in the past taken the approach of just hinting at what is missing. A neutral shape or coloured space is used in place of absent elements and hangs back from the original objects, asking the viewer to complete the exhibit in their mind. The relationship between ‘authentic’ element and the mere suggestion of what fills the gap is clear. What we are trying to do with the fountain is far more radical in museum terms and possibly closer to the restoration of historic buildings where it is standard practice to attempt a full renovation in the materials and spirit of the original.

Within a museum full of objects, this approach presents many issues around the notion of authenticity. Conservation has strict guidelines governing any actions that they are involved in, and which Hanneke has been trained to consider at all times. For example, the new pieces should look close to the old ones but not so close that they fool the public into thinking that they are one of the early Meissen pieces. This guidance can become even more specific in some cases, and the advice for predominantly white objects like our fountain is that the new parts should be slightly darker or duller than the originals in order that they do not draw the eye from the historic objects. Reino as curator also wants to show the public the ‘truth’ of the fountain, but he wants to present it to them in a way that brings back the original spectacle of the piece. This requires new methods that get as close as possible to the idea of the authenticity of the original display.
What information exists?

A major defining actor in making informed decisions about the fountain is the available information. We have the following:

- Original architectural plans of the monumental fountain in Von Brühl’s palace grounds made by Mattielli
- Newly made survey plans of the Mattielli fountain produced for that fountain’s restoration
- Photographs and measurements of the Mattielli fountain
- Photographs and measurements of all the Dresden elements
- Photographs and measurements of all the V&A fountain elements
- 3D scans of all the Dresden Museum elements
- 3D scans of all the V&A elements

Using this information, we have arrived at an overall plan of how the fountain should look and the composition of the group.

One of the questions that we asked ourselves at the beginning of the restoration is: what can 3D scanning and 3D printing technologies bring to the fountain project that is different to conventional restoration? The most straightforward answer is the reason that Reino instigated the 3D scanning in the first place: that it would allow the missing pieces to be reproduced. But was this the most appropriate way to achieve our aim of authenticity? What other approaches could we take?

The Museum at Dresden offered to take moulds of their objects, but this would have left us with a problem of scale. Whoever it was decided would make the models and moulds would need to scale them up to allow for the substantial shrinkage of porcelain when fired to a mature state. The Dresden offer could not allow this change of scale and therefore the objects would have had to be cast in a material such as resin.

Meissen said that their approach, which was not offered to us, would be to have Uwe Marsehner remodel the missing parts by eye as oversized parts. Meissen are currently doing this to remake missing parts (candlesticks) for their famous ‘Swan Service’. This would allow for the change in scale and would come with some authenticity of being made by the original company.

Would the parts remade by the company who made the original be more authentic than the 3D scans? Would casts of objects made from the original moulds and made in a different material be more authentic?

Considering all the options, Reino decided to use the ‘impartial “truth” of the scanner’. He felt that the authenticity of the fountain lay with the original ‘hands’ from the eighteenth century, not with a contemporary approximation, albeit from Meissen. The scans allow us to access the Meissen of 1745 and there, in our opinion, lies the authenticity of this project.

As well as capturing information from the past production, the technology has some very practical benefits for the project. Using the 3D scans it would be a simple matter to oversize the scanned information and have the models output to allow for the shrinkage. Using the 3D scanner has also allowed us to recreate two pieces that were missing from the original in the V&A collection. There are two sloping walls on either side of the construction. For some reason Meissen did not remake these elements when they recast in the nineteenth century and chose instead to make an edited down version, and so they are also missing from the Dresden Museum group. The two from the right-hand side of the V&A original version were found in fragments in the storeroom and were able to be fully restored by conservation. This involved the pieces being laboriously cleaned with specialist materials and processes and then bonded strongly but temporarily (in accordance with current practice) back together. The two right-hand sloping walls were then scanned and a straightforward mirroring of the scans ‘brought back’ the missing right-hand objects.

Issues of using the 3D scanner

One issue that concerned us about using the scanned information was whether we would lose a lot of the subtleties of detailing because the original scanned object was glazed. This was a major concern when it came to look at the larger of the sloping wall pieces, which has very detailed modelling on its front section. Usually when taking 3D scans of objects that have a reflective surface or some translucency the surface is prepared in some way by painting it or dusting it with powder. Conservation issues prevented us from doing this and our worry was that there would be some information lost as we only pick up the very top glazed surface. This would be worsened when we came to glaze the new versions and the fear was that our glaze layer would obscure this detail even further.
We decided to focus our initial trials on a section of this large sloping wall. The section included some of the ‘dripping fern’ or ‘icicle’ detailing that is used throughout the fountain and we hoped that this would allow us to evaluate the pooling of the glaze better. A small section was ‘cropped’ from the scanned file, cleaned up and output by stereolithography as a 3D print in resin. When we compared the section with the original we were extremely pleased to find that there was no discernible loss of details. In fact it would appear that the scanner had penetrated the surface to some small degree and, in the case of these details at least, presented us with information closer to an unglazed version. Once more the technology enabled us to get a little closer to the original information that we were seeking.

Choosing and costing technology

We were far less pleased, however, with the price of using this particular technology. One of my tasks at the beginning of the project was to review the budget that had been allocated to the production aspect of the project. It became immediately clear with the price of the test section that this particular technology would be prohibitive for making the models. The objects range in size but there are a number of very large ones, and with the oversizing factored into the price the cost of producing them by any kind of RP technology would come in at least twice what the museum would be prepared to pay, even after we managed to raise the production budget.

We looked into a number of different methods for outputting the objects before deciding upon CNC machining. This procedure proved to be the most cost effective for a number of large objects, produced in a very robust material that moulds can be taken straight from. The choice was also appropriate to produce the simple level of topographic detail that most of the larger parts have. Some of the objects have large areas that are quite plain and do not require the sophisticated print resolution of RP technology.

There were concerns, however, that where there are details, such as the front of the sloping wall, the machining approach be able to produce it accurately enough. We considered a hybrid approach to produce these objects, having the two different technologies make the models and then join them together. But a comparative sample of the same sloping wall section convinced us that the machining could handle the detail. By incrementally going down through tool head sizes to the most appropriate scale, CNC machining accommodates the production of areas with both sparse and fine detail.

Two of the parts, the wheel hub and one spoke, are very much smaller than the other parts and they will be 3D printed and slip-cast to enable us to produce multiples that can be pieced together to form the two missing wheels. Two other objects that have multiple parts are the small border elements seen in the lower part of this image, and these can be sledged using traditional techniques, making further savings.

Truth to materials?

With the methods for making our models established, we turned to working on the aesthetic qualities of the objects themselves, but how close could we get to the originals in terms of materials and processes?

Some of the broken V&A elements enabled us to make detailed micro-observations of the cross-sections of the glazed ceramic body. This showed us that the glaze was clear and that the ‘colour’ of the white came from the clay alone. The invention of European porcelain provided the foundation of Meissen in the early eighteenth century and our early tests in clay quickly revealed that to get anything approaching the incredible visual qualities of the early Meissen objects we would also need to use porcelain.

It was clear from the start that we would not be recreating the actual clay and glaze formulations. It would also be impossible to recreate the conditions of once firing the work in a wood-fired reduction atmosphere to temperatures over 1,300 degrees. We decided getting the porcelain to have as close an aesthetic quality to the original material would be as far as we could go within the constraints of the project. With this in mind I trialled every commercial porcelain that I could access, adding almost homeopathic amounts of blue colorants to both the clay and glaze in order to move away from the slight creamy white of most porcelains and get closer to the blue-white tinge of the Meissen reduced ceramic.

Accurately identifying the shrinkage of our clay recipe has been the most crucial measurement of the project. If this is wrong then the parts will not align properly. One of the details that we had to double-check was to compare the true scales of the scanned objects that both collections have. Our concern was that in the intervening one hundred years between making the two groups, Meissen had developed a slightly different formula for their clay with a different...
shrinkage. We checked this by comparing footprints
of the seahorse base owned by both the V&A and
Dresden Museums – reassuringly, the scans were the
same size.

Having inched closer to the original aesthetic with
our clay body and glaze we decided to focus on
producing one piece, the seahorse base. Because
we now have the moulds for this object, I am able
to make as many attempts to realize the piece as
is necessary. I initially trialled three versions of the
seahorse base without adding any sprigged details.
The aim was to pin down the final mini-cule amounts
of cobalt-derived colorants in the clay body and
glaze. I also made a quick attempt at replicating the
original surface tooling so we could see how the
glaze pooled.

Another issue that we have discussed at length is
the patina, dirt, and discolouration of the original
pieces, and which you can see on the original to the
right of this image. How far does conservation go
in removing this, and do we address this aesthetic
aspect in making the new works? With the aim to
return the fountain to its former glory, some cleaning
is appropriate and conservation has strategies for
removing dirt and leaving patina. What remains is
a much cleaner object but the important evidence
of use remains, such as where the minerals in the
water from the running fountain have left their trace,
as illustrated in this image. As we can see, the new
pieces have none of this discolouration, and it was
decided that adding any would be too theatrical and
diminish the nature of them as replacement parts,
that the patina would be fake and this would reduce
them to being props. The original Meissen objects
would have looked like our versions when new and so
there is some precedent for their cleaner condition.
At the same time, from a conservation point of view,
perhaps this is the most appropriate visual sign of
them being newly replaced parts and testimony that
we’re not trying to deceive the public into thinking of
them as the early versions.

Returning to the issue of the hand-tooling marks
that are on the surface of the originals, it was obvious in
making these first tiny full-sized tests that these
surface marks were completely wrong. If I were
to get closer to the originals it would be better if
I could work on them while observing the original
small section of this object. This is quite tricky to
arrange as it is one of the 1745 pieces and needs to
be escorted from the museum to my studio and back.
But it has allowed me to be much closer in replicating
the surface marks and hand-modelled sprigs.

I am currently a little over half way through the
project and on target in meeting our aims; we have
established the approach, the budget, methodology
and aesthetic aims for the project, and the specific
methods for realizing the objects. What remains now
is for me to produce all the missing objects, still a
large challenge, which will take me up to March 2014.

**New edition? definitive state?**

The original fountain was intended to be a one-off
piece of spectacle. If we consider the original
production of the fountain back in 1745, the objects
could have been produced through unique hand-
modelled elements. Transposing the objects into cast
elements, however, was a more effective approach
for Meissen to take for a number of reasons: Taking
a mould from the model and press moulding a
copy was a more practical approach than having
to consider the practicalities of firing whilst hand
forming a unique piece.

If the piece went wrong during its production then
it would be simple enough to produce another. In
addition to this, any subsequent breakages could be
easily replaced; this was after all a very large group of
ceramic objects that would be regularly set out and
put away by Von Brühl’s staff. Physically ‘capturing
and storing’ the information of the fountain in mould
form as a means of production, Meissen adopted
from the beginning a methodology of reproduction.
This means that the notion of what is ‘original’ and
what is ‘authentic’ becomes hard to pin down.

We start to get into a similar area that fine art
printmaking occupies in terms of determining the
differing degrees of authenticity in different editions
of a work. We could consider the fountain restoration
project from the perspective of the reproduction of
printed editions. In this context Kaendler produced
the original autographic information, making the
models by hand based on the monumental fountain in
Von Brühl’s pleasure gardens. This information would
have then been transposed into a series of piece
moulds by other technical staff who could have
run off the artist’s proof or ‘first edition’ that was
marvelled at in Hanbury Williams’ letter home.

We know that breakages occurred during subsequent
use of the fountain, and that the broken elements
were replaced by new ‘editions’ of individual
elements. Much later on an entirely new edition was
produced from the same master moulds. But with
the loss of some information as to how the different
elements would be displayed, and no knowledge of
certain finishing details, this edition, in print terms, went through a change in 'state'. This resulted in a much edited hand-coloured edition, the one that exists in the Meissen stores.

Through a great deal of historical and analytical research, the V&A restoration project has amassed a large amount of information, allowing us to build a much better informed opinion of how the 'original edition' looked. New technology has allowed us to access the necessary lost 'master' information, which had been locked into the moulds, and we are finally able to produce a new authentic edition of Kaendler's great work.

I'd like to briefly iterate some of the transformations that this project has had:

- Initial concept and hand-drawn plans for a grand outdoor fountain realized in stone
- Clay models cast in plaster and then made in porcelain
- Fired and displayed
- Broken and replaced
- Lost
- Restored once in the nineteenth century
- Some broken parts found in the store rooms and restored at the V&A
- Some parts digitally scanned and manipulated, CNC machined in composite materials and remade in porcelain
- Original and replacement parts redisplayed together at the V&A

In the light of this amazing journey, who is to say what is 'the' most authentic information? What we can be absolutely sure of when the latest rendering of this truly zeitgeist object is displayed in the New European Galleries 1600–1800 next year is that it will be the most definitive state of the original fountain since Von Brühl first azed it in 1745.

References
All other information courtesy of the Victoria and Albert Museum, London, UK.
James Charlton

Acts of Materiality

This paper examines parallels in the constructs of materiality within haptic and generative 3D modelling systems developed by the researcher, and 1960s conceptual art practices. It explores how in both virtual and physical practices materiality is realised though a shared agency between artist and media.

Building on Leonardi’s work that distinguishes materiality from the corporal substance of material objects (Leonardi, 2010), the paper speculates on the role of process-driven and performative methods in which materials co-determine the form of the work (Lippard, 1997) and through which the body assumes a central role in materiality.

The argument is developed through analysis of two recent works - Øform and iForm, both of which use the body as a generative agent in constructing virtual forms. Although in these two works the body assumes different spatial function in relation to the forms generated, in both cases the body is seen as “overreaching itself” (Mearleau-Ponty, 1962) as it enters into inter-subjective partnerships with the digital.

Øform is a haptic modelling system that uses Microsoft Kinect to track the spatial coordinates of the artist's hands in order to generate 3D forms within CAD software. The algorithmic analysis of gestures disassociates the virtual form from the spatiality of the artist body. In doing so the artist is forced to defer his actions to the virtual content. Action becomes dissociated from outcome as anatomical norms of spatial organisation are redefined by the algorithmic system.

In contrast iForm draws on the GPS data of multiple iPhone participants distributed across a landscape to produce virtual 3D forms. Each GPS participant generates a point in space based not on their longitudinal and latitudinal position but on proximity to other participants.

These points are compiled into a three-dimensional model on the server in real-time. As participants track each other’s location on their iPhone they are estranged from their physical location as they project into the collective virtual form.

The construct of materiality through dynamic material and spatial interactions between human and nonhuman agents analysed in these two works is compared to early performative works by Robert Morris (Site, 1964) and the participatory Happenings of Allan Kaprow. Both Morris and Kaprow are shown to treat the body as a material object that draws us into inter-subjective relations. The comparison shows how as artists of both generations probe new modes of production the body assumes a central role through which new modes of materiality are engaged and understood. The paper suggests that such an understanding of materiality is essential to developing a digital craft capable of engaging the digital as a material in its own right.


idot.net.nz/?page_id=508
In 1968, when Lucy Lippard gathered the collective conceptual practices of the time and packaged them up as ‘dematerialised’, I was six. In a way I have always been dematerialised, or at least I can never remember a time when art was not.

So now as an artist practising in an era of the ‘internet of things’, where online services and digital fabrication have blurred the boundaries between the material and the immaterial, what constitutes materiality?

In this paper I want to examine parallels in the constructs of materiality within my own hybrid digital/sculptural practice – specifically Øform, 2011, and iForm, 2010, and that of 1960s conceptual art practices – in particular Robert Morris's performance work Site, 1964, and Alan Kaprow’s 18 Happenings in Six Parts, 1959, in order to develop an understanding of how we might go about engaging ‘the digital’ as a material in a manner consistent with other material sculptural practices.

These two works from the 1950s/1960s serve as examples1 of a period in which new methods of interrogating materiality were being explored, and as such present means by which we might go about approaching ‘the digital’ in order to develop a practical understanding of digital materiality. ‘These are forms of behaviour aimed at testing the limits of possibilities involved in that particular interaction between one’s actions and the materials of the environment’ (Morris 1970: 33–4).

As artists associated with Lippard’s dematerialised ‘ultra-conceptual practices’ (Lippard 1973), both Morris and Kaprow were central in developing a contemporary understanding of materiality. As Jacob Lillemose explains, Lippard's dematerialisation of art as an object is not an argument for the disappearance of materiality but a rethinking of materiality in conceptual terms (Lillemose 2008).

This non-corporeal attitude to materiality establishes an argument where immateriality becomes a new material condition (Lillemose 2008). With materiality defined as being immaterial, we can conceive of ‘the digital’ as possessing materiality once we accept ‘the digital’ as a structural method rather than a technological function: ‘dematerialization designates a conceptual approach to materiality whereas immateriality designates the new material condition – or just a new material’ (Lillemose 2008: 5).

So what is this digital thing?

As loosely used terminology, digital is used largely as a qualifier of an object – for example digital-media, digital-network, digital-camera ... denoting superiority over the analogue.2 Thus digital-media is distinct from ‘the digital’ in the sense that it is an artefact of that which is digital. ‘The digital’ is really the underlying structural method that results in the production of what we call digital-media.

In this argument I am extending Lewis's (1971) widely accepted definition of ‘the digita’ as being a discrete representation in opposition to the analogue, which he describes as a continuous representation. While the differentiation between discrete and continuous modes provides a sound definition of ‘the digita’, I reject the necessity of any representational modality as mediation through representational systems unnecessarily distances us from a subject.

While digital-media operates from an imposed modality that is in representational deference to analogue materiality, ‘the digital’s materiality should not be bound by representation any more than analogue material. Rather ‘the digital’, as proposed by Barbara Bolt in her counter-representation reading of Heidegger, should be located in a dynamic
non-representational space directly between artist and material, thus eliminating the necessity of any representational mediation by digital-media.

According to such a counter-representational understanding of art, the work of art is no longer an object for a subject; the relationship between artist, objects, materials and processes is no longer one of mastery and all elements are co-responsible for the emergence of art. (Bolt 2004: 20)

It is precisely this co-dependent dynamic between human and non-human actants that Leonardi (2010) clarifies in regard to digital-media. Arguing for a definition of materiality that is inclusive of instantiations of non-corporeal agents, Leonardi (2010) stresses the affordance of materials rather than their physical properties, stating that it is in the interaction between artefacts and humans that the materiality is constituted.

These alternative, relational definitions move materiality ‘out of the artefact’ and into the space of the interactions between people and artefacts. No matter whether those artefacts are physical or digital, their materiality is determined to a substantial degree by when, how and why they are used. These definitions imply that materiality is not a property of artefacts but a product of the relationships between artefacts and the people who produce and consume them. (Leonardi 2010: 13)

With materiality liberated from both representation (Bolt 2004) and corporeality (Lillemose 2008; Leonardi 2010), the argument for a materiality of intent within process returns us to the work of Lippard’s ‘ultra-conceptual’ artist of the 1960s. Although predating Lippard’s (1968) seminal text on dematerialisation, aspects of Morris’s performance works of the 1960s taken in the context of his subsequent sculptural practice articulate this approach to materiality.

Site, originally performed by Morris and Carolee Schneemann in 1964, starts and finishes with Morris standing in front of a small white rectangular block of similar proportions to a large cuboid in the centre of the space. During the course of the performance Morris removes panels from the larger box, revealing a reclining nude figure posed as Olympia (Manet 1863). The noise of a jack-hammer is also heard throughout the performance.

What is of interest here is not the narratives of the work but the interactions between Morris and the plywood. Morris is seen to manoeuvre the plywood slowly and deliberately through a series of actions: lifting, rolling, and flipping. … The artist is seen to be intently focused on the task at hand which, given the size and weight of the sheet, would have required some concentration and physical exertion.

While each action is short and relatively unimpressive, breaking it down in individual frames shows how a material dynamic is formed between the body and the plywood sheet.

As Morris moves the board from one side of his body to the other by rolling it over his back, the board becomes both subject and object. By the same token, the artist’s body is doubled as if performing some unbounded cartwheel. In the tension of the space between the two neither are dominant – each yields to and demands of the other in the same way to constitute the materiality of the work.

Somewhat later in ‘The Phenomenology of Making’ (1970), Morris writes of this idea of finding form in the activity of making by testing the limits of a material against the body. Clearly, when Morris (1970) speaks here of interacting with a ‘material in relation to (rather than in control of it)’, he is expressing the idea of co-constituted materiality that is seen in Site.

Øform (2011) makes similar claims to a shared agency through the use of a haptic modelling system in which the performative actions of the artist constitute a materiality in a network with digital-media. To be clear, I am not suggesting that this work engages digital materiality. Rather it is seen as indicative of a means of engaging with a non-corporeal material agent that might subsequently be applied to materialising ‘the digital’.

Øform uses Microsoft Kinect to track the spatial coordinates of the artist’s hands in order to generate 3D forms within CAD software. What is of interest to me here now is not so much the resultant forms but the structural method through which they are achieved that forces the body into a shared agency with the digital-media.

Through algorithmic analysis of the gestures, the artist’s body becomes spatially disassociated from the virtual form, and the artist must defer his movements to the virtual content. Action becomes dissociated from outcome as anatomical norms of spatial organisation are redefined by the system.
As with Morris, the artist is intensely focused on the material subject that in return instructs the movement of the body. The agency here is identical to the co-constituted materiality identified in Site – in the exchange between action and material neither is dominant. Each yields and demands of the other in the same way to constitute the materiality of the work. (The software yields intent to the artist as the artist surrenders bodily action to the software.) It is in this engagement that the materiality of the work is contrived.

In a contemporary context any argument for shared agency must be considered in regard to Speculative Realism’s critique of the Kantian anthropocentric privilege of human perception. Speculative Realism’s flat ontology provides a model of irreduction in which agency is not reducible to human encounter and objects remain irreducible from each other (Bogost 2012).

While the principle of irreduction supports an autonomous reading of ‘the digital’, Speculative Realism’s insistence on the equality of agents in a network fails to acknowledge the instigative and intentional role of the artist in the work. As we see here at the end of Site, the plywood without human involvement cannot maintain its state and simply falls to the ground, whereas Morris is able to instigate a new action.

Addressing this problem, Kirchhoff offers a reinterpretation of ANT that supports a shared agency of materiality that privileges embodied experience. For Kirchhoff, material entities do not have agency as an intrinsic quality by virtue of their materiality‘ (Kirchhoff 209). Like Leonardi, Kirchhoff’s materiality exists only ‘if the concept of “material agency” is a relational and asymmetrical quality … that emerges in the “symbiotic interplay” between human embodiment and material properties’ (Kirchhoff, 209: 7).

**Happenings**

If the staged performativity of Site engaged the body of the performer/artist in an inter-subjective dialogue with the plywood, then Allan Kaprow’s Happenings extends this further by actively drawing the audience into the network of the piece. Despite preceding Site by several years, Kaprow’s early Happenings of the late 1950s were more ‘radical’ in their disregard for performative conventions and less committed to formalised subject – object relations. ‘Kaprow had continually questioned the aesthetic conventions of framing the relationship between subject and object, the distinction between artist and audience’ (Kelley and Kaprow 2004: 34).

As Happenings were taken up by Kaprow’s contemporaries,9 they rapidly evolved into more theatrical events that were seen as an “anything goes” form of avant-garde theatre’ (Kelley and Kaprow 2004: 43) and quite removed from the initial methodologies found in Kaprow’s seminal 18 Happenings in Six Parts (1959).

While in the recent rash of re-enactments both Morris’s and Kaprow’s works have been videoed, only photographic documentation exists of Kaprow’s original Happening. As a result, much of our understanding of 18 Happenings in Six Parts is based on Kaprow’s extensive notes, drawings, scores … or descriptions by members of the audience.

Audience members were assigned to one of two rooms within the three-room installation in which the six sequential parts – simultaneous performances that involved eight overlapping sound tracks, ritualised movements, projected slides, spoken text and eccentric props – occurred. With unsponsive movements lacking in emotion, performers carried out a variety of sustained choreographed tasks including playing musical instruments, striking matches, spray-painting plastic with kitchen cleaner and squeezing juice from oranges. The performance concluded with scrolls of text unfurling from the ceiling and performers walking out in single file (Kelley and Kaprow 2004).

While such descriptions provide a sense of the experience, what is more important here than the specific actions are the structural implications of the work in regards to the role of the audience.

Developing out of Action Painting, in particular the work of Jackson Pollock (Kaprow 1958), Kaprow’s Happenings attempted to generate an environment that immersed the viewer inside the work, not just by putting them inside the performative space but by making them active agents in the work through tightly prescribed instructions that – in the case of 18 Happenings in Six Parts – fragmented narrative by breaking the audience up, moving them around and creating ambiguous ‘free’ time within the work (Rodenbeck 2011). ‘Being inside one was like being inside an abstract painting’ (Kelley and Kaprow 2004: 20).

This score with its sparse instructions is commonly seen as a precursor to later development of
interactive art works. Although it is initially hard to see the audience as participants in the manner we accept or even expect today, the invitation for the audience to ‘consciously insert themselves’¹⁰ (Rosenthal et al. 2007) into the works undoubtedly informs our understanding of the idea of interaction as a breaking down of the audience and artwork hierarchy. As Noah Wardrip-Fruin and many others have observed: ‘The “Happenings” are a touchstone for nearly every discussion of new media as it relates to interactivity in art’ (Wardrip-Fruin and Montfort 2003: 1).

More than simply providing a precedent for current approaches to interactivity, these early works also highlight inter-action as a means of separating ‘the digital’ from representational media. As Soke Dinkla expresses it in direct reference to Kaprow:

The widespread judgment that interactive intercourse with computer systems prepares the ground for an emancipation from the media context, via the development from ‘passive’ to ‘active’ reception, is being euphorically defended by referring to the participatory art of the sixties. (Dinkla 1996: 289)

What we have in Happening’s vision of interaction is not simply the prospect of a singularity of subjects that co-constitutes materiality as with Morris, but a further liberation of subjects from representation.

I am not proposing Happenings as a means of accessing ‘the digital’ but rather suggesting that their strategy of collapsing audience and artist relata, as an extension of the performative engagement with objects found in Morris’s work, suggests ‘the digital’ might also be realised in a co-constituted materiality between two human agents as much as between human and non-human agents.

The coding of Kaprow’s audience via a score, to carry out a series of scheduled tasks, is a strategy repeated in iForm – where participants were given a set of rules to structure their actions within a variable environment.

Programmed to perform a set of functions, ten participants each with iPhones were dropped off in different locations around a circular bus route. At a designated time they opened a GPS App and started feeding geo-spatial data to a server. Their instructions were to remain on the bus until someone else from the group got on. At that point they were to catch the next bus in the opposite direction. This was to be repeated until all participants reached a designated bus stop. The performance lasted several hours. Using the GPS data, a three-dimensional form was made by defining points from distances between participants rather than geo-spatially. The form resulting from the performance was 3D printed and exhibited. Like Kaprow’s performers and audience, the participants in iForm were carrying out non-matrixed actions though which they blindly assembled a concrete form.

If a non-matrixed performer in a Happening does not have to function in an imaginary time and place created primarily in his own mind, if he does not have to respond to often imaginary stimuli in terms of alien and artificial personalities, if he is not expected either to project the subrational and unconscious elements in the character he is playing or to inflect and colour the ideas implicit in his words and actions, what is required of him? Only the execution of a generally simple and undemanding act. ... The performer merely embodies and makes concrete the idea. (Kirby 1995: 30)

Conforming to their instructions, iForm participants were isolated from both each other and the software constructing the form. Their function within the work is discrete – self-contained and digital in a way that parallels both the compartmentalised structure and likely experience of the audience in 18 Happenings in Six Parts (Kirby 1995). Broken into parts both temporarily and spatially, the audience experience was likely one of discontinuity in which it was impossible to perceive the whole of the work. Divided as they were across three spaces and distracted by multiple events, it is unlikely that any two people witnessed the same thing.

What I propose is occurring in 18 Happenings in Six Parts, then, is an emergence of a digital structural method that is a function of both a shared agency and fragmented isolation that relocates the individual at the spatiotemporal centre of the materiality of the work. What we have is not one continuous material but multiple co-constituted materialities all of which are interconnected in the relational network of the piece.

While at first this seems contradictory in the sense that I am claiming both a continuous singularity and discrete individuality within the work, this is not at all problematic when we accept this as a state of the work rather than the participants. The work can be split across multiple sites, spaces and times that operate independently and at the same time function as a whole.
Conclusion

What is it then that constitutes materiality in these works, and how might this analysis assist in engaging ‘the digital’ as a material within sculptural practice?

Materiality has been presented not as a corporeal property of a subject but as a materiality of intent that denies representation and is located within an exchange between co-dependent actants. ‘The digital’ has been articulated as a structural method that governs relations within a network. Thus any efforts to engage digital materiality within sculptural practice should be focused on identifying operations that, like Morris’s performative actions and Kaprow’s scored events, are historical precedents for methods of interrogating materiality.

That ‘the digital’ for the moment remains hidden behind representational interfaces points to the need to develop specific actions and processes that operate within that structural method in order to rematerialise ‘the digital’ within sculptural practice.

Notes

1. These works are both from early formative stages of the artist’s practice and have the advantage of being more conceptually ‘open works’ (Eco 1989). Although Morris stopped doing performance works and moved on towards objects-based work, the significance and origins of his interest in process are clearer in Site and Neo Classic. Kaprow’s later happening became somewhat diluted by the influence of more theatrical strategies, and the role of the audience diminished.

2. As Florian Cramer has pointed out, the ‘digital’ had been synonymous with better for a long time (Cramer 2013).

3. Morris was briefly involved in performances with the Judson Dance Theatre, New York, from 1961 to 1964. Continuing work begun in San Francisco with Simone Forti and Anna Harin, he carried forward dance-related explorations in a workshop situation with Yvonne Rainer and Carolee Schneemann (Morris 2012).

4. Without wanting to dismiss other important readings of this, work such as feminist readings of Schneemann’s role, which can itself be seen as co-constituted through the image of the gaze and digital internal and external construction of self, I am focusing on Morris’s physical engagement with materials in order to highlight a point.

5. The project uses blob detection software to track the movement of hands that enter into the capture space – a narrow plane of space in front of the user’s body. By evaluating the volume of each hand within the capture space the software computes dimensions on three axes. As a simple example – the position on the Y axis is derived from the volume of the left hand presented to the camera. With only the tip of a finger in the space a, the Y axis is set to one.

6. In particular here I am referring to Graham Harman’s Object Oriented Ontology in which objects exist independently of human perception (Harman 2002).


8. ‘Speculative realism is a movement in contemporary philosophy which defines itself loosely in its stance of metaphysical realism against the dominant forms of post-Kantian philosophy or what it terms correlationism. Speculative realism is believed to have taken its name from a conference held at Goldsmiths College, University of London in April, 2007’ (Taylor 2012). Key proponents include Ian Bogost, Ray Brassier, Graham Harman, Ian Hamilton Grant and Quentin Meillassoux.


10. ‘Invitations to the event said “you will become part of the happenings; you will simultaneously experience them”’ (Beaven 2012).

References


Additive manufacturing (AM), or 3D printing, is becoming increasingly widespread in both industrial production and studio practice. Research into AM in metals, in particular Direct Metal Laser Sintering (DMLS), is largely driven by the exacting engineering applications of the aerospace, motorsport and medical sectors, which focus on materials and process performance issues such as available materials, material properties, build efficiency, increasingly complex build structures, and new fields of application.

Our research is situated within the area of DMLS concerned with structural development. We investigate the potential of structural flexibility as a functional and aesthetic design element, and its applications. In contrast, current research in this area mainly focuses on structural complexity, seeking to eliminate flexibility to create stability and enhance strength and stiffness (e.g. Murr et al. 2012). Although some approaches to flexible structures exist such as live hinges and spring clips (Gibson et al. 2010), these are developed for technical purposes, and not with regard to any emotional effect. Similarly, current artistic explorations of AM generally focus on semiotic-narrative rather than soma-aesthetic expression of flexibility to create emotion (Niedderer 2012).

Flexibility can create both surprising emotional expressions and experiences as well as functional uses and effects, for example through tactile feedback. While previous work used conventional analogue metal fabrication techniques to assemble spring-like forms to create emotional expression, our current research explores diverse flexible structures through the use of digital manufacturing technologies. The aim is to exploit the geometric freeform potential of AM to create affective flexible elements. For example, the mechanical capacity to deform can have subtle but surprising and engaging emotional effects.

The ability to control and fine tune movement is enhanced through the ability to add and remove material at will within the editable CAD environment (Dean and Pei 2012).

For this research, a theoretical review of the nature of flexible structures and of current deformable AM geometries and their applications has been conducted. This has been complemented through a series of practical experiments exploring the creation of emotional expression through flexibility. Both the examples and experiments of AM flexible geometries are analysed and evaluated against the framework on emotional expression developed by Niedderer (2012) with regard to the responses they elicit and their potential applications. The outcome and contribution of the research will be a better understanding of the structural geometries and potential uses of flexibility in AM as well as of its expressive potential.

**References:**


Flex-it: Exploring emotional expression and experiences through elasticity in digital manufacturing

Abstract

This research investigates the potential of structural flexibility as a functional and affective design element, and its potential applications. Our research bridges the areas of jewellery design, emotion design and structural development in the Additive Manufacture (AM) of metals. The paper begins with a theoretical review of the nature of flexible structures and of current deformable Additive Manufacturing (AM) geometries and their applications. This has been complemented through a series of practical experiments exploring the creation of emotional expression through AM flexible geometries. Both existing examples and the outcomes of the experiments are evaluated against the framework of emotional expression developed by Niedderer with regard to the emotional responses they elicit. The outcome and contribution of the research will be a better understanding of the structural geometries and potential uses of flexibility in AM as well as of its expressive potential.

1. Introduction

Additive Manufacturing (AM), or 3D printing, is becoming increasingly widespread in both industrial production and studio practice. Research into AM in metals, in particular Direct Metal Laser Sintering (DMLS) and Selective Laser Melting (SLM), is largely driven by the exacting engineering applications of the aerospace, motorsport and medical sectors, which focus on materials and process performance issues such as available materials, material properties, build quality and efficiency, and increasingly complex build structures.

Our research is situated within the area of AM metals concerned with structural development with application in jewellery design. We investigate the potential of structural flexibility as a functional and affective design element, and its applications. In contrast, current research in this area mainly focuses on structural complexity, seeking to eliminate flexibility to create stability and enhance strength and stiffness (Murr et al. 2012). Although some approaches to flexible structures exist such as live hinges and spring clips (Gibson et al. 2010), these are developed for technical purposes, and not with regard to any emotional affect. Similarly, current artistic explorations of AM generally focus on semiotic–narrative rather than soma-aesthetic expression of flexibility to create emotion (Niedderer 2012: 60–61).

Flexibility can, however, create both surprising emotional expressions and experiences as well as functional uses and affects, for example through tactile feedback based on the mechanical capacity to deform, which can have subtle but surprising and engaging emotional effects.

While previous work by Niedderer (2012) used conventional analogue metal fabrication techniques to assemble spring-like forms to create emotional expression, our current research explores diverse flexible structures through the use of digital manufacturing technologies. The aim is to exploit the geometric freeform potential of AM to create affective flexible elements. The ability to control and fine-tune movement is enhanced through the ability to add and remove material at will within the editable CAD environment (Dean and Pei 2012).

For this research, a theoretical review of the nature of flexible structures and of current deformable AM geometries and their applications has been conducted. This has been complemented through a series of practical experiments exploring the creation of emotional expression through AM flexible geometries. Both existing examples and the outcomes of the experiments are analysed using the framework of emotional expression developed by Niedderer (2012) with regard to the emotional responses they elicit and their potential applications.
2. A review of the use of flexible structures in AM

This section provides a review of flexible structures in general and where they occur, and then focuses on examples of flexible structures in the use of AM and more specifically in AM metals.

2.1 Elasticity and flexibility

Flexible structures occur in all areas of life and can take many forms for many different purposes: from spider silk to bungee jumping ropes, from DNA to the slinky toy (Figures 1 and 2), there is a large variety of natural and artificial elastic materials and structures in a ubiquitous range of applications. An important distinction to be made in this context is that flexible structures on the one hand rely on the elastic qualities of the material they are made of, such as spider silk, rubber and many other elastic materials. This is due to their elastic structure at micro level, that is at molecular level (Balakrisnan et al. 2012; Smela 2012; Hopkins 2013) that either deforms and reforms or that stretches and contracts under stress/when released. On the other hand, flexible structures may rely on specific structural characteristics at macro level (instead of elasticity at micro/material level) to facilitate flexible movement (e.g. Kleemann 2012).

In this paper, we therefore make the terminological distinction between ‘elasticity’, which we use to refer to the springiness of a material, i.e. its microstructure, while we will use the term ‘flexibility’ in relation to macro structures. In this regard we understand elasticity to refer to a material substance ‘that spontaneously resumes … its normal bulk or shape after having been contracted, dilated, or distorted by external force’ (elastic, n.d.). In the same way, for the purpose of this paper, we define flexibility to pertain to a structure that spontaneously resumes its normal bulk or shape after having been contracted, dilated, or distorted by external force.

In many cases, the two aspects of elasticity and flexibility are combined (e.g. parametric | art 2013; AWOL 2012). They can, either singly or in combination, enable flexible movement as exemplified by the well-loved slinky toy: a simple metal or plastic spiral which can be made to ‘walk down’ stairs due to the interplay of elasticity/flexibility, material weight and gravity (Poof-Slinky 2012; Figure 2). Elasticity/flexibility thus offers the potential to design movement into otherwise static structures.

2.2 Flexible structures

Flexible structures seem relatively under researched, and often developed by trial and error (Pai 2013), and there is little systematic literature on the subject (e.g. Wright 2005; Pai 2007; Sclater 2011; Hall 2013; International Industrial Springs 2013; Wikipedia 2013). We therefore present here a somewhat eclectic overview of some of the most common flexible structures, which we analyse according to their geometric and functional characteristics.
Perhaps the most ubiquitous flexible structure is that of the spiral or helix, the helix having a constant diameter and a gradient, while the diameter of the spiral changes and the gradient can be (but does not have to be) zero. In nature, flexible spiral or helix shapes tend to occur, e.g. in DNA or flower tentacles (Figure 3) where they are either of structural importance (e.g. DNA) or have developed as a support mechanism, e.g. for plants to hold on to a supporting structure. As an artificial structure, helix and spirals have become important as springs in countless applications, from roller ball pens to bedsprings, from coil springs as part of a car’s suspension to angle-poise lamps, from coiled electrical leads to spring balances. Thereby most applications work on compression, some on expansion such as the spring balance or the angle-poise lamp, and yet others on torsion such as torsion springs or spiral springs in watches (Pai 2007; Hall 2013; International Industrial Springs 2013; Wikipedia 2013) (Figures 4, 5, 6).

Figure 3: Spiral (cucumber plant), 2013. Photograph: Kristina Niedderer

Figure 4: Spiral spring, 2013. Photograph: Kristina Niedderer

Figure 5: Compression spring of a roller ball pen, 2013. Photograph: Kristina Niedderer

Figure 6: Tension spring of an angle-poise lamp, 2013. Photograph: Kristina Niedderer

Other applications of springs include cantilever springs, which find application in springboards or in tweezers, and leaf springs, which can be found, e.g. in the bow (and arrow), in traditional suspension systems, and in light switches.

A second group of structures include loops (as in knitted structures, Figure 7) or the repetition of loosely connected geometrical structures through folding, bending, mechanical connections or layering, etc., where the lack of internal connections between threads, wires, etc., allows the material to be flexible, usually creating fabric-like structures or membranes. The intrinsic characteristics that all these flexible structures appear to be based on are that they are instable/ flexible due to long stretches of unsupported thin thread/wire or sheet, which also applies to spirals and helix shapes.
2.3 AM and SLM as a process for creating flexible structures

For this research, we focus specifically on one process and material to create flexible structures: this is the use of stainless steel with SLM. The reason for this is that until now AM metal processes have mainly been used to create structural complexity, seeking to eliminate fixing to create stability and enhance strength and stiffness (Murr et al. 2012). Although some approaches to flexible structures exist such as live hinges and snap-fits and compression fittings in a Selective Laser Sintered (SLS) polyamide part built in one piece (Figure 8). Another example is the use of certain elastic polymers combined with flexible structures to create extremely flexible objects: Kleemann (2012a, 2012b) has created an ultra flexible ball, using the repetition of a geometrical motive with an elastic laser-sintered polymer to test how flexible laser-sintered objects can be.

One limitation and challenge of using SLM with stainless steel is that the SLM process creates a metal structure that is akin to cast metal, whose material structure is less elastic than metal that has been work-hardened and annealed to reinstate its cubic molecular structure. We therefore deal here with a material with limited intrinsic elasticity. While future research may investigate enhancing the elasticity of laser-sintered stainless steel, this present research focuses on the creation of flexible (macro) structures.

While AM metals processes, perhaps due to cost and technical challenges, have not yet been explored with regard to the production of flexible structures, a few interesting examples of flexible structures can be found in the broader area of AM. For example, technology provider EOS have created a demonstration piece that illustrates a conventional hinge, live hinges, snap-fits and compression fittings in a Selective Laser Sintered (SLS) polyamide part built in one piece (Figure 8). Another example is the use of certain elastic polymers combined with flexible structures to create extremely flexible objects: Kleemann (2012a, 2012b) has created an ultra flexible ball, using the repetition of a geometrical motive with an elastic laser-sintered polymer to test how flexible laser-sintered objects can be.

On an industrial scale this phenomenon is already utilised by the textile industry to create novel super flexible textile structures. For example, i.materialise (2013) offers a thermoplastic polyurethane named TPU 92A-1 with rubber-like qualities, which was used to create Iris van Herpen’s digitally-fabricated dress (Core 77, 2013). Research at Loughborough University has explored Impact Absorbent Rapid Manufactured Structures (IARMS) in polyamide (Brennan-Craddock et al. 2008). These designs are based on the cellular structure of foams with an intended application in sports personal protective equipment (PPE). The aim of the project was to create customised PPE optimised for both impact and fit to the curvature of the individual’s body. The structures developed include cellular frameworks made up of struts which were helical in form rather than straight; the structure effectively becoming a matrix of extension/compression springs (Figure 9).
To conclude this broad review, it demonstrates that while new elastic materials are being developed and different kinds of flexible structures are being explored, little thought has been given to their affective qualities. In the following, we therefore discuss the emotional characteristics of flexible structures in the context of the affective framework developed by Niedderer (2012).

3. Flexibility and emotions

Niedderer’s work (2012) has explored how the movement inherent in flexible structures can be used as a medium for expressing complex emotions in design. Using Argentium silver and laser welding in the context of silver design, Niedderer has explored the notion of movement as an alternative to visual semiotic and appraisal approaches to create product expression. The study offers a soma-semiotic framework as an aid for creating and interpreting complex emotions in design, and which we utilise in the following.

The framework distinguishes expressive, functional and behavioural movement, which can have both concrete and symbolic meaning, and which is read through a combination of semiotic and somatic interpretation. Semiotic interpretation is based on the recognition of iconic, indexical or symbolic shapes and features, while the somatic reading is based on semiotic reading and empathic intuition (Niedderer 2012: 61–63). For example, in reciprocating (mimicking) someone else’s smile we feel that someone else is happy. This intuition is capable of very fine discrimination, e.g. whether a smile is happy or sarcastic or sad (Shusterman 2011). Niedderer distinguishes three features as key elements of the framework. These include: semiotic and semantic object indicators, their individual emotional meaning, and the summative interpretation of all meanings as shown in Table 1 (2013: 65–66).

Table 1: Schema of soma-semiotic framework of emotion

<table>
<thead>
<tr>
<th>Meaning Indicator</th>
<th>Description of movement/image</th>
<th>Soma-semiotic interpretation of individual movement/image with regard to emotion</th>
<th>Soma-semiotic interpretation of combined movement/image with regard to emotion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Movement 1 (expressive/functional/behavioural)</td>
<td>…</td>
<td>…</td>
<td>…</td>
</tr>
<tr>
<td>Movement 2 (expressive/functional/behavioural)</td>
<td>…</td>
<td>…</td>
<td>…</td>
</tr>
<tr>
<td>Visual image 1</td>
<td>…</td>
<td>…</td>
<td>…</td>
</tr>
</tbody>
</table>

Niedderer further provides an example of how to use this framework to read artefacts which we offer here, and which we will follow in the subsequent discussion of examples.

‘Fruit Bowl 1’ [Figure 10] used 16 looped silver strips arranged in a 2-layered star shape to create a flattish ball shape, which transforms into a doughnut shape when laden with fruit, visualising the weight of the fruit. This construction is very springy and can be made to bounce as if in ‘elated joy’, displaying the corresponding movement qualities described by Walcott (1998: 893) for elated joy, i.e. high movement activity and dynamics. Thus far the design’s expression was predicted, what was not predicted was that once the ‘bowl’ was laden with fruit, it sheared also sideways. With the fruit in the middle, the long silver
strips on the outside and the rolling movement (combined up-down as well as sideways movements),
together, these components made the bowl not just ‘joyous’ but also comical, raising associations
to a ‘drunken spider’ (body high up in the middle on long legs ‘wobbling about’). This is due to the
combination of two contradictory emotions, that of joy (bounce) and fear (image of spider). The ‘wobbly’
sideways movement, signifying unsteadiness/drunkenness/incapacitation of a potential ‘danger’ (spider),
can be seen to evoke relief as a third emotion. Below is a demonstration of the completed soma-semiotic
framework grid [Table 2] to show that it can help with identifying the individual indicators and meanings
for the analysis. (Niedderer 2012: 65–66)

![Image of Fruit Bowl 1, Kristina Niedderer, 2009.]

**Figure 10: Fruit Bowl 1, Kristina Niedderer, 2009.**

<table>
<thead>
<tr>
<th>Meaning Indicator</th>
<th>Description of movement/image</th>
<th>Soma-semiotic interpretation of individual movement/image with regard to emotion</th>
<th>Soma-semiotic interpretation of combined movement/image with regard to emotion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Movement 1 (expressive/functional/behavioural)</td>
<td>bounce + high movement activity and dynamics</td>
<td>elated joy</td>
<td>Put together, joy (bounce) and fear/scariness (of spider) are a contradiction of emotions, which leads to a humorous reading. Especially when the third component, ‘unsteadiness/helplessness’, is added, which can be read as incapacitating the potentially scary ‘spider’, the image becomes comical and elicits laughter and feelings of ‘fun’.</td>
</tr>
<tr>
<td>Movement 2 (expressive/functional/behavioural)</td>
<td>wobbly circular/sideways ‘rolling’ movement</td>
<td>unsteady, drunken, helpless</td>
<td></td>
</tr>
<tr>
<td>Visual image 1</td>
<td>visually heavy centre (fruit) + long silver strips emanating from the centre</td>
<td>Heavy centre and centrally emanating strips are read as body and legs, inferring the image of a spider because of the similarity of their relationship/proportions. Spiders are widely perceived as ‘scary’ and associated with fear.</td>
<td></td>
</tr>
</tbody>
</table>

Before applying this framework to our own prototypes, it seemed useful to analyse one of the existing
eamples to understand the capabilities of the framework better. Due to its similarities (and subtle
differences) with the previous example, we chose to analyse the flexible sphere by Kleemann, which
is shown in Table 3. This analysis shows that the use of the framework is able to elicit quite subtle
differences in emotions, based on the semiotic and somatic interpretation of the different indicators. One
limitation of the analysis of this example is that we have not been able to hold the actual ball, but have
worked from the images. Therefore we cannot say whether the object has subtle vibrations or bounce, etc., other than those reported by the maker (Kleemann 2012a, 2012b).

Table 3: Example of soma-semiotic framework completed for fruit bowl 1

<table>
<thead>
<tr>
<th>Meaning Indicator</th>
<th>Description of movement/image (as provided by the maker, Kleemann 2013)</th>
<th>Soma-semiotic interpretation of individual movement/image with regard to emotion</th>
<th>Soma-semiotic interpretation of combined movement/image with regard to emotion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Movement 1</strong></td>
<td>Squeegee: it can be pressed between the fingers in a doughnut shape, resuming its shape following pressure release.</td>
<td>Fun (to squeeze)</td>
<td>This object and the interaction with it invokes a complex set of emotions including those of the interactant as well as the perceived emotions of the object which takes on an animated character. These emotions include: the fun of squeezing the small object and of holding it tight as if restraining it, which together with its softness makes it feel 'vulnerable'. At the same time it 'pushes back' as if to regain its freedom and to make a bid for escape. Together, this can be seen to invoke a complex mixture of pleasure, power and care.</td>
</tr>
<tr>
<td><strong>Movement 2</strong></td>
<td>Bouncy, bounces off the wall</td>
<td>Energetic, active, quick</td>
<td></td>
</tr>
<tr>
<td><strong>Visual image 1</strong></td>
<td>Visually intricate but abstract, possibly association with a small creature due to intricate surface which might remind one of fur or other organic material</td>
<td>Alive</td>
<td></td>
</tr>
</tbody>
</table>

In the following, we describe first the design and technical development of the experimental pieces, followed by their affective analysis.

4. Creating flexible structures using AM metals

In this section, we describe the decisions made in selecting the design for the experimental work, and then how the design was developed technically in relation to formal considerations.

4.1 Design decisions

In spite of their free form potential, AM layer-build technologies each have their own practical limitations (Dean 2013: 170–173). SLM, the process used for prototypes in this research, in common with many other AM metal technologies, requires a sacrificial scaffold-like support structure to be built along with the part to counter the movement associated with cooling molten metal. Whilst this support structure is designed to be minimal and easy to remove, its addition pre-production adds difficulty to an already costly process. Designs created for additive manufacture frequently exploit the technology's potential for geometric complexity and fine detail: support removal can be almost impossible in difficult-to-access forms and in finer sections where the strength of the break-away support comes closer to that of the part itself. In SLM support structure is needed to anchor the part securely to the build platform; beyond this it can be largely eliminated by designing within the limitations of the process. As a design builds up layer by layer from the machine platform substrate the added material is secured in place by the fused metal structure below. If the form develops within a certain angle to the vertical, usually around 40 degrees, the geometry can be self-supporting without the need for supplementary scaffolding support (see Figure 11) (Dean 2008).
4.2 Designing the prototypes

The first design considered developed from a set of ‘conventionally’ fabricated rings created by Niedderer in 1994 (Figure 13). The move to additive manufacture allowed for greater complexity in terms of the number of spring elements while the nature of the formed AM material restricted the design to finer movements than in the conventionally made pieces.

The resulting form is effectively an array of springs arranged radially around the finger and joined by a rigid outer ring (Figure 14). As can be seen, the coiled leaf-shape of the spring element is designed to remain within 40 degrees to the vertical apart from the underside of the loop where the supports can be easily accessed and ‘cleaned-off’.

The first problem encountered was that, because the material sections of the design were relatively fine and the elasticity of the material limited, the geometry could easily be damaged during its...
removal from the build platform substrate. As the SLM system was routinely used for more substantial geometries, common practice was to saw the pieces from the substrate. This proved inappropriate for our application and resulted in plastic deformation of the parts and a distortion of the radial arrays (Figure 15).

![First test with deformed radial arrays after removal from the base plate.](image)

Figure 15: First test with deformed radial arrays after removal from the base plate.

Removal of the parts by wire erosion using an outside supplier solved this problem to an extent although the geometries remain prone to distortion during support removal. Where the fine supports can be gripped individually they can be removed with relative ease and without risk; where supports are grouped in confined spaces, however, their combined strength presents a problem. Support is typically added using pre-defined tools in either the technology provider’s software or a proprietary AM file processing package such as Magics or Netfabb. The software flags up a ease of risk to the build with a scale of colours. The amount and pattern of the support used to alleviate any problems is largely empirical, however, and based on the experience of the user. There are different types of support including square pillars and rectilinear sections. The pillars proved more effective in our application as they are more or less equally weak in all directions. Care had to be taken in placing these pillars because if placed too close to one another they would fuse together to become a single entity.

An example of the problems which support removal can present was provided by the initial test pieces. Following the failure of the first build and in spite of the restricted angles to the vertical fine supports were added internally to stabilise the geometry (Figure 16). These simple pillars were relatively fine and weak; on screen their removal appeared straightforward. In practice, however, access proved extremely difficult and the removal of each required threading a fine hack aw blade through a tiny aperture. Until these internal supports were removed the affect of any movement could not be explored as the pillars effectively cross-braced and neutralised the spring.

![Test pieces on base plate with additional internal supports, 2013.](image)

Figure 16: Test pieces on base plate with additional internal supports, 2013.

The design was developed through a series of iterations exploring variations in the number of springs or radial petal forms, the cross-section of the spring along its length and the interface between spring and supporting band. The principal aim was to achieve an appropriate resistance. The problem proved to be in making the petal forms strong enough to avoid plastic deformation while at the same time maintaining some amount of flexibility. Reducing the number of springs allowed them to be wider, making them stronger laterally, to protect the radial array from plastic deformation whilst continuing to allow flexibility to resistive force to and from the centre.

5. Putting emotions to the test: Interpreting the prototypes using the soma-semiotic framework

Once the first set of prototypes was developed sufficient, we used the soma-semiotic framework to analyse the pieces with regard to their affective qualities and expression, as shown in Table 4.
Table 4: Example of soma-semiotic framework completed for ring prototype 1

<table>
<thead>
<tr>
<th>Meaning Indicator</th>
<th>Description of movement/image (as provided by the maker, Kleemann 2013)</th>
<th>Soma-semiotic interpretation of individual movement/image with regard to emotion</th>
<th>Soma-semiotic interpretation of combined movement/image with regard to emotion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Movement 1 (expressive/functional/behavioural)</td>
<td>Squeezes, grips the finge</td>
<td>Grip, security, adjustment</td>
<td>The movement and force associated with Movement 1 dominates and, coupled with the technical/industrial aesthetic, the overall impression is of an adjustable device</td>
</tr>
<tr>
<td>Movement 2 (expressive/functional/behavioural)</td>
<td>Can be twisted or rolled radially against the finge (more an aspiration as yet needs to be bigger)</td>
<td>Playful, distraction</td>
<td></td>
</tr>
<tr>
<td>Visual image 1</td>
<td>Visually intricate but with an overbearing technical, industrial aesthetic</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The result of the analysis was that while the design had been intended to offer an aspect of playfulness, the current design actually emphasized perceptions of functionality. The design had been intended to be sized to fit the desired finger comfortably without any flexing of the geometry, the idea being that once in place the ring can rock against the finge. The unintended but predominant act, however, is to force the ring further down the finger or onto larger fingers working against the springs. The intended ‘function’ of the springs is perceived to be a ‘one size fits all’ adjustability which unfortunately masks and distracts from the playful aims. Now that the performance of the SLM material is better understood, the intention is to disassociate flexible movement from function and create less obvious movements that provoke a greater emotional response, for example the flexible ball ring illustrated in Figure 17.

![Flexible ball ring design, Lionel Dean, 2013.](image)

Figure 17: Flexible ball ring design, Lionel Dean, 2013.
6. Conclusion

This research has embarked on a new area of research, which is the development of flexible structures through DMLS with the aim of creating emotional expression. The research was framed theoretically through an analysis of the nature of ‘elasticity’ and ‘flexibility’; through a review of existing flexible structures and their uses; and through an overview over current uses and developments of flexible structures using SLM.

The theoretical part was complemented through the development of a series of experimental prototypes using DMLS. The experimental pieces were developed firstly to explore the creation of flexibility using DMLS from a technical point of view, and secondly to understand how this flexibility can be used to enable emotional expression. The latter was assessed through analysis of both examples and results using the soma-semiotic framework developed by Niedderer.

The outcome and contribution of the research are twofold:

Firstly, a better understanding of the structural geometries and potential uses of flexibility in AM as well as of its expressive potential.

Secondly, it has shown the benefit of the soma-semiotic framework in analysing given examples with regard to their affective expression. In our case, the analysis has enabled a better understanding of the deficits of the current prototypes with regard to emotional expression.

In response to the findings, future research will investigate movements that are both unrelated to function, to avoid misinterpretation, as well as less obvious movements that are likely to provoke a greater emotional response.

References


Reflections on a Collaborative Research Project in Digital Moulding for Glass Casting and Artistic Interpretations

This is a two-part paper: firstly, describing a collaborative research project aiming to provide innovation in glass investment casting through the exploration of digital fabrication methods. Secondly, illustrating examples of the artistic exploration of this process alongside digital technologies, like 3D scanning, in the pursuit of mixed media artefacts. It will therefore compare traditional moulding and construction methods with digital fabrication methods. The paper is written from the perspective of a glass artist with little experience of digital technologies and discusses the impact of the collaboration upon her working methodology and creative output.

This research project was initiated in early 2010 at Affiliation C by Author B, Research Fellow in 3D Digital Production, and Author A, Senior Lecturer in BA(Hons) Contemporary Crafts: both are members of a research group at Affiliation . The aim of the project is to explore ways of combining Author A’s specialist knowledge of kiln-formed glass and Author B’s experience with digital design and fabrication technologies.

Author A previously collaborated with Aaron McCartney by providing a case study for his PhD research into ceramic shell moulding, which had not previously been explored in terms of glass casting. Whilst this technique had numerous significant advantages compared with conventional glass moulding techniques, this method presented a number of technical challenges for users and has so far seen limited adoption by the glass community. The impetus behind Author A and B’s research project was to utilize Author A’s knowledge of the ceramic shell process by extending its application and relevance when combined with emerging digital fabrication technologies.

This research has now successfully established an entirely new method of creating glass casting moulds directly from three-dimensional CAD files without the need for a physical mould pattern. The method developed is based on Additive Layer Manufacturing (ALM) technology using a three-dimensional printer, a process commonly known as ‘Rapid Tooling’ (RT). The inner part of the mould can be printed on a 3D printer and strengthened by the application of refractory outer layers. Through examples of Author A’s creative practice, which employs both conventional and digital methods of mould production, the paper will illustrate a number of unique advantages of RT digital moulding including: accurate glass casting, economies in mould production and firing schedules which could have an impact on studio and institutional glass casting production methods.

The success of the project has resulted in sponsorship from the sector leading companies ZCorporation (US) and Gaffer Glass (NZ).

The paper will also reflect on the personal struggles of finding an artistic application/voice for digital tooling, especially with a restrictive digital skillset to draw on. Issues concerning autonomy of production, aesthetic values and relevance to established artistic concepts and material language are discussed. Author A’s current artistic practice concerns low-tech construction methods to assist with the exploration of concept over and above the technical process and so the paper will also address the dilemma of how to use digital tools to help realize and stay true to the original ethos of making.

uwe.ac.uk/sca/research/cfpr/research/3D/research_projects/towards_a_new_ceramic_future.html
Gayle Matthias and Tavs Jorgensen

Reflections on a Collaborative Research Project in Digital Moulding for Glass Casting and Artistic Interpretations

Abstract
This is a two-part paper; firstly, describing a collaborative research project aiming to provide innovation in glass investment casting through the exploration of digital fabrication methods. Secondly, illustrating examples of the artistic exploration of this process alongside digital technologies, such as 3D scanning, in the pursuit of mixed media artefacts. It will therefore compare traditional moulding and construction methods with digital fabrication methods. The paper is written from my perspective as a glass artist with little experience of digital technologies and discusses the impact of the collaboration upon my working methodology and creative output.

This research project was initiated in early 2010 at Falmouth University by Tavs Jorgensen, Research Fellow in 3D Digital Production, and myself, Gayle Matthias, Senior Lecturer in BA(Hons) Contemporary Crafts, both members of Autonomatic, a research group at Falmouth University. The aim of the project is to explore ways of combining my specialist knowledge of kiln-formed glass and Jorgensen’s experience with digital design and fabrication technologies.

Previously I collaborated with Aron McCartney, providing a case study for his PhD research into ceramic shell moulding, which had not previously been explored in terms of glass casting. Whilst this technique had numerous significant advantages compared with conventional glass moulding techniques, this method presented a number of technical challenges for users and has so far seen limited adoption by the glass community. The impetus behind our research project was to utilise my knowledge of the ceramic shell process by extending its application and relevance when combined with digital design and fabrication technologies.

This research has now successfully established an entirely new method of creating glass casting moulds directly from three-dimensional CAD files without the need for a physical pattern. The method developed is based on Additive Layer Manufacturing (ALM) technology using a three-dimensional printer, a process commonly known as ‘Rapid Tooling’ (RT). The inner part of the mould can be printed on a 3D printer and strengthened by the application of refractory outer layers. Through examples of my creative practice, which employs both conventional and digital methods of mould production, the paper will illustrate a number of unique advantages of RT digital moulding, including accurate glass casting, economies in mould production and firing schedules which could have an impact on studio and institutional glass casting production methods. The success of the project has resulted in sponsorship from the sector-leading companies Z Corporation (US) and Gaffer Glass (NZ).

The paper will also reflect on the personal struggles of finding an artistic application/voice for digital tooling, especially with a restrictive digital skillset to draw on. Issues concerning autonomy of production, aesthetic values and relevance to established artistic concepts and material language are discussed.

My current artistic practice concerns low-tech construction methods to assist with the exploration of concept over and above the technical process, and so the paper will also address the dilemma of how to use digital tools to help realise and stay true to the original ethos of making.

Introduction
Having been a practising glass artist for over twenty years working predominantly with kiln-formed glass processes, I have witnessed many transitions within studio glass. The movement is fairly young, established in the 1960s in the art schools. Over these years improvements have been made in line with technological advances in glass machinery and equipment and increased availability of wide ranges of compatible glasses. Digital technologies such as water jet cutting, vinyl plotting and laser cutting are commonly employed by glass practitioners. Some processes, however, especially aspects of investment moulding, remain fairly antiquated, resulting in inaccuracies in the moulding process. The research discussed in this paper aims to enhance these traditional moulding methods.
Part I – Collaborative research into digital moulding for glass casting

Conventional moulding

According to Cummings, ‘Casting is normally taken to mean the filling of a mould with a liquid form of your material, allowing this liquid to solidify, and then separating the object and mould to reveal the desired form’ (1997: 81). Moulds need to be resistant to distortion and cracking, porous and soft enough to allow the expansion of the glass yet able to withstand high temperatures, usually between 850 and 880°C, and be easily removed from the glass after firing. Moulds tend to be made from adapted recipes of plaster and quartz, with additional refractory powders to help resist high temperatures and prevent the mould mixture from sticking to the glass.

Traditional lost wax fabrication for glass casting consists of a series of steps and could be described as a meditative process, Cummings paints a picture of ‘generative rhythms’ which are 'accumulative through stages rather than single events; this allows for opportunities for feedback, revision and adjustment’ (1997: 10). I know that within my own practice there is a certain pleasure and reward from such a slow pace of production and opportunities arise through play and ‘what if’ scenarios. It is the space between making which can be as important as the activity itself. Negatively, it can be perceived as an unnecessarily laborious process going through a series of indirect positive and negative model and moulding stages without coming into contact with the glass. An extended period of courtship is required to become familiar with glass’s inherent qualities. These numerous stages can also result in compounded errors in model and mould making which can gradually, subtly remove the glass artefact from the original intention (master model).

Conventional investment moulds tend to fall into two categories: monolithic moulds and multi-layered moulds. The monolithic mould is produced in a single pour of refractory mix over a wax pattern contained within a mould. The multi-layered mould is hand-built in layers, which may vary in thickness and material content and are applied using a brush, spatula or by hand to follow the profile of the wax pattern. For both processes, wax patterns tend to be steamed out of the refractory mould; the abrasive action of the steam can also deteriorate the mould surface.

Thwaites and Seybert at the RCA undertook an investigation and comparison of glass casting moulds in 2002, which featured an international survey of current studio practice, empirical testing and recommendations for improved investment mould recipes. However, the outcomes were still based on traditional silica-based plaster/quartz mixes with additional modifiers and they are hazardous by inhalation.

Ceramic shell moulding

The realisation of ‘Father and Son’ which formed part of my ‘Generation’ series provided a case study for Aron McCartney's PhD on the adoption of traditional bronze casting ceramic shell investment moulds for glass casting. This introduced more accurate and efficient ways of making investment moulds with vast improvements in terms of reduction in materials, firing cycles and durability. As McCartney describes, ‘Ceramic shell moulds are made from liquid slurries. These are based on colloidal silica mixed with molochite flour and stuccos of dry molochite, applied in graded layers to a wax pattern’ (2001: 149). McCartney altered this recipe by modifying the initial layers in contact with the glass to prevent the mould mix from sticking and included a softer sandwich layer to accommodate the expansion and contraction of the glass during the firing cycle. The wax pattern is burnt out of the mould using a blowtorch; this also carbonises the inside of the mould. Unfortunately, this process has not been adopted by the glass community, possibly through lack of dissemination, but also due to the subtle intricacies of the moulding process, wax burn out, and drying process which requires specific ambient temperatures and air flow in order to evenly dry the moulds. This can be difficult to replicate in a studio set-up.

Collaborative contextualisation

My collaboration with Tavs Jorgensen, Research Fellow in 3D Digital Production and member of Autonomic, a research group based at Falmouth...
integrating digital skills and technologies in craft practice, sprang from a discussion about ceramic shell moulding.

Tavs Jorgensen originally trained as a craft potter before becoming a designer in the ceramic industry. Recently he has focused his practice on research into the use of new digital design and fabrication tools. Currently, he is involved in projects concerning digitally driven reconfigurable tooling including DIY CNC. The purpose of this collaboration became to combine my knowledge of kiln-formed glass with Jorgensen’s experience with digital technologies by the investigation of Rapid Prototype (RP) 3D printing.

Current research in RP modelling in relation to glass casting has focused on the use of 3D printed patterns translated into glass via the lost wax method or burn out of RP models. Direct printing of glass using glass ballotini and glass powders has been researched by companies like ExOne Co and Professor Mark Ganter’s vitraglyphic 3D printing research at the Solheim Additive Manufacturing Laboratory at the University of Washington. However, this tends to produce opaque pate-de-verre like artefacts, which are fragile and shrink extensively on firing.

According to Cutler, ‘While it is possible to directly print objects in glass using an RP machine, as yet, there is no single source or system that can provide all the needs of a glass artist, as 3DP materials and processes remain in experimental mode’ (2012: 99).

**Research description**

Our initial collaborative tests made use of the ALM (Additive Layer Manufacturing) equipment at Falmouth, in this case the FDM (Fused Deposition Modelling) RP machine that produced models in ABS plastic.

The ABS plastic was treated in the same way as a wax pattern and invested in the multilayered ceramic shell with an inner softer sandwich layer. However, on burn out in the kiln, the mould was not sturdy enough to accommodate the expansion of the plastic and cracked. According to Material Safety Data Sheets, ABS plastic fumes are also hazardous by inhalation so these tests were abandoned. We were approached by a Z Corporation 3D printers representative who offered to provide a series of test samples in a starch-based powder as an alternative to the ABS plastic.

Z Corp’s ALM technology is based on building parts by spraying binder on layers of powder, a process which has been developed from two-dimensional inkjet printing technology. While we had little experience with this particular ALM technology, we were aware that the Z Corp 3D printers could work with a number of different powders, both inorganic plaster-based and organic, starch-based, compounds (Jorgensen and Matthias 2013: 5).

These starch patterns were fragile to handle during the moulding process, though successfully burnt out using a blow torch without cracking the mould. However, the surface quality was poor. We tried impregnating the starch patterns in hot liquid wax to improve their stability but this was not particularly successful and did not improve the surface quality to any great degree. This led us to test another sample donated by the Z Corp rep in the form of a small vase made from a new plaster-based material (zp150 powder) which we filled with glass cullet and fired. We were impressed to see that such a fragile looking mould could survive the firing cycle, indicating good refractory possibilities and that the glass had taken on the internal form, be it small, without completing adhering to the plaster. This opened up a whole new direction for our research and shifted the emphasis from RP model making and ceramic shell moulding to Rapid Tooling (RT), whereby we could potentially 3D print the mould directly without the need for a physical pattern. The pattern would only exist virtually on the computer screen in the 3D software.

![Figure 1. RP test models in ABS plastic and starch. RT mould printed in the zp150 material. Photo: Jorgensen 2010](image)

The RT concept is, however, nothing new in terms of Z Corp technology. The company had for a number of years been selling a refractory build medium called ZCast (3D Systems n.d.), for the creation of moulds for metal investment casting, but the use of this build medium had always remained very limited, perhaps due to a very low surface resolution (Jorgensen and Matthias 2013: 6).

In Rhino software, Jorgensen generated a series of moulds based on the accumulation of random geometric primitives. The random sphere model...
became the main test due to its complexity of undercut surfaces. Z Corp continued to support our endeavour and RT printed a series of moulds, which varied in wall thickness and composition.

The limitations of the RT mould were soon revealed on firing a larger amount of glass in a more complex form. 'From this series of tests we also discovered that the zp150 would shrink about five percent when exposed to the temperatures needed for glass casting (750 – 800°C)' (Jorgensen and Matthias 2013: 7). We used a plant pot as a reservoir to store the additional glass needed to fill the mould, so that it would trickle cast. The mould collapsed under the weight of the glass – the precarious nature of the original mould design aided this. However, the surface of the glass in contact with plaster was promising in its clarity and the ease in which the mould would dissolve in water made the demoulding process very efficient, good indicators that the process was worth pursuing and that the addition of supporting refractory layers, the modification of the plaster surface by the application of infillants or a combination of both methods were all areas for us to explore.

We returned to the ceramic shell process as a way to back the RT150 powder mould. We created stands for the moulds that also acted as handles that located inside the mould and allowed easy manipulation of the moulds during applications of colloidal silica and molochite stucco. Initial results were shown to representatives of Z Corp who then agreed to sponsor us by providing a Z Corp 310 printer, which was installed in the university in 2011.
To our disappointment, we discovered a discrepancy between the shrinkage of the RT inner mould and the back-up ceramic shell layers. Ceramic shell is very stable and does not shrink during firing, whereas the 150 powder shrinks quite considerably for a plaster-based medium. We had the powder analysed as Z Corp were not willing to divulge such trade secrets, but we still did not establish the reason for this shrinkage – it might have been due to organic materials burning out during firing. The small gap between the inner mould and the outer shell meant that the inner layer was not fully supported and therefore produced hairline cracks. Pre-firing the plaster inner layer, then applying the shell, was a viable option but seemed to introduce an unnecessary complication to the moulding and adversely affected the economics of the process.

We therefore embarked upon a series of tests to try and reduce the shrinkage of the zp150 powder mould by using different infill rants, modifying the ceramic shell and testing other supportive refractory layers to see if we could find a match. We did manage to halve the shrinkage rate of the zp150 powder. We tested a wide range of materials with mixed results; testing was accumulative, and in some cases intuitive. We used the collated data to establish the next round of tests.

The necessity of a versatile research journal was recognised, and in an attempt to find a format to compile all the information into complete journal entries we experimented with the use of a private blog. Prior to that, we had tested traditional analogue ways of recording and collating data, but both methods insufficiently captured and contained the diverse research methodology.

In order to facilitate a way of effectively logging our research we developed our own template for a ‘rich media’ journal using a database template for an iPad, which allowed us to photograph, record audio and empirical data so that we could easily reflect upon our analysis. Recorded conversations were particularly useful as they provided a greater context – spontaneous musings on the test results were sometimes insightful. Audio prompts also helped to maintain a research flow, especially on occasions when momentum was lost due to other commitments.

Through basic trial and error, application of prior knowledge, processes of elimination and combined and varying understanding of moulding materials we have successfully managed to marry the RT plaster mould with refractory back-up layers in several different outcomes. Our lack of scientific knowledge has meant that we have experimented through basic questioning of material properties and understanding of basic principles in the manner of creative practitioners, with intrigue, frustration and perseverance.

![Figure 4. Successful glass casts. Photos: Jorgensen 2010 and Matthias 2013](image)
Advantages of the RT glass moulding technique compared with conventional moulding include:

- New creative opportunities through the use of 3D software
- Very easy transition from virtual files to glass artefacts
- Significantly reduced moulding materials
- Reduced energy use through lower temperature and shorter firing
- Potentially better glass surface quality
- Easier and safer de-moulding
- Safer materials (Jorgensen and Matthias 2013: 10)

We are still in the process of testing the moulding process. Through further testing we want to trial different types of glass. We aim to address issues of scale of the RT mould which is currently restricted by the size of the build chamber, explore extended uses beyond casting, researching other kiln-formed glass processes and other material applications. We are in the process of running a pilot project with undergraduate students at Falmouth to test the moulding process on a varied range of models.

The RT moulding research has clearly defined objectives and as a consequence is a logical, technical series of problems to solve; this contrasts with my personal interpretation of digital fabrication methods.

**Part II – Artistic interpretation**

**Contextualisation of artistic approach**

![Image](image_url)

**Figure 5. Anatomical Deconstruction I and Anatomical Deconstruction V. Photos: Simon Cook 2011, 2012**

In my current personal work, which does not involve digital fabrication, I am exploring the relationship between materials and the body. I am interested in the element of danger associated with glass, wishing to create precarious and delicate structures supporting utilitarian ceramic found objects to intensify the desire for the audience to physically engage with the work.

The distorted bone-like ceramic element has been deliberately broken to allow the viewer access to internal layers and cavities. Sheet glass is used to extend and redefine forms and reference the movement of the body. The construction of the work is deliberately low tech, using cut and paste methods. My aim is to liberate myself from my technical straitjacket. As Sennet states, ‘the craftsman’s desire for quality poses a motivational danger: the obsession with getting things perfectly right may deform the work itself’ (2008: 11). I seek and strive for imperfection in my work, a ‘wilful amateurism’. I struggle to make my work imbalanced, to disrupt and offset a harmonious composition by interjecting an awkwardly cut sheet of glass, lodged into a brutal cut. To allow work to be publicly displayed with a chip or scratch could be judged in terms of poor craftsmanship.
Pye's ethos of ‘the workmanship of risk’ (1968: 20) is a terminology I would like to apply to my practice, with respect to intentional disparities, the avoidance of precise repetition, where ‘rough workmanship does not necessarily imply bad’ (1968: 34). Against the claim of perfection we can assert our own individuality which gives distinctive character to the work we do', states Sennet (2008: 105). I hope by combining the digital processes with the broken readymade and sheet glass I can maintain this agenda for making so that the digital work can be exhibited alongside the low-tech work in a seamless way.

I perceive myself to be a craftsperson in that I work with the language of glass alongside other materials. I work with techniques of glass manipulation but my work is not about those techniques. Neither do I want my work to be about the digital process. (Unfortunately, this paper does not include a critique/contextualisation of contemporary craft.)

However, as a practitioner, it is important for me to be able to find ways to use RT moulding in my work: to define the limitations of the RT moulding and other digital equipment that support the 3D printing through artistic interpretation, to test whether these processes are appropriate for the generation and realisation of my concepts, to familiarise myself with CADCAM through experiential learning, and to test whether the digital processes are generally user-friendly. With assistance from Jorgensen, recommending appropriate digital software and kit for me to experiment with and providing guidance throughout these processes, I have managed to complete a piece of work and am in the latter stages of production of a second piece which follows similar principles to the first.

Description of my digital interpretation

For my first piece of digitally generated work I had an exhibition deadline to meet, which provided a framework. My work is in part initially a response to ceramic fragments by investigating forms in relation to their broken surfaces. Being interested in edges, where one edge meets another, a cut or broken piece of glass or ceramic, the creation of tension where edges meet, the digitisation of edges naturally became my starting point.

Because of my limited CAD skills I did not feel that I could produce CAD models in a conventional way, as I would have to spend many hours getting up to speed with the software prior to being able to make what I envisaged. Instead, the models that I generated had to come from an alternative ‘by proxy’ method, and with the assistance of Jorgensen and his digital input. Masterton stated that ‘it is important for digital makers to know their tools in the same way as any other craft person’ (2007: 17), which is true in terms of feeling in control, being efficient in design and production and being able to safely operate equipment and creatively exploit and in some cases redefine its boundaries.

However, if I had known how to use CAD then I might not have discovered this particular way of working which, for me, seems more intuitive and less removed from the material process, retaining physical/haptic engagement. These production methods may be idiosyncratic or significant to other practitioners faced with a similar situation of inexperience of CADCAM. As McCullough observes, ‘the more we learn how to do, the less we know what to do’, and ‘the more sophisticated the techniques, the more people become intrigued by them, and the less anyone cares to focus on other aspects of the human condition’ (1996: 67).
My implicit knowledge of glass meant that I was aware of the weight of the material and how it would affect the positioning of the ceramic components, tilting the larger piece of ceramic once assembled. In order to securely fix the glass and ceramics together the glass had to plug into the slip cast ceramic cavity and therefore I made silicone models of the broken edge, by isolating and filling part of the internal space. The forms derived from this process were also intriguing and later stimulated other interpretations of my concept. Broken sections of the ceramic and silicone models of the internal cavity were scanned in a Picza 3D scanning machine. This machine provided a transition between the physical and the virtual object and was a direct way to digitize information. It was not totally reliable as there were some problems with scanning undercut models which affected the accuracy of some of the results and handheld scanners proved even more difficult to operate as they appeared not to be designed to precisely record sharp edges and severe angular shifts.

I focused on the scanned ceramic ends. Using Magics Materialize, I deleted irrelevant mesh faces to isolate the broken surface of the sink. I then had to transfer the information from mesh into splines. In Rhino I drew interpolated splines using the mesh points as guides. The broken ceramic pieces were repositioned on the grid base of a microscribe so that they could be orientated with the microscribe. The microscribe integrated the engagement between objects, materials and the CAD software, a gestural piece of kit that allowed me to capture physical movement and record data. Initially I tried to digitise the edge of the spline directly from the broken ceramic but discovered that the microscribe was not accurate enough. Therefore I recorded the length and width of the internal cavity of both ceramic ends, to create cross-reference points. The curved leading edges of the ceramic were also recorded using the microscribe so that the linking glass form would be an accurate continuation of these edges.

I could then align and rotate the outline of the ceramic ends with the reference cross, to give an exact positioning. These points were also used to create rails for the sweep so that I could create the surface between the two ends. This raised the question of what arises when these two ceramic outlines are united through the digital process – what form will be revealed through such orientation? I was not in total control of this process on several levels and, given the time and greater confidence with the process, I would have liked to explore other permutations. I found it difficult to work with abstract data, and rotating and orientating the reference crosses did not come naturally to me – I had to keep referencing the actual objects to be able to orientate myself!

More recently on revisiting this process I have annotated dots with a code to correspond with points on the actual object to enable me to more clearly navigate my way around the CAD imagery. In Rhino I experimented with hollow tubes with internal textures as well as solid forms. I required a great deal of assistance with this process. The procedure was akin to learning a new language, but instead of starting with the basics I was thrown into an intermediate class so I learnt particular sophisticated terminology but could not necessarily hold a basic conversation.
It was important to bring elements of the 3D CAD modelling into reality on numerous occasions, to check the positioning and physicality of the work. By 3D printing test end pieces and models I was able to check the fit of the components. As Dormer observes, ‘one almost comes up against the unexpected in the materials themselves. Materials have flaws and in real life these flaws have to be worked around, but on a computer the material remains imaginary and flawless’ (1997: 147). The RP prints have flaws and it is quite easy to lose the subtly of form that needs to occur when one material continues the surface/line of another in a smooth transition.

Unfortunately, there was not the time to experiment with RT moulding methods for this project. Therefore I had to revert to conventional processes: master silicone moulds were taken of the RP model, moulds were filled with liquid wax, a refractory mould was made incorporating air vents and a reservoir and the wax was steamed out of the mould, then filled with glass and fired in a kiln. The internal plug had to be assembled in the wax stage.

The cast was ground and polished prior to assemblage. This re-established a physical engagement with the work and could possibly be the case if other practitioners were to employ RT moulding. The fine linear nature of the digitally printed surface can easily be removed through coldworking the glass, if required.

**Reflections on the artefact – is it a hybrid or intermediate?**

Does this work communicate my concept, satisfy or enhance my making requirements in the way I intended it to? Being pragmatic, I recognise this as a transitional piece of work, which I feel does not possess the impact which I attempt to achieve in my low-tech assemblages – it is too precise and predictable in form. There are qualities within the work and the production of the work that are unresolved, partially due to my limited CADCAM skill set, but I was also compromised by the restricted timeframe and as a consequence I was still resolving...
some model and moulding problems through conventional means. However, this is quite often the scenario when producing work for exhibitions.

CAD can result in a disconnect through delay and separation from the physical relationship of thinking and making and I struggled with this. I still maintained control of the 3D modelling but, due to my reliance on Jorgensen’s assistance, I did not have the luxury of playing with forms in a way that I would do with materials at hand. Therefore I had to plan in advance my intentions, then adhere to that decision even if at a later date I felt like I would like to have returned to stage one of the design process. That is not to say that I did not have to revisit stages of the digital processes on many occasions, but this was due to digital technical oversight or missing data or inaccuracy of 3D modelling. In my opinion, the screen shots and production methods are visually more exciting than the finished work, and I have taken inspiration from this and the moulding of internal cavities, which has led me back into conventional casting methods.

Ironically, the finished glass element is visually akin to a piece of hot-formed glass, though it would not have been possible to achieve this level of precise fluidity and accuracy of fit through hot glass modelling.

Moving outside my comfort zone is important so that I don’t stagnate as a maker, so that I can relate to and be reminded of what it is like to be an apprentice, to throw something fresh into the mix of making and regain an alternative perspective on my practice. On the other hand, the enticement of technique is something that I consciously want to avoid. As McCullough states, ‘the possibility of craft lies not so much in the technology as in the outlook you bring to it’ (1996: 271).

I would like the exploitation/exploration of these digital tools to help me enhance the glass casting process by arriving at more innovative forms, be they more complex, intricate or basic than I am currently able to achieve by hand. This requires greater knowledge of 3D software. As McCullough argues, digital technology has a lot in common with craft production methods: the use of tools, manual dexterity, employing kinesthetic and visual thinking and experiential learning and that a symbiotic relationship should be actively pursued. Pye refers to the ‘workmanship of certainty found in quantity production and in its pure state in full automation’ (1968: 20). I have yet to achieve this, and as Pye goes on to state, ‘although the components may be made by the workmanship of certainty they will still nearly always be assembled by the workmanship of risk’ (1968: 34), which I still find to be the most challenging aspect of my creative practice.

References

According to David Pye handwork can be understood as two aspects of workmanship: workmanship of certainty and workmanship of risk. Craft, he argues typically falls into workmanship of risk owing to the uncertainty of the outcome caused by lack of control over materials and processes.

The Aalto vase is an example of risk workmanship. This design has evolved over several decades. It was originally made using wood moulds; this made each batch of vases unique due to the decay of the mould it brought unique parametric changes to each vase.

This is in sharp contrast to Additive Layer Manufacturing (ALM) where the materials and the process are developed to the point of certainty. So, how in such a controlled process can we add elements of risk and uncertainty akin to craft? Would applying craft thinking give added value to the artefacts?

The development of an artefact through design software allows the designer-maker to attain a high degree of refinement. Cultivating a design can take several days. Has the relationship between maker and artefact shifted to a virtual plane?

“Contemporary craft is about making things. It is an intellectual and physical activity where the maker explores the infinite possibilities of materials and processes to produce unique objects.”

(Greenlees R)

Makers in the realm of digital craft such as Drummond Masterton (2007) have explored the idea of disrupting CNC machine code to add aesthetic qualities, using machining marks as a primary design feature.

Materiality is essential to craft thinking; what materials are selected and how they are treated is of great relevance. In some ways current ALM processes have inadvertently through delivering design freedom, limited this creative enquiry by reducing the palette of materials available to the designer-maker.

Paste Deposition Modelling aims to increase this palette and open ALM to experimentation, it relies on hacked-together hardware and subverts software to explore syringe-based 3D paste deposition. This approach enables designer-makers to 3D print with almost any material.

Craft materials like Precious Metal Clay (PMC) offer an opportunity to explore ALM in a context that is not normally associated with uncertainty. PMC is known for its unpredictability; variables in size, and firing temperatures can influence the final outcome. PMC in clay form can be adapted for PDM using simple tools. Whilst a layered filament texture is evident from the process, it can be blended and made smooth, according to the designer’s intention, it can also be exaggerated and exploited in a similar way to Masterton’s work leading to a more honest outcome of the process.

Silicones are easier to predict and when considering the final form offer very little uncertainty. However, the materiality of the build is far less predictable. It has surprising optical, structural and tactile qualities. Subtle differences in the internal structure can deliver great changes to the overall feel of the artefacts.

The process is much more open to ‘happy accidents’ where the material can be led to behave in unpredictable ways leading to stochastic features not reflected in the virtual design stages.

PDM exists in three domains; digital, code craft, and traditional practice. This brings about a process that can be a hybrid in that it is ALM yet regains the nature of being ‘touched by hand’.


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**Introduction**

3D printing, Rapid Prototyping (RP) or Additive Layer Manufacturing (ALM) are synonymous terms for what has become a mainstream method for producing realistic models, or parts, from a 3D CAD file (*.stl). The steps are that the *.stl file is imported into the RP machine’s software which slices the model into layers and processes the build orientation and any
support required for the part to cope with overhangs. The model is then built by the machine 'bottom up' in successive additive layers.

There are many closed systems on the market and a limited spectrum of materials, most of which are suitable for prototyping purposes but often require a step-change with other processes to translate them into the correct material for purpose. In the jewellery sector an example would be the printing of wax masters for investment casting. Direct Metal Laser Sintering (DMLs) and other precursor metal ALM methods and systems have existed for many years but were still not developed for use in the field of jewellery by the time of this project.

In 2005, EOS demonstrated the possibility of sintering precious metals (Paynter 2005). Since then, EOS have collaborated with Cookson Gold to produce an operational machine.

Fused Deposition Modelling (FDM) is a process in which a spool of plastic filament is drawn in a heated nozzle which respectively plasticises the filament, enabling it to be deposited in layers according to the CAD data. A number of affordable entry-level FDM systems have emerged, e.g. ‘Rep-Rap’, ‘Bits From Bytes’ and ‘Makerbot’. These open up possibilities of ownership and, being less of a closed system, are easier to customise. FDM is perhaps the most similar to the build method used in PDM.

Coupled with the emergent open-design culture we see ‘technophilic crafters “hack” machines, reverse engineer them and apply craft thinking on them to make them into open tools that can do new crafty things’ (von Busch 2010: 119).

With current ALM systems the goal is to achieve near finished products so as to require little to no finishing by hand. The trend in ALM system development is towards higher resolutions to eliminate evidence of the process by reducing the layer height (stepping). In doing so, however, the opportunity to exploit the stepped quality of the process aesthetically is lost, without intentional programming. The exploitation of the stepping texture can be seen in the digital clock by Brian Podsches (Figure 1), where he intentionally exaggerated the stepping texture of the SLA process across the top of the piece to use it as an aesthetic feature. He then used this print as a form to cast in polyurethane which he then electroformed in silver.

Figure 1. Electroformed silver clock by Brian Podsches © Brian Podsches, image used with permission.
The approach of leaving the evidence of the process leads to a more honest outcome. This is similar to the digital deconstruction method created by Drummond Masterton (2007). However, instead of using additive manufacturing he uses subtractive methods, cutting into blocks of material using a CNC mill (Figure 2). CNC machining leaves cutting marks and patterns on the surface of the material. In the industry, these are usually polished away. However, Masterton focuses on using these as the primary aesthetic feature of his work. He interferes and manipulates the machine code to create patterns and cutting marks that are distinctive to his visual vocabulary, ‘taking advantage of the unique circumstances that the tools can provide, and moving beyond using the tools to simply aid in the speed or ease of production’ (Campbell 2007:61). In doing so he takes greater ownership of the final object. By modifying the machine code, he overrides the decisions the machine has made on how to make the intended part and manipulates them to achieve his desired outcome.

The Aalto vase is an example of workmanship of risk. The vase was originally made by blowing glass into a wood mould – each mould was hand crafted and used several times. Over time the glass would burn the mould, producing a parametric change, meaning that even vases made from the same mould would not be identical. The manufacturing process has changed in recent years to meet demand and the workmanship has shifted to certainty by using steel moulds where each batch is identical.

ALM can be considered to be workmanship of certainty as the outcome is for the greater part beyond the control of the maker as long as the parameters and machine set-up are correct. In such a controlled environment makers are able to dedicate most of their time to the development of form through CAD software to exploit the properties of the system and the material to the very limit, producing results that can surpass the expectations of the material.

This can be seen in the N12 bikini designed by Mary Huang and Jenna Fizel (Figure 3). Here the packing and linking of the components that make up the bikini have been calculated using an algorithm to produce the desired shape and mechanical properties in Nylon 12 using selective laser sintering. This example shows that there has been a shift in the materiality of making towards the digital domain given the limited spectrum of materials available to the process. Makers have to find new ways to exploit the material and use the freedoms provided by the manufacturing technique to produce the desired functions. However, they are still limited by what is physically possible with the given material.
Materiality is essential to craft thinking – what materials are selected and how they are treated is of great relevance. While many practitioners have attempted to adapt to the limited range of materials available for experimentation by working with what is available, the fact still remains that closed ALM systems are designed to be user friendly and have limitations built into the software to ensure optimal conditions. This is reflected in the materials used by the process as they are both finely tuned to the point of certainty.

The research draws upon the development of open systems. It uses hacked together hardware and subverts software to explore syringe based Paste Deposition Modelling. It aims to extend the materials available for ALM. It does this by using a CNC machine as the platform for 3D deposition of materials (Figure 4). This approach overrides any need for firm are in the system as it is driven in real time from a computer. The pneumatic syringe based deposition heads allow for almost any material to be deposited, as long as it is in paste form.

Craft relies on tacit knowledge. Tacit knowledge is acquired through experience and it is the knowledge that enables you to do things as distinct from talking or writing about them. (Dormer 1997: 147)

The nature of the research in this project is practice based. It delves into ideas and applications with different materials in order to gain experience and understanding of the process. Areas of investigation have included medical devices, embedded electronics, product design and jewellery. This article covers the deposition of silicone and metal with some examples and applications.

**Code generation**

File preparation for ALM generally makes use of slicing software. This generates instructions for each layer of the object including infill patterns and surface perimeters.

This automated process, however, does not allow the designer freedom to generate unique patterns pertaining to the designer’s visual identity. To overcome this limitation, the layers of the object are designed individually in 2D within CorelDraw and exported to G-code, where the sequence of layers can be repeated in code as required; this method is more suited for straight walled builds. Alternatively, the layers generated in CorelDraw can be imported into 3D Studio Max and edited there to create more complex surfaces such as twists and overhangs (Figure 5). This approach allows for greater control over the geometry and the resulting visual and tactile qualities of the artefact. If need be, the system can also use G-code generated by a standard slicer such as Slic3r.

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**Figure 4.** Experimental set-up. Esteban Schunemann (2012) © Esteban Schunemann.

**Figure 5.** Tool path development diagram. © Esteban Schunemann.
**Materials, preparation and syringe loading**

**Metal clays**
Metal clays consist of metal particles suspended in an organic binder which burns away upon firing; the metal particles also sinter and produce a near fully dense metal part.

Precious Metal Clay (PMC) is a silver clay that emerged in the 1990s manufactured by Mitsubishi Materials; other brands such as ‘Art Clay’ also exist and pre-formulated metal clays are also available in bronze and copper. Conventional techniques used with metal clays are similar to those used in ceramics and pertain to craft, although the final object is commonly jewellery.

One of the fundamental issues of metal clays is that, despite the manufacturer’s guidelines, it is difficult to predict the shrinkage from the particles sintering. This is a relative black art, dependent on the geometry and scale of the item. It is also dependent on the specific clay formulation in terms of particle size, homogeneity, particle shape, and proportion of metal particles to binder. Some characterisation of the sintering process, relative shrinkage and the resulting material properties of the various formulations of PMC has been undertaken by (McCreight 2010).

For the tests in metal detailed in this article, two types of clays were used: BronzClay and PMC Pro (90% silver). PMC Pro was chosen over ‘PMC3’ (pure silver) as it is a stronger material (Cool Tools). In a 2010 study, Sanderson demonstrated the relative strength of ‘PMC Pro’ by practically working the metal and sizing rings (Sanderson 2010: 7).

**Material preparation**
Metal clay as sold is too vicious for deposition, so to prepare it fresh clay is spread on a smooth surface (e.g. glass) with spatulas. Distilled water is gradually added with an atomiser. Olive oil is also added to help condition and lubricate the clay. This procedure is ‘hands on’ and the proportions vary depending on the age of the clay and how long it is mixed for, but roughly the proportions are 4–8 grams of water and 0.1–0.5 grams of olive oil for every 50 grams of clay. Typically, PMC Pro required more water to prepare than BronzClay to reach a suitable viscosity. The result is a paste with a viscosity comparable to peanut butter. Silicone required no preparation as standard off the shelf a ethoxy silicone was used.

**Syringe loading**
Mixing with spatulas reduces the amount of air that gets inside the clay. When loading the syringe, however, some air is introduced; large air bubbles can lead to deposition interruptions which can ruin a build.

To reduce the likelihood of large air bubbles, the paste is first loaded in a syringe that is used to load the depositing syringe from the front. This double loading method helps diffuse the large air bubbles in the clay. The silicone was also loaded with a similar front loading method, but it was done directly from the silicone cartridge.

**Silicone deposition**
Elastomers in ALM are not common. Systems like Objet feature rubber-like materials but they are not durable and only suitable for prototypes. The rubber-like material has the advantage that it can be combined with rigid variants of the material to simulate different levels of shore A values (Stratasis A 2013). However, there is no chemical resistance data on these materials and, furthermore, the maximum elongation achievable by the rubber-like material is 170% (Stratasis B 2013: 3). These limitations can be overcome by using silicone in PDM. The material is readily available and can be matched to the application.

**Deposition perimeters and stability**
For 3D deposition in silicone to be possible, the material must be self supporting. Otherwise the structure would collapse in the first few layers or each layer would require curing before consecutive layers could be added, insofar as all the silicones tested have demonstrated excellent self support properties. Figure 6 shows a 100 mm tube built in clear silicone with no infill or support structures; this build took fifteen minutes to complete. The curing time of this silicone is 4 mm per day but it can be handled within one hour.
While the silicone might be self supporting it is important to consider the structural integrity of what is being built. The 100 mm tube was made with two perimeters per layer; these make up the wall of the build. Previous build attempts failed when only one perimeter was used, this is because filaments are cylindrical and therefore inherently unstable. Figure 7 illustrates the issue. The draft angle of the structure is also of importance. When the build reaches 45° one of the filaments with be deposited in mid air unless there is an infill or support structure underneath to support the filament.

**Mould deposition**

The elasticity of silicone makes it ideal for moulding applications. The manufacturer of the silicone used claims up to 800 per cent elongation at breaking point with a working temperature range of -40°C to +180°C (Mapei 2011).

Several hollow builds were made, primarily to test the limits of deposition but also to test if they were water tight and therefore suitable for moulding. Figure 8 shows one of the moulds (yellow) taking just under four hours to make with a 0.4 mm nozzle and three perimeters. The second mould, nicknamed ‘the seashell’ (red), was made using a 0.8 mm nozzle to exaggerate the filament texture and save time. This build was completed in one hour with three perimeters.

Both moulds were found to be water tight and were tested for their suitability as moulds by casting resin and gelatine; both successfully de-moulded. As a final test the yellow mould, being the thinnest and most flexible, was also tested with cake mix and baked in an oven; while the silicone is not food safe it served well as proof of concept. The silicone was able to withstand the temperature and remain flexible after baking; it showed no signs of discoloration or burning.
Silicone textiles

ALM is suitable for making complex shapes and products that would perhaps be too difficult or impossible to make by traditional methods. In this case the properties of the silicone were exploited to make textiles (Figure 9). The build is quite simple – it consists of two layers of silicone in a log-pile configuration; a 0.6 mm nozzle was used to extrude the filaments. Initially it was thought that the filaments were too thin and the textile would be too delicate to handle but, surprisingly, it is quite strong and able to withstand being stretched.

![Silicone textile](image)


Silicone watch

The work on the silicone watch constitutes a milestone in terms of the development of the machine and the experience gained in depositing with silicone. A new version of the deposition head was developed during the tests leading up to this build to support up to three deposition heads with an automatic tool changer. The watch is a multi material build featuring both clear and opaque silicones and an embedded digital watch movement which was added during the build to encapsulate it inside. The image on the right in Figure 10 shows the moment the movement was installed. The infill was designed to maintain an even cell distribution along the whole band to make it soft and comfortable to wear. The whole build took four hours to complete with a 0.8 mm nozzle.

![Silicone watch](image)

Figure 10. Silicone watch finished (left), movement installed (right). Esteban Schunemann (2012) © Esteban Schunemann.
Silicone process discussion

The work in silicones in terms of the form pose little uncertainty. As long as the deposition set-up is correct, however, what is uncertain from the virtual model is the materiality of the build and how the artefacts feel and behave when handled – it is a tactile experience.

The moulds functioned well without any tearing. Few materials bind to cured silicone so this makes it ideal for mould making. The shape of the seashell would be a very complex form to machine in order to make a mould, so even with the curing time of the silicone it is still a very fast method for producing bespoke moulds. This could have potential applications in the cake decoration industry as complex moulds can be manufactured with a short lead time.

The watch demonstrates the importance of control over the deposition process. The model could not have been made using an automated slicer; it is impossible for the creator of the software to anticipate all possible applications and intentions the maker might have and provide optimised solutions for each. The infill (blue in the pictures) used in the band of the watch went through several iterations until it reached the softness and flexibility that was desired. The window of the watch made in clear silicone makes a lenticular effect over the display; as the light is diffused through, it creates an intriguing effect when the light becomes interlaced with the filament pattern.

The versatility of PDM in silicones is manifested in the silicone textiles. The movement of the textile is organic in nature, flowing and yielding. Just the theme of making textiles with silicones can render an infinite number of possible permutations and patterns to explore, each with different applications. This is the aim of PDM – to open ALM to a tree of exploration with infinite branches.

Deposition of metal clays

Key research questions concern whether metal clays can be adapted for 3D deposition. In the first instance this means diluting them to a consistency that will pass through a tapered syringe nozzle, determining the deposition parameters, and finally seeing whether the reformulated material will sinter fully. From initial results, a range of 3D geometries that show the limits of deposition can be developed. Finally to show how such materials, within the constraints found, may be used for jewellery, a range is developed that suitably aligns the aesthetics of PDM and the possibility of self-originated infill structures with the intentions of the designer. This is subsumed within the creation of rings as they demonstrate the ability to create a product to a set size, taking into account material shrinkage during firing. It is considered that the internal structure of the part achieved by infills may also have an effect on the overall shrinkage.

Preliminary tests

To build the knowledge required for deposition, basic test geometries were deposited in BronzClay; these included simple log pile structures and cones featuring draft angles from 30° up to 45° at 5° increments. The cones were made to determine the maximum draft angle the clay could be deposited at unsupported. The firing schedule was based on the manufacturer recommendations (RioGrande 2011: 9). The 30° and 35° cones built well. The first few layers had the tendency to slump due to the weight of the material, but as the diameter of the layer decreased the structure became more stable. This scenario, rather than producing a regular cone, results in something of a ‘witch’s hat’. At 40° the inner filament struggled and became detached from the layers underneath at several points (Figure 11). The build completed but the surface quality was less than ideal.

Figure 11. 40° draft angle cone, being deposited (left), fired (right), BronzClay. Esteban Schunemann (2012) © Esteban Schunemann.
At 45° the deposition failed (Figure 12). The steep angle meant that the innermost filaments were deposited in mid air, causing the layers to collapse. This meant that further layers were now being deposited too high, causing the filament to coil and move randomly as the build progressed. The unpredictability of the filament placement under these conditions can become something that is desirable.

Figure 12. 45° draft angle cone, being deposited (left), fixed (right), BronzClay. Esteban Schunemann (2012) © Esteban Schunemann.

The cones were used to underpin the development of the process towards producing sophisticated hollow builds. Another build was made in both BronzClay and PMC Pro using the geometry made for the seashell silicone mould (Figure 13).

The seashell was sliced with the same parameters used on the cones. While depositing in BronzClay there was an issue with the air supply which caused the pressure to constantly rise and fall. The effect was that the filament became finer as pressure fell, and as the pressure rose it became thicker. Consequently it became necessary to manually adjust the feed-rate in ‘Mach3’ on the fl. While the print was successfully completed, the surface had a wavy quality that was not part of the design. It is worth considering, however, that this brings forth ideas as to how the effects of varying the flow-rate could be used for aesthetic purposes.

Figure 13. Seashell build in PMC Pro (left), BronzClay (middle) and CAD model (right). Esteban Schunemann (2012) © Esteban Schunemann.
The seashell test showed that PMC Pro has a higher tendency to slump than ‘BronzClay’; this could be partially due to it having a higher water content. This was observed early in the build, and to alleviate the slumping air from the supply was directed at the build platform. This helped the build dry quicker as it progressed and lessened the impact of the slumping.

**Tessellated rings**

Several rings were designed where the infill as the primary feature. These rings were used to observe how much shrinkage occurred in the rings. They were made in both PMC Pro and BronzClay. The firing schedule for PMC Pro was based on work by Sanderson (2010), where she attempted to characterise the shrinking of PMC in the context of rings and how the firing stage in enced the final outcome.

The BronzClay rings warped during firing – the geometry became elliptical and was no longer flat. The rings were strong enough, however, to be hammered flat. The ell ti cal shape was then rounded on a ring mandrel; the rings were not stretched. In contrast PMC Pro rings showed little warping and only required a few light taps with a mallet to make them fully flat and sound. The shrinkage was consistent when comparing the rings made with both materials; which was 14.5 ring sizes. Figure 14 shows a comparison between a fi ed and unfi ed ring.

![Tessellated ring shrinkage comparison in BronzClay. Esteban Schunemann (2012) © Esteban Schunemann.](image)

**Hex rings**

These rings featured a lighter geometry with no infill o ascertain if the thick infill of the p evious test had any infl ence on the shrinkage. The rings were made in two batches to observe how the rings shrank and then make dimensional corrections to the design to target a specific size in the econd batch. The first ba ch of rings shrank less than the tessellated rings, which suggests that the infill did in ence the shrinkage. The ring with the dimensional corrections shrank marginally less than the first ba ch; yet, due to the uncertainty of the shrinkage, the ring was designed to be smaller than required so that it could be sized up if need be; it is easier to go up one or two ring sizes than going down. Nevertheless, the size was close enough to correct on a ring sizing mandrel. The overall shrinkage of these rings was between nine to ten ring sizes. One of the rings from the first ba ch was burnished with water and sanded smooth before firing o test how the deposited clay would react to working using traditional techniques. The rings were finished with a patina o emphasise the filament exture.
Large rings

These rings were made as an exploration using the experience gained from the previous work. They were burnished and made smooth on the outside surfaces but left untouched inside to contrast the filament texture against the smooth surface (Figure 16).

The cityscape ring (BronzClay) was heavily worked in its greenware state by cutting, burnishing and sanding to observe how far the deposited clay could be pushed. The shrinkage of this ring was 13.5 ring sizes, which was greater than the hex rings but smaller than the tessellated rings.

The suspension (PMC Pro) ring was burnished on the outside and light sanded. This ring shrank less than expected at 8 ring sizes.
Metal process discussion

The creation of texture goes beyond the digital domain. The material can be led to behave in a stochastic fashion; by depositing at less than optimal parameters filament placement can be unpredictable, breaking the symmetry of the layered texture and producing something unique. This was observed during the cone draft angle tests where the print failed at 45° (Figure 12). This shows the process is open to ‘happy accidents’ where key aesthetic features are not reflected in the virtual design stages.

It has been shown that metal clays can be adapted for PDM. They can be prepared with large tolerances using simple tools and dispensed through a syringe nozzle. Firing schedules were determined and it was found that ‘BronzClay’ and ‘PMC Pro’ sintered fully and could withstand basic wroughting. Seashell geometries (Figure 13) demonstrated that PDM can produce sophisticated, tapered and twisted parts without support material, which bodes well for creating 3D hollow parts. Benchmarking the dimensional stability of metal PDM by ring size shrinkage was attempted. This was combined with developing a body of work to demonstrate some anticipated benefits of coupling the PDM characteristics with self-originated infill strategies. Where consistent batches were fired as built (i.e. not worked by hand), there was good consistency within the batch but not between different designs. This is likely to be dependent on the design features of: external and internal perimeter geometries, infill patterns, wall thicknesses and build height. PDM is in its infancy. For it to be dimensionally reliable, a more formalised experimental approach would be required. This would encompass process development rather than a crafts research based context. An exploration of metal PDM for craft outcomes that are not dimensionally constrained would appear an appropriate way forward.

Further to the investigation with the rings, another piece was made. A pendant was designed as a visual expression of the tessellation patterns PDM is capable of when not dimensionally constrained as per previous tests (Figure 17).

Figure 17. Pendant in PMC Pro. Esteban Schunemann (2013) © Esteban Schunemann.

With PDM for metal clays there isn’t a step-change, and only the material required in the part is prepared, rather than a bed of powder. This, combined with the desktop prototyping merits, could be an open-source, low-cost and versatile process for cold forming metals, making it ideal for one-offs or small batch production requiring little set-up cost. This presents a viable route for designer-makers wishing to work with ALM in precious metals.

Conclusion

What has been presented here is a process which allows makers to take ownership of the artefacts made with the process by encouraging creative enquiry and allowing the maker to take control of ALM and make active decisions that are pertinent to the craft process and the maker’s visual identity.

Generating PDM program files is a multi-step process that could be deemed complex and off putting for many, but not all. It is an approach in the open-source domain common to many types of research. Masterton (2007: 20) created a process for intervening in the automatic generation of cutting tool paths for metal decoration using Corel Draw. PDM similarly offers opportunities for design by control of the tool paths and infill patterns. Ideally a platform based system to develop geometries and tool paths is needed. As such approaches become mainstream, they should eventually grab the attention of software developers.

The layered PDM creates a texture which can be exploited within the product’s visual identity. PDM can deposit using a number of different sized nozzles. The capability to deposit even larger filament diameters allows for further exaggeration.
of the texture. The ability to quickly change filament diameter makes this a reconfigurable arrangement that is less directed by the constraints of the 0.1 to 0.4 mm filament diameters typical of FDM. Whilst a layered texture is evident it can also be selectively blended and made smooth, according to the designer’s intention. This brings about a process that can be a hybrid in that it is ALM yet regains the nature of being touched by hand. This approach presents a change in the nature of practice, one in which coding skill needs to become part of the designer-maker’s toolkit to take full advantage of the freedoms offered by the process.

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Memory is not constituted after present perception, but is strictly contemporaneous with it, since at each instant duration divides into two simultaneous tendencies, one of which goes toward the future and the other falls back into the past. (Deleuze, 1991, p. 118)

Knitting is a ritualistic process of making which is based on binary multiplications of stitch formations, the knit and the purl. Knitting is culturally embedded within our society and wardrobes; it takes the form of the craft object to the avant-garde garment. It has a duality of making that of hand and machine, which parted ways at the onset of the European industrial revolution in the sixteenth century. It is only in the last twenty years that the machined has come full circle back to its craft roots, with the capability to produce objects on ‘the round’ through seamless knitwear technology.

This paper, engaging my current PhD research, concerns a critical assaying of the impact of seamless knitwear technologies, particularly with respect to the role of design and craft in its applications and outcomes.

Through the notions of matter, memory, duration, past and future this research advanced through a reliance on past knitwear design knowledge to initiate designs using seamless knitwear technology; though the “past” was subliminally contemporaneous. Initially garments were made out of the points of view that consisted as my design knowledge and the material relations of my knowhow—intuitive prospecting with yarns and a pre-theoretical encounter with seamless knit technology.

A garment arrives, and for the first time I as able to retrace from this congealing of movements that constituted the formed matter, to the intuition-in-action that opened the haptic connectivity. This constituted the momentum of a repetition-in-difference, the shuttling of duration’s pastness and futurity, but also its virtuality, its intensive forces and its actualisation, its extensive forms and formations. This process of reflective development worked both inside and outside of the internal seamless knitwear design system, by combining the functional processes of the technology with intuitive craft responses to each garment’s affective qualities embedded with design memories.

Computational design methods in the knitwear industry have a genuine impact on the skill sets of practitioners. Such an impact requires new approaches to design method as well as new ways of understanding design histories and the possibilities of futures. This research challenges past design methods and re-kindles influential creative past experiences. The traditional Japanese aesthetic of Wabi-Sabi was one past experiential influence that surfaced during this research, through its proximate resonance and dissonance with seamless knitwear. In its current applications, seamless knitwear appears to be antithetical to traditional Japanese approaches to creativity. To engage this ‘present’ of a complex of technological, historical and aesthetic forces that distend contemporary knitwear practices, my paper aims to ask how we might think the time of production differently and in this find in erstiti al spacing’s in computational design processes that invigorate a more traditional understanding of design.
Amanda Smith

Past, Present and Future: A haptic approach to mass-production seamless knitwear technologies

Abstract

Knitting is a ritualistic process of making which is based on binary multiplications of stitch formations, the knit and the purl. Knitting is culturally embedded within our society and wardrobes; it takes the form of the craft object to the avant-garde garment. It has a duality of making, that of hand and machine, which parted ways at the onset of the European industrial revolution in the sixteenth century. It is only in the last twenty years that the machined has come full circle back to its craft roots, with the capability to produce objects on ‘the round’ through seamless knitwear technology.

This paper, engaging my current PhD research, concerns a critical assaying of the impact of seamless knitwear technologies, particularly with respect to the role of design and craft in its applications and outcomes within a garment design process. This is achieved through a process of reflective development working both inside and outside of the internal seamless knitwear design system. By combining the functional processes of the technology with intuitive craft responses to each garment, affective design qualities become embedded within garments produced via a mass-production design system. It is the evocation of past design knowledge as applied to the present technological boundaries of computational design systems that opens the shuttling of duration’s pastness and futurity, finding the interstitial space in which to think the time of production differently and introduce a haptic aspect.

Computational design methods in the knitwear industry have a genuine impact on the skill sets of practitioners. Such an impact requires new approaches to design method as well as new ways of understanding design histories and the possibilities of futures. This research challenges past design methods and re-kindsles influential creative past experiences. The traditional Japanese aesthetic of wabi-sabi was one past experiential influence that surfaced during this research, through its proximate resonance and dissonance with seamless knitwear. In its current applications, seamless knitwear appears to be antithetical to traditional Japanese approaches to creativity. To engage this ‘present’ of a complex of technological, historical and aesthetic forces that distend contemporary knitwear practices, my paper aims to ask how we might think the time of production differently and in this find in erstabilir spacings in computational design processes that invigorate a more traditional understanding of design.

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Keywords

seamless, knitwear, design, mass-production, haptic

Twisting folded narratives

Knitwear became part of fashion incrementally over many centuries, predominantly being worn as underwear and not becoming known as outerwear until the early 1900s. All knitwear garments and accessories, such as the knitted stocking, were hand-knit until the sixteenth century when, due to the demand created by the wearing of hose, William Lee developed the mechanised stocking-knitting frame. This produced a coarse knitted fabric, fashioned into a stocking, heralding the beginning of industrialisation of the knitting industry and the possibility of mass-produced clothing (Black 2002, 2012).

Knitwear is now seen as a subculture of fashion and crisscroses borders and boundaries found within fashion design, technicity, production and cultures. It has a duality in its modes of production: domestically perceived hand knitting and machined industrial production. The image of the domesticity of knitting remains embedded within the imagery of knitwear as a product, even though industrialised knitwear is now produced on some of the most advanced technology available for clothing production. Whether evoking a domestic romanticism embedded in knitwear history or emphasising computerised knitwear technologies,
Knitwear has followed parallel journeys of hand-knit and mechanised production. Up until the 1950s, mechanised knitwear was limited by sheer mechanical capability, with hand-knit garments more sophisticated than those produced by machine (Power 2007). There were design innovations driven by knitwear designers and technologists alike during the 1950s and 1960s, such as McQueen patenting the Basque beret technique of *fechage* (1950s) as a technique to make outerwear, not just berets. Elsa Schiaparelli and Emma Pfauti had both developed ways of making individual hand-knit garments with no seams, whose principal concern was body-fit (Power 2007). However, industrialised knitwear technology was not advanced enough to be able to duplicate these techniques. It has taken another seventy years for this to be achievable, as mechanisation in the form of seamless knitwear technology.

Throughout history, fashion has influenced and driven industrial and technological developments but, equally, shifts in technology have also influenced changes in fashion. Power discusses the development of seamless garment technology and also notes that the first generation of WHOL GARMENT® machines released by Shima Seiki Manufacturing in 1995 didn’t have the initial impact on the industry that was originally predicted. Power suggested: ‘the product range capability of the first machine as too restrictive for the fashion arena’ (Power 2007: 11). Other industry experts (Hunter 2004–5; Spencer 2001) noted that the industry generally was not ready to embrace seamless knit technology. Such innovation had moved beyond the industry’s mind-set and designers’ understanding. This research presents another thought-image. It recognises the timeliness of developments in seamless knitwear and its utilisation by knitwear designers. We see how the pull and push between these two, technology innovation and design innovation, are reliant on one another. They fold but are often asynchronous, out of time with one another. This means they produce new time, which is to say, a future that is the new. Such folding is the new. Hence, this research raises the question of what is the current relationship between technology and design and investigates the slow uptake and use of seamless garment technologies within the designer knitwear industries for production that is not of a standardised nature. This paper researches the design possibilities and limitations using seamless knitwear technology, at a point when this technology is readily available but seemingly underutilised.

This case study explores the creative options open to knitwear designers when using seamless knitwear computerised technologies, to ascertain if it is possible to fully engage with the notion of three dimensionality of creative knitted form building when using this technology. This was accomplished through a series of practical experiments using seamless knitwear technologies from an experienced knitwear designer’s perspective, but one which had little to no technical CAD training or knowledge. This lack of technical knowledge allowed an un-premeditated approach to be taken when interacting with the technology, and thus had the potential to open up new ways of thinking about and making knitwear. This method of approach prevented the technology from dictating and supressing the creative design process. By taking a more flexible approach it allowed for the adaptation of the standardised software to be integrated with an iterative design process. An open approach to the structured commercial design and production system of seamless knitwear technology enabled the design process to be more creative and haptic as an integrated design philosophy. This approach resulted in the production of more unique and expressive seamless knitted garments, reflecting a three dimensionality in form.

This study re-thinks the manner in which the design process is approached through invoking the aspect of maker as they connect with the materiality of the made. The incorporation of wabi-sabi, an ancient Japanese ethos, as an approach to ‘being’ – or in this study an approach to ‘making’ – opens this interval, creating a new way of entering the technical standardisation of seamless knitwear technicities. By evoking wabi-sabi as part of the design philosophy within this study, the haptic elements of a garment’s materiality and aesthetic nuances of creative details are re-incorporated back into a mechanised and standardised commercial practice.

**Contextual framework of study**

This study took place in the New Zealand locale and, as such, this was the first community of seamless knitwear design outputs to be analysed.
In assessing the relationship between knitwear design practice output potentials and the adoption of seamless knitwear technology, it was found that limited design styles were being produced. It was found that this technology was not being used for designer knitwear in New Zealand but for tourist wear of a predominately standardised and classic shape. Traditional knitwear design processes are based on the fabric development of a textile swatch, which is then knit to size to produce a front, back, and two sleeves. The required shapes are cut from this fabric using flat-pattern-making techniques. The development of seamless knitwear has proved to be the first major production swing away from traditional manufacturing processes which relied on an assemblage of parts of a garment and are reflective of this flat-pattern-making paradigm. The technical development of four needle-bed knitting technology created the ability to produce WHOLEGARMENT® knitwear, as explained in *Knitting International* (1995):

The sweater is knitted into a cylindrical configuration by first separately knitting the body portion from the waist and the two sleeves from the cuffs, respectively. When these three portions achieve a predetermined length, they are integrally knitted together at the lower portions of the armholes. The sleeve caps are inclined through progressive reductions in the width, and the shoulder portions are knitted thereafter. (Mowbray and Spencer 1995)

A primary theme within this production model is the move from knitted fabric pieces, which were cut and sewn, to the more cost-effective, seamless knitwear capability. The introduction of seamless knitting technology has manufacturing advantages, but these come potentially at the cost of design. The machines come with pre-installed design packages and, at this point, it appears that most companies in New Zealand either lack the design vision, the technical understanding or the need to develop their own internationally competitive designs which fully exploit this technology. Consequently, they tend to use ‘ready-made’ programmes with limited design aesthetics.

**Seamless knitwear processes**

Ever since the advent of the role of designer made its way into the knitwear industry in the 1930s (Power 2007), there has been a technical and design divide. This divide has been both a gender and an occupational one. The gender divide is not, however, the main issue. It is only exacerbated by the different training procedures that designer and technician historically have had. Knitting companies generally train their technicians in-house; designers usually complete a university design degree, or previously a polytechnic or technical college qualification. They thus have very different knowledge bases (Eckert and Stacey 1994). This historic model of occupational roles within the knitwear industry has formed the basis for the development of the human interface with seamless knitwear technology. There are two separate programming systems,
one for the technician and one for the designer. This can be seen through the evolution of design systems for seamless knitwear, which for Shima Seiki culminates in the latest SDS-ONE APEX-3 design and programming system and for Stoll in the M1Plus design and programming system for knit-and-wear garments. This paper argues that even though seamless technology is a remarkable achievement, providing the first means to produce three-dimensional garments, its main focus has been on technical capability, or technical composition, in distinction to aesthetic composition. The rudimentary design systems developed for WHOLEGARMENT® technology lack all but the simplest capabilities for difference for the designer.

Seamless knitwear technology is promoted as having endless design possibilities, but the reality is that there is still a manufacturing and production focus on technical abilities. When a designer works with the ‘Design’ system which interfaces with the technical programme, ‘Knitpaint’, it continues to promote the traditional ‘role’ divide, along with a continuation of a two-dimensional knitwear design process. It does this through continuing to follow a scripted, standardised design process within the computerised imagery which is reflective of traditional cut-and-sew two-dimensional front, back and sleeve shapes. Having two CAD programming systems, one for technical and one for design, currently the programming systems replicate and renew established approaches to design and production, remaining entrenched within traditional industrial models for knitwear design and manufacturing.

When working on both the ‘Design’ system and the ‘Knitpaint’ system, flat two-dimensional images are generated by the computer programme’s visualisation software. It is difficult to imagine these images as anything other than versions of traditional mass-produced replicas of knitwear seen in our closets for decades. The flat block-like shapes, along with the designer’s stitch selection options, where the designer can pick from ready-designed texture or basic colour patterns, all result in a design system at once cutting-edge technology from a technical perspective and yet nothing but a designer’s colouring in tool. This research suggests that seamless knitwear technology is successful for mass-production and global markets, where design has become synonymous with pre-programmed shaping, embellished with surface decoration, colour or texture. Yet there is little support for the designer who wishes to explore the three-dimensional aspect of shape or form differences within knitwear (Smith 2013).

Wabi-sabi as a lived experiential affect

Wabi-sabi is an essential aspect to my research. It is more than a style of design, or an approach to making in the conventional sense of an aesthetic affect. Wabi-sabi is lived before it is practised. Or, rather, it is a way of living rather than something one applies to particular things. In this sense, it is closer to an understanding of style as that singularity by which matter folds and unfolds in its nuanced duration of development and change. The twin ideas of evanescence and the ephemeral embody the Japanese aesthetic known as wabi-sabi (Inouye 2008). Wabi-sabi forms an ethico-aesthetic sensibility that often describes traditional Japanese craft and art products. It has become known throughout the western world as an aesthetic. It is seen to represent a certain quality of craftsmanship and a design philosophy, which has been adapted and transferred into the everyday. It is, at once and without difference, singularly remote and ritualistic.

Wabi-Sabi is the art of impermanence, becoming-imperceptible. It relies on matter’s processes of degradation through change as an object is made and ages, expressing an object’s nuance in a Bergsonian sense (Bergson 1991). It expresses the organic nature of matter as the designer or artist works with material, responding to the flows of matter as an object is formed. This transient, fragile nature of wabi-sabi is constantly changing and is therefore never complete, constantly becoming, with forces—affections or sense-events constantly reforming or making their mark on an object or person, creating a singularity of form in a unison of matter—memory. Wabi-sabi’s impermanence, inconsistency and incompleteness recognise the im/perfection of all things, and that whereby the hand of
the artist is expressed. It thus rejects perfection and a uniformity seen with mass-production processes, creating a singularity of affect connecting an artisan and the way of making. Creating in this way leaves room for a designer to respond intuitively to the emerging materiality of forming. This creates the interval, which allows the designer to move outside of known experience and an intentional object, to develop beyond representation as repetition of itself: ‘only those who have transcended the boundaries of dualism, who have succeeded in stopping their internal dialogues, who are able to perceive the world in its “is-ness” are able to be creative in the truest sense of the word’ (Juniper 2003: 95).

Wabi-sabi provides a method of making for this research project. Because of wabi-sabi’s opening to temporal instability that seems polarised to seamless knitwear’s standardisation, it opens a way of asking anew what this machine is capable of becoming: how to relate to it differently? How to comprehend it differently? Wabi-sabi is not a look being sought from the machine outputs. It is a way of artisanal following of the flows of matter as they became assembled in the modulating capabilities of a WHOLEGARMENT® machine. Wabi-sabi provides an asymmetrical fluidity to form building through the yarns used and responses to these and their materiality. It pushes the garments away from a known structural model, accessing further potentialities of de/formation. As each garment emerges, the reciprocity of affect—being affected happen in the expression of the flows of matter: intuition in action. By understanding the nuances of the machine, the nuances of the yarn and the nuances of their relations and potentialities, a style is developed—a way for matter to become texture, to find its own nuanced expression.

**Experimental matter**

Initially design development used orthodox methods for concept building: sketching initial ideas and trialling three-dimensional toiles on a mannequin. However, it quickly became apparent that neither of these methods was easily transferable to seamless knitwear technology. It was not possible to mime the technical functions of seamless knit technology when drawing or toiling, therefore complicating an ability to know how these initial ideas would be actualised. It became obvious that the design development had to be done on the CAD system attached to the seamless knitwear machine. This was the sole way to explore shape development having the same technical parameters or behaviour as a ‘whole’ garment without seams structuring the volume. Because of its seamlessness, the surface dispersions of intensities of the garment develop according to the plays of this structural absence, or void. Formations and deformations become programmable within the surface textures of garments via the modal essences of the seamless technology’s functions. The initial garment experiment used the basic tunic as a starting shape and, through using partial knitting (flechage) on one side, it deformed the rectangular shape into a curve which, when worn on a body, was reinterpreted in movements around the body, its materiality creasing, causing it to drape and fold, opening to a play of signifying possibilities.

To create this de/formation, to alter the basic tunic shape, a new Package, or pac, had to be introduced, initially developed by the technician at the university textile and design laboratory. The imagery for where the pac will be used is drawn on the overall, front and back two-dimensional images at compressed-garment stage of registration. These become the areas of movement, caused by directional forces being introduced to the basic form. The pac is then registered through a ‘package development’ process, and the new pac is then incorporated with the other pacs that make up the basic garment structure. A series of garments were developed, all based on the basic sleeveless tunic shape and using a variety of wedge shapes placed on the garment using two packages developed by the technician. Through this experimentation, a range of points-of-inflection as trialled. Each garment was developed, knit, analysed and incrementally altered. With each garment, improvement notes were taken and garments placed on mannequins to observe the lines, proportion and the way that the garment draped. In this way a shape lexicon was developed. With each variation, a series of differentiated modulations were elicited, creating a contextual order of differences, building a signifying system of meanings.
The garments shown are some of the results from using just two additional pacs, the wedge and the diamond wedge, on a basic tunic shape (Figure 4). Modifications were more distinct when used on both back and front of the garment, as seen in the first garment on the left, or when used in a vertical line through the centre of the garment, as seen in the last garment on the right. As already emphasised, it is not possible to predict what a knitted garment will look like when processed and knitted from the two-dimensional imagery in the compressed form. This is a format most closely resembling something that a designer would recognise. It is possible to move the design at this point to the Design System, but because the CAD software is not able to reconstruct the movement of stitches, or wales, it cannot represent this shaping visually in stitch structure form (Figure 5). Where wedges were placed on a standard tunic shape, the resultant garment is curved, but the stitch structure image remains symmetrical and rectangular in format.
There were a number of findings relating to shape modification and three-dimensional form building, uncovered from the first even or eight garment developments. When a garment has differential forces applied to both front and back, an asymmetrical hemline with diagonal drapes folds through and around the body. This same garment, when seen lying flat, has such intensive movement that the forces twist and fold the body, displacing the neck and armhole openings on to a diagonal line. All of the garments had such intensive modifications, created through forces applied using diamond wedges through the front of the garment. Differentiated results were achieved by using different configuration formats, but all had hemline distortions. The modification of the hemlines differed from asymmetrical to symmetrical, depending on the degree of movement caused by forces created by the diamond wedges. Deformation was more exaggerated the further the inflective forces were placed away from the central vertical point of the garment. Further findings were that the depth and length of the wedges created a more or less defined fold, depending on the increase or decrease of intensities, which ran through and around the garment body. All garments had to be read as flat two-dimensional shapes. It was not until they were worn that intensities of movement could be seen acting and counteracting forces around a body, taking on a third dimension. These forces multiplied, folded and refolded, changing shape and formation which changed again when a body moved.

At this point it was realised that further pacs would need to be developed for similar movements to be accomplished within all of the other basic pre-installed garment programmes. For a sweater and a cardigan format, each pre-installed format would need separate pacs for the left, right or central wedge. This brought the number of pacs developed to nine. A technician developed all of these additional pacs; but once this was completed, it was possible to apply and work with these pacs independently, to create garments. As a designer, the more that was achieved and fed into a cycle of building design capacities through design lexicon memory, the more a designerly process was being developed and understood, intrinsic to the technological capabilities. Advancements were made with developing design parameters whilst also building up a praxis knowledge with the technical programme, Knitpaint, thus developing a greater understanding of the translation between the two-dimensional imagery and the three-dimensional realities of a garment. Further designs were completed using both the sweater and cardigan basic pre-installed programmes, with the pacs that had been developed added to them in a variety of configurations. The visual CAD imagery remains very similar in each garment configuration, but the three-dimensional form of the garment when knitted out differed from each iteration (Figure 6). It was only possible to gain a design knowledge of three-dimensional results through making, when working with this technology. Each garment incrementally grew from the previous garment, as did both technical and design outcome knowledge.

Figure 5. Stitch structure of additional pacs in ‘design’ format and realised garment (Smith 2013). Source: ‘Design’, SDS-ONE Design, Shima Seiki Manufacturing.
The imagery of the CAD system within Knitpaint remains very removed from the reality of the garment produced but, because the designer is working in an incremental way, each time a garment is produced they are able to interact with it through visual and touch sensory responses, the physicality of the garment. The garment’s matter becomes folded into the development process, maintaining designer-design tactility, enabling a haptic response to findings as they emerge.

**The collection is a swarm**

The seamless knitwear technology is designed to produce replicated knitwear for mass-production, losing the quality of craft and the nuance of designed details within garments. Through the linear production processes, which are inherent within the design system, repetition of the same is generated, again losing the craft detail that differentiates one product from another via individuation.

Seamless knitting, through its very mode of production, challenges any simple binary division between interior and exterior. Its seamlessness enables interior to become exterior if garments are inverted, with little else other than the stitch structure changing from knit to purl. Its method of making in circular motion renders the joins invisible, therefore enabling the interior to be the exterior with minimal transformation of the final form of a garment. The usual knitted object has a defined inside and outside, as do most conventional textiles or textile objects. An inside manifests the connections of parts, revealing the manufacturing processes (Turney 2009). Seamless knitwear merges the inside with the outside just as the knitted stitch is formed by the yarn passing from the front to the back as it loops around itself to form the face and the reverse surfaces of the fabric simultaneously. The seamless garment when worn on a body becomes an exterior with the body interior. Due to seamlessness and merging of interior and exterior, when worn the garment capacities for forming/deforming the space between it and the body become realised without interruption.

Seamless garments, as with all textiles, may be thought of as resultant actions/reactions to forces of manufacture, which have been distributed throughout the garment in an intentional manner by a designer, plying with *interference* of construction techniques. The garment and the interior body are able to react with one another to redistribute the *fullness*, or highest intensive degrees, created by internal movement of fabric structures, distorting garments and nullifying standardised forms. This deforming of subject-space, through redistribution of exterior fabric around a body, creates garments that envelop the wearer in folds – drape, fold/unfold, form/re-form – constantly changing, actuality to virtuality and back again, touching potentiality (Massumi 2002). The intrinsic structure of the seamless garment and additional structural forces added by the designer through the registration of partial knitting pacs create internal movement of the knitted wales away from the parallel. This disturbance off the-parallel intensifies the force of movement around a body when doubled and tripled, from double pacs being applied, or when forces collide from opposing sites of a body, complicating the exterior formations of the garment.
The resultant garments use a body as central core, and pivotal points on the body support the structure of the garment. Due to internal garment forces created by movement around the body, the garment deflects away from its nature – the ‘natural’ bodyline recreating an individualised three-dimensional form. The differential forces in each garment create singularities of design that, though machined, are not of a standardised shape. They are singular though entirely replicable. They move around a body, creating asymmetrical lines away from the parallel, course to wale lines creating organic forms. Each interpretation of a garment changes with its point of view. The distorting course to wale creates curvilinear shapes, inflects surfaces and, due to the absence of seams, enables free rotation. There is an affect; the sensation of an excess of fabric that drapes. Its sensate matter seems to form body-spacings peculiar to its garment flow, asymmetrical, fragile, and impermanent.

Drape and asymmetry are intensified through texture, the folds of matter enacted in linear stitch structures. Garments with twists and double twists create movement and multiple movements throughout their three dimensions. These movements distort the linear stitch structures away from the horizontal or the vertical, mimicking and emphasising the force of movement happening throughout the garment. The resultant collection is composed of singular garments of organic three-dimensional de/formations, challenging the standardised output normally created using seamless knitwear technology. This has been achieved by allowing the designer to become central to the design process, by reinstating a rhizomatic designer–fabric–garment assemblage, at odds with the Design System/Knitpaint arborescent hierarchy. A designer more familiar with body–garment–space assemblages has connected to the interior processes of designing that were always already there in the mechanical assemblages of Shima Seiki technology, but required a particular point of view in order to reveal the genuine modal essences of that technology. The designer has thus become enabled by the technology and not excluded from it.

Figure 8. Final collection of three-dimensional garment forms with stitch structures emphasising directional flows (Smith 2013). Photo by E. Hughes.
The fragility of the garment collection’s evolving singularity creates an ‘encounter’ with impermanence, evoking the temporality of its materiality, and fashion as an immanent becoming. This is not the wabi-sabi of the decayed or faded but of an irregularity and the transformational, indicating impermanence through the subtleties of formation, of fold/unfold. Memories of making are traced within the work, inflecting affect e excess, thinking’s inventing and a thing’s functioning-motion through incorporeity. Material objects connect across their interiority/exteriority with an asymmetry and irregularity of structured surfaces, organic, intrinsic material forces, creating at times awkwardness of forms, irresolute and unresolvable, yet with intimate, understated trace-like structural veins. The time of a garment is encountered in another way, as it folds, unfolds and refolds.

References
“Design, like war, is an uncertain trade, and we have to make the things we have designed before we can find out whether our assumptions are right or wrong... ‘Research’ is very often a euphemism for trying the wrong ways first, as we all must do.”¹

Vernacular, as it relates to architecture and design, is defined by material availability, community knowledge, and access to tools. Prior to the Industrial Age, most architecture was created in the vernacular tradition by the master craftsman. As J.B. Jackson observed in Discovering the Vernacular Landscape, the architecture of farmers and wage earners was transformed with the settlement of North America. The abundance of wood, paired with the settlers’ knowledge of woodworking (community knowledge), spawned a vernacular revolution that has been carried out to the present. But this mode of practice has been threatened, first by the Industrial Age and most recently by the Information Age, as the traditional role of the architect has shifted away from that of the “master craftsman” to the professional “design worker.”² As a result, a divide between designing and making in the practice of architecture occurred. This shift impacted an essential part of the architect’s process by degrading the symbiotic relationship between mind and hand and limiting the immediate design consequences that only making can provide.

Recent technological developments have changed the economic model of designing and making in architectural practice. The cost reduction in digital fabrication tools over the past decade has allowed for greater community access to fabrication processes, encouraging a social entrepreneurialism which embraces the reconciliation of designing and making. The dissemination of digital fabrication tools and renewed interest in craft has spurred a 21st century hybrid mode of practice, which this paper will seek to define as the digital vernacular.

This dissemination of technology into communities has created a niche for the digital vernacular to deliver services to those who otherwise could not have achieved them using normative practice. In order to demonstrate the potential of this new mode of practice, the paper will analyse specific case studies in which relevant technologies have inspired socially embedded innovations.

The digital vernacular is not merely a romanticized notion of a design future; rather it is grounded in technology available to the community. This theoretical framing seeks to focus design energies on more meaningful conversations - ones that seek the social and economic possibilities within the opportunities of today’s digital tools.

James Stevens and Ralph Nelson

Digital Vernacular: Democratising architectural making

Abstract
Prior to the Industrial Age, most architecture was created by the master craftsman or within the vernacular trades where ‘design’ and ‘making’ were aligned. The Industrial Age, and most recently the Information Age, shifted the role of the architect away from that of the ‘master craftsman’ to the professional ‘knowledge worker’. As a result, a divide between design and making in the practice of architecture occurred. This shift impacted an essential part of the architect’s process by degrading the symbiotic relationship between mind and hand and limiting the immediate design consequences that only making can provide. But recent technological developments have changed the economic model of design and making in architectural practice and re-established this lost connection. Most importantly, they have provided new opportunities for craft, design, and architectural practice to align. The purpose of this paper is to examine these new opportunities, define what constitutes the digital vernacular and demonstrate its place in the future of making. The paper will seek to define the digital vernacular by evaluating each of the following variables: materials, knowledge, and tools. Using normative practice as a control, the paper will conduct a comparative analysis of these variables by examining economic viability (cost-to-wage ratios), logistical feasibility (training and facilities), and skillset availability within the domain of architecture (insourced versus outsourced). Using this data, and resulting guidelines, the paper will demonstrate the successes and failures of a practice using the digital vernacular as its primary project delivery methodology and how the digital vernacular enabled new makers.

The focus of this research is not to build an inventory of equipment and methods; rather it is to develop a higher understanding of what constitutes vernacular practice within the digital age. Exploring the digital vernacular is not intended to seek new form-making, but to improve and inform understanding of traditional vernacular methods and to enable a new generation of master craftsmen. This clarity is imperative as to ensure the quality of design and making with emerging technologies and help to prevent high-volume, low-quality results.

1. Defining the digital vernacular
The name digital vernacular is a response to a particular mode of contemporary making that embraces the practical, poetic, and ethical principles of vernacular design while utilising the virtues of both computer-guided tools and hand-guided tools.

Digital, as an adjective modifying vernacular, is defined as always relating to both hand and computer. The origin of the word ‘digital’ stems from the Latin digitalis, or ‘of or relating to a finger’ (Oxford English Dictionary, 2000). The definition of digital as a ‘discrete value representing physical quantity’ was a natural evolution from working and counting with fingers. In the mid twentieth century, following rapid advancement of electronic computers, the definition of digital evolved to ‘expression in discrete numerical form’ and the now common use of the word. Digital vernacular joins the past and present by linking hand sensitivity with computer power.

Vernacular, as it relates to making, is defined as ‘belonging to, developed by, and used by, the people of a particular place and time’ (Oxford English Dictionary, 2000). Vernacular has always referred to that which is native or indigenous. With the advent of digital communication and exchange, the very definition of place and time is changing, and the digital vernacular recognises that place and perceptions of time are no longer bound to specific locations, but are now related to common circumstances, characteristics, or values held in common by a group of people transcendent of traditional place and time. It is important to note that the vernacular does not emerge from an isolated group of intellectuals or specialists but rather from the ‘spontaneous and continuing activity of a whole people with a common heritage, acting under a community of experience’ (Clausen and Belluschi 1994). The definition of contemporary community and the meaning of heritage are rapidly evolving and the digital vernacular is defined in response to this evolution.
1.1. Working principles

The digital vernacular is defined by several working principles; three of the most important are logic, sufficiency, and play.

Logic has long been a hallmark of the vernacular. Logic is a defining human capability and characteristic, perhaps most simply defined as the practice and art of reasoning. Logic is a vernacular trait, used by common people in specific places and times, to organise, evaluate, and process a manifold of conditions and opportunities that are present in community and individual life. Logic could be described as a tool for editing a world seemingly obscure and arbitrary, revealing the legible and meaningful. An example of an editing tool for the digital vernacular might be Ockham’s Razor; when faced with several choices, the simplest response is usually the best.

Principles of sufficiency have guided the vernacular for thousands of years, where long-term ecological and social sustainability was not merely a concept but a way of life. Sufficiency is characterised by the fundamental idea that people can determine what is enough and what is too much, striving for a balance between needs and desires. Prior to the Industrial Revolution, communities practised principles of sufficiency by choice but by circumstance. With limited resources and simple technologies visible to all, a natural check and balance was in place. Sufficiency always balances means and ends in an extended time frame and provides a sober evaluation of what is need and what is desire.

It is also important to describe what sufficiency is not, lest it be confused with parsimony or the assumption that past civilisations were any less intelligent, sensitive, or creative than society today. Sufficiency is not the suppression of dreams or desires. It is not the inhibition of intellect, ambition, or creativity. It is not a call to eliminate specialisation or discovery. Rather, it is the greater and more challenging exercise of these thoughts and actions, in a context with tangible limits and boundaries that guide more robust, appropriate and meaningful outcomes for the present and the future.

Thomas Princen (2005) writes in The Logic of Sufficiency that the paradigm of efficiency and the logic of empire, defined as the efficient extraction, technological mastery, and accumulation of private wealth, has delivered much to contemporary life. Princen expands, saying:

Now that the planet is ecologically full it must give way to alternative logics, ones that twist and fall, that have mystery and surprise, that do not maximize anything. They must be at once economic and ecological, rational and self-limiting, innovative and humble. (2005: xi)

These are foundational ideas to guide the digital vernacular and an antidote to much of the nihilistic design operating in the world today. ‘The expectation that every new discovery or refinement of existing means must contain the promise of higher values or greater happiness is an extremely naive thought. It is not in the least paradoxical to say that a culture may founder on real and tangible progress’ (Huizinga 1970).

Another fundamental principle of the digital vernacular is related to perhaps the most common action undertaken by all people through all ages: play. Johan Huizinga (1970), in writing in Homo Ludens, states that ‘Play is older than culture, for culture, however inadequately defined, always presupposes human society, and animals have not waited for man to teach them their playing.’ Play predates culture and is fundamental to the animal nature of being human. These characteristics of play are especially important in defining the digital vernacular.

Play as a voluntary and free activity is important if the democratisation of design and the voice of the vernacular is embraced. Play guided by specific limits of time is important if the design work undertaken is to be framed around the conditions of the present rather than some conditions of future fantasy. If one can say that great works of design reflect their time, then playing within the present, being in the present, is a critical boundary, opportunity, and limit. The clarity, appropriateness, and historical nature of vernacular design are due in part to its powerful expression of a specific time.

Play guided by bounded place is another integral principle relevant to the vernacular, as there are unique qualities and characteristics associated with a specific place. This relates back to the recognition of play as ‘freedom itself’ (Huizinga 1970), and fosters the ability of people to express their uniqueness and the particulars of the place in which they live and thrive. Bounded place is also another way of describing the essential playground of the digital vernacular: the studio. Within the studio, surrounded by materials and tools, the deepest intensity of design is realised under the principles of play.
That play ‘creates order and is order’ is both relevant to the design process and the vernacular (Huizinga 1970). It is through order that the meaning of design and community can be conveyed and understood. Central to the understanding of the order-making condition of play is the guidance of play by rules and principles. The best of design is guided by rules and principles and, like play, does not exist without them. There is no way to cheat at good design, and to cheat undermines the fundamental integrity of play. The rules are only the means to the end, the conditions a player must accept and work within in order to participate, as ‘limited means beget new forms, invite creation, make the style. Progress in art does not lie in extending its limits, but in knowing them better’ (Braque 1994).

2. Makers

Architecture is not simply imagined; it is real. In order to move imaginings into architectural reality, one must make. The digital vernacular has enabled a new generation of makers to move ideas from virtual simulation to physical fabrication. The term ‘maker’, as it relates to this paper, is defined as those designers and architects that provide full-scale outcomes as their instruments of service. Makers have a prominent place in the legacy of the crafts and trades and are the epitome of the persistence of the craftsman.

2.1 The importance of the master craftsman

William Morris characterised the craftsman as someone who fluidly connected the energies of the mind, body, and soul. The craftsman made with his own hands that which his mind conceived, until the Industrial Revolution separated the craftsman’s ideas from his actions, leaving him alienated from his trade. In Shop Class as Soul Craft, Matthew Crawford (2010) revisits this suppression of craft in his argument for the value of work in the post-industrial era. He asserts that craftsmen and tradesmen have both an ethical and moral obligation to the artifacts they make. Both Morris and Crawford, along with many other contemporaries, are reacting to the importance of the master craftsman, not only to production and output, but also to the health and sustainability of a civilised society.

2.1.1. The suppression of the master craftsman

The meaning of craft and the craftsman’s place in society has evolved over time. Once representing power, strength, or skill, craft has become associated with a specific rade, ‘spawning into the more persistent notion of the craftsman around the 15th century’ (Adamson 2010).

Beginning in the Middle Ages, craft guilds existed as a formal association of skilled craftsmen, otherwise known as masters (Epstein and Prak 2008). These masters trained apprentices and journeymen in specialised fields. The apprentice process could last anywhere from two to over seven years and was treated as a ‘series of modules’ which led to more developed expertise (Epstein and Prak 2008). Most processes used by the guilds employed ‘simple technology in small workshops’, obtaining maximum results through minimal means (Epstein and Prak 2008). Innovations within the guilds were not actively pursued, but discovered through ‘small-scale and incremental practical experiments’ during the apprenticeship process (Epstein and Prak 2008).

The vast economic pressures of the Industrial Revolution ultimately marginalised the master craftsman. It was not possible for a carpenter to hand turn a wood spindle and compete with a manufacturer that could produce thousands of spindles more per day. More was lost than simply the ability to create objects by hand. The soul that Morris refers to is expressed through the pleasure of making and the independence delivered through the process of mastering one’s own craft.

With the advent of the assembly line, Henry Ford changed the fundamental economic model for the production of automobiles and other consumer goods. It was no longer necessary for a carriage maker to understand the tools of his craft, nor was it necessary to know the material, its origin or behaviour. It was only important to follow a structured model of assembly. In return, Ford famously paid his employees well for their time. Ironically Ford stated, ‘if money is your hope for independence you will never have it. The only real security that a man will have in this world is a reserve of knowledge, experience, and ability.’ This quote stands in contrast to his actions (well intentioned or not), which led to the eventual consolidation of knowledge, leaving the craftsman to work on the assembly line rather than practise his trade. The removal of knowledge from the craftsman diminished all trades that endeavoured to make what they conceived.

2.1.2. The persistence of the tradesman and craftsman

After the Industrial Revolution, the craftsman became marginalised and the craft guilds dissolved as a result of the new business values of minimalism and economy. Yet while the Industrial Revolution threatened the craftsman’s place in society, it did not render him irrelevant. There was still a need for skilled labour within the context of the new
machine age, ‘marking the emergence of the modern craftsman’ (Adamson 2010). For example, ‘hand-finishing of metal as difficult to make absolutely smooth using an automated cutting tool’ (Adamson 2010). The craftsman’s skill and sensitivity were still essential, but only as a fragment of a larger and holistic mechanised system.

Despite economic factors, the degradation of knowledge, and lack of access to tools and materials, the trades and crafts persisted. This endurance is linked to two basic human needs – the desire for an improved life and the innate part of a person that causes them to actively pursue this improvement, what Morris refers to as ‘soul’. As David Pye (1999 [1978]) observes, ‘nothing we design or make ever really works’ and fundamental design and craft needs constant tending as if it were a ‘new born babe’. Pye captures the desire that constantly tugs at designers. The building must be large but light, low cost but made of gold, thus providing content variables that are inherently in conflict, needing to be balanced with compromise. This ultimately creates dissatisfaction as it figths with the desire to improve and resolve matters directly. This is not done out of necessity; in today’s society, there is the ability to purchase a way out of most problems. But, this does not extinguish desire, it does not satisfy the soul. It is the act of making, the knowledge of active participation, and the satisfaction of the haptic knowledge of the tools used that feeds the soul. This need cannot be satisfied by industry or economy.

2.2 The return of the maker

Regardless of Morris’s arguments, the resulting conditions of designing and making were primarily driven by economy. Until recently, the cost of labour, equipment, shipping, and raw material dictated the marketability and long-term sustainability of a product. Recent developments in digital technology have contributed to a shift in the economic factors that promote large-scale, centralised manufacturing. It is now economically possible to mass-customise many of the products utilised. This is not to imply that it is easy, or that it will become a widespread phenomenon, but there is an opportunity for new makers.

The digital vernacular is born from a new relationship between designer, maker, material, and tool. For decades, the designer has been divorced from the maker, ceding to the maker final influence on the quality of the product. There will always be some part of the design that the designer has overlooked, and this leaves the maker the task of reconciling the disparity between idea and reality. Craft is born from an intense relationship between maker, material, and tool, and is executed with judgement, care, and skill (Pye 1995). The quality with which design intentions are carried out resides in the hands of the maker. But the designer and the maker have a fundamental connection; they are both fully vested in the quality of the outcome. It is through this common denominator that the recent collaboration between design and fabrication has re-established more fluid intention-driven projects.

3. Digital vernacular tools

In Richard Coyne’s (1999) book Technoromanticism, he describes what he refers to as a ‘Golden Age’ where culture existed in a pre-literate state and where the hand was the prehensile tool. Learning and understanding was not done by reading and writing, but by touching, feeling, and doing – this was the basis of all mechanisation (Giedion 1948). In the context of today’s digital world, when presented with new digital tools that allow for a designer to reconnect with the haptic nature of architecture, one can easily devolve into a digital utopia. The digital vernacular, rooted in the practical traditions, seeks to avoid this digression through careful selection of tools. This selection is not set to impede progress or creativity but rather to root the basis of work in the present, not in romantic notions of the future.

For tools to be classified as vernacular they must be readily available, repairable by the maker, and affordable. Much like the recent democratisation of information brought on by the internet, the democratisation of manufacturing and mass customisation has brought digital tools within economical reach of builders, makers, and architects. This change in accessibility can be seen in the fluctuations of the wage-to-tool cost ratio over the past hundred years in the United States.

In 1922, a carpenter in the US could expect to make $1.00 per/hour (Chicago Regional Council 2012), while a circular saw sold by Hibbard Spencer Bartlett & Co. (1922) would cost $285, making the ratio 0.35 per cent. Comparatively, a carpenter in 2010 earning $19.00 per/hour can expect to pay around $10,000 for a new three-axis CNC (ShopBottools.com), resulting in a ratio of 0.19 per cent. With a ratio as low as 0.19 per cent, it is easy to conclude that the wage-to-tool cost ratio puts today’s digital fabrication technology within reach of the vernacular trades.
This data is further reinforced considering that, in 1996, an entry level CNC cost approximately $30,000. As stated above, a new three-axis CNC averages around $10,000, reflecting a 66 per cent reduction of 66 per cent within a twenty-year span. The change in entry-level economics is also occurring with additive fabrication processes. Within the past ten years, the price of additive fabrication tools has entered a realm the average person can afford. For instance, MakerBot is an open source three-dimensional printer being sold for under $1,000, but less than ten years ago machines with the same capabilities sold for $125,000.

Common understanding of this phenomenon is represented in Chris Anderson's 2010 Wired magazine article that covered a new revolution in the manufacturing process. Anderson asserts that the democratisation of technology has led to a new voice for the individual. Some manufacturing processes, once only available to factories with hundreds of workers, can now be done in a small workshop. In the Industrial Age, products were designed for the masses, and companies focused on mass-market appeal; now, individual makers are finding their niche in what Anderson calls a new ‘Atoms Age’. For example, the auto company Local Motors has only ten employees but is a custom car manufacturing company utilising peer production, open source technology, and user-generated content. 'In an age of open source, custom fabricated, DIY product design, all you need to conquer the world is a brilliant idea' (Anderson 2010). The power of the micro-factory over the Fortune 500 Company is in its ability to anticipate change, adapt readily, and operate with low overhead due to globalisation. These small shops focus on the quality of their products, not the size of their market.

### 3.1 Making digital vernacular tools

Throughout the history of craft, the tools of building trades have evolved slowly over time. This is due to the fact that all craftsmen conduct the same task, with the same tool, repeatedly until they can perform it with predictable skill. As Henry Petroski (1992) observes in *The Evolution of Useful Things*, it is the creative and reflective artisan that in the midst of routine pays attention to the details of the tool and devises improvements. It is understood that all tools make other tools and each is connected by the evolutionary development instigated by the craftsman before.

The polygenesis of tools continued uninterrupted until the Industrial Revolution. As with other products of this time, tools were being developed and conceptualised inside the corporation far from the craftsman's domain. This disconnect continued until the twenty-first century democratisation of digital tools. Now, a craftsman has access to parts, plans, instructions, and assistance to build most any digital vernacular tool. It is this intersection between availability of material and community knowledge that defines a digital vernacular tool. If a tool cannot be built by, maintained, afforded, and evolved by the maker, it is not a vernacular tool.

### 4. Practice

Practising the digital vernacular embraces the inherent opportunities provided by new technology while maintaining the virtues of working manually with hand tools. The combination of designing and making is counter to the organisational structure set forth by many professional and trade organisations. When an architect is directly involved in the making and implementation of a proposal, there is a shift of responsibility that is not currently recognised within the bounds of normative practice. This is not to say that digital vernacular practice is a replacement for the traditional model of practice, but rather an alternative model. As such, the digital vernacular should be acknowledged as a legitimate part of the profession of architecture. The digital vernacular holds within it the attributes common to the profession: lengthy and arduous education, expertise and judgement, registration, and relative autonomy (AIA). The digital vernacular is but a specialisation of practice. The core expectations of an architect are unchanged.

#### 4.1 Normative practice

For the purposes of this paper, normative practice will be addressed as the standard project delivery methodologies defined by the American Institute of Architects. Currently, architects working in the US are guided by deontological ethics that demand a clear separation between design and making. Article 3.6.1.2 of AIA's Standard Form of Agreement Between Owner and Architect clearly states:

> The Architect shall not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work in accordance with the requirements of the Contract Documents. The Architect shall be responsible for the Architect’s
negligent acts or omissions, but shall not have control over or charge of, and shall not be responsible for, acts or omissions of the Contractor or of any other persons or entities performing portions of the Work.

The American Institute of Architects (2009) reinforces this position in *The Architecture Student’s Handbook of Professional Practice* when it states: ‘professions traffic in ideas and services rather than in goods or products. They have knowledge outside the ken of the layperson.’

The result of these rules is a standard contract model that separates knowledge, discipline, responsibility, and service into client, contractor, and architect (Figure 1). The architect is the guardian of the ‘ideas and services’ and determines if the work done by the contractor is consistent with the contract documents. The contractor is required to build to the contract documents and is wholly responsible for budget, schedule, safety, and final project delivery. In this sense, the architect's deliverables are the drawings and specifications, while the contractor's deliverable is the actual building. Recently new models have developed around design-build and integrated project delivery with marginal success primarily because they are still based on this division of responsibility. This separation of accountability within normative practice stands in contrast to the fluid decision-making and clear logic provided by the vernacular. Looking at the vernacular’s historic ability to succeed within natural limits, it is only reasonable to question the current model of practice.

4.2 Digital practice

The use of digital modelling to produce architecture has profoundly impacted the profession. The most apparent influence is in the limitless possibilities to generate complex forms. BIM fabrication tools such as Grasshopper and Digital Project are acting in response to the demands of digital practice. What is designed can now be readily fabricated by others. Practising digitally has created a process-based change to the profession. As Branko Kolarevic (2003) asserts in *Architecture in the Digital Age*, ‘the digitally based convergence of representation and production processes that represents the most important opportunity for a profound transformation of the profession’.

This opportunity has been leveraged by many firms successfully. For example, SHoP Architects uses a technique they call ‘direct fabrication’ where the design drawings produce the final fabrication geometry (Holden, Nobel, and SHoP 2012). This method of working presses against normative practice and dated rules that shape the profession by expanding the architect's traditional instruments of service to include direct fabrication files. SHoP has fundamentally changed the organisational diagram produced by normative practice (Figure 2). Further integration is accomplished by consolidating consultants (outsourced become insourced) and further engaging the clients and contractors in the design process. SHoP was able to do this not by limiting their responsibility, as the AIA recommends, but by increasing it, folding the ‘responsibility of others’ into their design process. Digital practice is a step towards practising the digital vernacular, but it has yet to break from normative practice’s separation of design and making.

![Figure 1. Normative Practice Organisational Diagram (adapted from Holden 2012).](image1)

![Figure 2. Digital Practice Organisational Diagram (adapted from Holden 2012).](image2)
4.3 Practising the digital vernacular

To make with the hands provides immediate consequences to design decisions. In a digital vernacular practice, an architect can conceive, design, model, fabricate and realise a design without interruption. A fluid motion of designing, testing, and iteration can be achieved by the architect(s). Understanding the importance of designing and making, David Pye (1999 [1978]) observed:

Design, like war, is an uncertain trade, and we have to make the things we have designed before we can find out whether our assumptions are right or wrong. … ‘Research’ is very often a euphemism for trying the wrong ways first, as we all must do.

The digital vernacular allows for designers to edit logically, achieve sufficiently, and play with design variables to seek solutions. Design cannot be faked within the digital vernacular, it is authentic in its successes and failures. It is rooted in the craft guild practices, bounded by the unique context of time and place. The digital vernacular further compresses digital practice’s process of design by integrating all aspects of design and construction into one entity (Figure 3). The architect is wholly responsible for design and construction, reaching beyond the limitations of normative practice.

![Figure 3. Digital Vernacular Practice Organisational Diagram.](image)

4.3.1 Suitcase CNC

To make evident the virtues of digital vernacular’s direction and potential, a brief case study is provided that describes the process of design and fabrication of a suitcase CNC machine undertaken by makeLab, an architecture and digital fabrication studio.

POLIS University, a new architecture and design institution in Tirana, Albania, was created to address the growing needs of a developing, post-communist country. In 2012, makeLab was asked to teach a digital fabrication workshop at POLIS but was faced with the dilemma that the new university had no digital fabrication equipment or tools. The challenge was to design a CNC machine that could be packed in a case, checked as luggage on a commercial flight and cost less than 1,000 USD. The multiple destinations in the Balkans required that the CNC be setup and broken down quickly and that alignment had to occur immediately without calibration. The project was further complicated by the unpredictable availability of replacement parts, inconsistent power voltage and the general rigors of travel. The suitcase CNC successfully enabled makeLab to teach a new skill set to design students who otherwise would have not had the opportunity.

The design process was guided by the limits inherent to designing a machine for travel, weight and budget. These design limitations require hyper attention to be paid to each component. Digital models were created to verify size and weight. Using three-dimensional geometry, a full-scale wood prototype was created to ensure all fittings worked and that disassembly, packing and unpacking could be done quickly and easily (Figure 4). After multiple attempts, the final machine’s structure was milled from HDPE plastic, commonly used for kitchen chopping boards. This material allows the joints to be fastener free by using joint taxonomy. Four OD Linear Motion Shafts coupled with 3/8” flanged sleeve bearings carry the load of the gantry. This allows for free movement without the need of gears or tracks that could slip quickly out of alignment while on the road. A small 12-volt, DC motor, much like those found on remote-controlled cars, is mounted to the z-axis. Through a series of couplings and belt pulleys, the motor is connected to a spindle holding a 1/8” endmill tightened by a 0.035” hex key. Each axis is driven by a Nema 17 stepper motor connected to a three-axis hobby CNC control board on the computer side and flexible aluminium coupling on the machine side. This aluminium flexible coupling proved to be essential on the road. When hit hard, the coupling deforms, allowing the ¼” stainless lead screw to run straight and reduce the possibility of misalignment and unwanted vibration. To eliminate the need for a desktop computer, the control board was served by a smooth-stepper board allowing connection to a laptop USB. Of course, all of this had to be contained in a sturdy case.
Although the machine was viewed as ‘complete and operable’, upon leaving for the Balkans the design was continually tended to as travel progressed, which started with an initial trip to Albania. In Albania, the CNC endured ten straight days of cutting and surfacing at POLIS University in Tirana. After a few hiccups, it made it through most of the initial run. Then, an on-the-road-repair to a belt driver allowed it to be demonstrated in Pristina, Kosovo. From there, it travelled to Paris to cut models in the courtyards of apartments, university campuses and basement hacker-spaces. Ultimately, the CNC broke down, was repaired, broke again and, with help from makers around the world, was repaired yet again. What was not expected, but what was ultimately learned, is that the machine was in a constant state of design and repair. As craftsmen have always done, the machine was modified as work progressed, using vernacular tools available in the immediate area. The travel, testing and repairs are as much of the design process as the initial assembly.

To align with the perspective of vernacular tools being accessible, repairable and affordable, the suitcase CNC was designed and built without the use of experts and built with low-cost non-proprietary components. Digital vernacular skills are thereby increased through the machine’s portability and its ability to ‘act’ and ‘teach’ in a vernacular way. Using vernacular tools also ensured that the Suitcase CNC was fully mobile, as it could travel independently of any specialised tools. Therefore, following completion of the design and construction, the Suitcase CNC can be packed, tagged and rolled away (Figure 5).

The design challenge from the client was simple: they desired to teach digital fabrication but had no tools. The response was direct: to bring the tools to the client. The response seems simple but it was not without research and an understanding of the origin of the issues. The philosophy, and ultimately the design response, was directly shaped by the history and context of tools themselves. From history, it is understood that, traditionally, tools were made by the tradesman who used them and were modified to suit their specific needs. This resulted in tools evolving within the boundaries of the user. The industrial age and, more recently, the digital age has accelerated the evolution of tools outside the hands of the end user. The Suitcase CNC sought to realign this evolution by creating its own machine, modifying tools to suit the maker’s needs, and passing this knowledge on as it travelled (Figure 6).
5. Conclusion

Given that logic, sufficiency, and play are the guiding principles of the digital vernacular, the design, fabrication and repairs of the Suitcase CNC is a manifestation of these principles. The Suitcase CNC was born out of the given conditions of time and place, making the solution logical and constructible. The construction of the machine was not guided by a desire to revolutionise making; it only sought to accomplish its task – be a portable and durable method of making.

The working principles – logic, sufficiency and play – are fully utilised in the final product and further evidenced by the tools used in completion of the Suitcase CNC. These vernacular tools, readily accessible and affordable, directly contributed to makers meeting the principles of logic, sufficiency and play. The seamless integration of the tools allows for fluidity from design to creation to repair, which is essential to the digital vernacular.

The Suitcase CNC functions, but only because makeLab used vernacular tools, materials and, ultimately, physical testing. The convergence of designing and making allowed makeLab to operate at its highest and best use, culminating in the principles, processes and tools that exemplify the foundation of the digital vernacular. In turn, the Suitcase CNC enabled the university to teach a curriculum in digital fabrication and repairs of the Suitcase CNC is a manifestation of these principles. This home the digital vernacular has found in the future of making, but also by the democratisation of making it away from the experience led to numerous grants to makeLab used vernacular tools, materials and, essential to the digital vernacular.

The Suitcase CNC is not defined solely by the act of making, but also by the democratisation of making it provides. By supplying designers with fundamental tools and knowledge, new makers have been enabled and are participating in the future of making.

The fruition of this endeavour demonstrates the home the digital vernacular has found in the future of making. This home is not defined solely by the act of making, but also by the democratisation of making it provides. By supplying designers with fundamental tools and knowledge, new makers have been enabled and are participating in the future of making.

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References


Florian Stephens & Rosemary Wallin

Maintaining Authenticity: Transferring patina from the real world to the digital to retain narrative value

Summary: This research is concerned with utilizing new technologies to harvest existing narrative, symbolic and emotive value for use in a digital environment enabling “emotional durability” (Chapman, 2005) in future design.

The projects discussed in this paper have been conducted as part of PhD research by Rosemary Wallin into ‘Technology for Sustainable Luxury’ at University of the Arts London, and visual effects technology research undertaken by Florian Stephens at University of West London.

Jonathan Chapman describes vast consumer waste being “symptomatic of failed relationships” between consumers and the goods they buy, and suggests approaches for designing love, dependency, and even cherishability into products to give them a longer lifespan. ‘Failed relationships’ might also be observed in the transference of physical objects to their virtual cousins. Consider the throwaway nature of digital photography when compared to the carefully preserved prints in a family album.

Apple often use a skeuomorphic (Hobbs, 2012) approach to user interface design, to digitally replicate the patina and ‘value’ of real objects. However, true transference of physical form and texture presumably occurs when an object is scanned and a virtual 3D model is created. This paper presents three practice-based approaches to storing and transferring patina from an original object, utilizing high resolution scanning, photogrammetry, mobile applications and 3D print technologies. The objective is not merely accuracy, but evocation of the emotive data connecting the digital and physical realm.

As the human face holds experience in the lines and wrinkles of the skin, so the surface of an object holds its narrative. From the signs of the craftsman to the bumps and scratches that accumulate over the life of an item over time and generations, marks gather like evidence to be read by a familiar or a trained eye. According to the time and the culture these marks are read within, they will either add to or detract from its value. These marks can be captured via complex 3D modelling and scanning technologies, which allow detailed forms to be recreated as dense 3D wireframe, but the result is often unsatisfying. 3D greyscale surfaces can never fully capture the richness of patina. Authentic surfaces require other qualities such as colour, texture and depth, but there is something else - more difficult to define.

Donald A. Norman expands on the idea of emotion and objects by describing three ‘levels’ of design “visceral, behavioural and reflective”. Visceral is based on “look, feel and sound”, behavioural is focused on an object’s use, and reflective is concerned with its message. New technology is commonly seen in terms of its ability to increase efficiency, but this research has longer-term objectives: to repair or even rebuild Chapman’s ‘broken relationships’ and enable ‘emotionally durable’ design.

The PhD that has formed the context for this paper examines the concept of luxury value, and how and why the value of patina has been replaced by fashion. Luxury goods are aspirational items often emulated in the bulk of mass production. If we are to alter behaviour around consumption, one approach might be to use technology to harvest patina as a way to retain emotional, symbolic and poetic value with a view to maintaining a relationship with the things we buy.

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maintaining-authenticity.blogspot.co.uk
Introduction

This research is concerned with utilising new technologies to harvest existing narrative, symbolic and emotive value for use in a digital environment enabling ‘emotional durability’ (Chapman 2005) in future design. The projects discussed in this paper have been conducted as part of PhD research by Rosemary Wallin into ‘Technology for Sustainable Luxury’ at University of the Arts London, and visual effects technology research undertaken by Florian Stephens at University of West London.

Luxury goods, digital animation and perfection

Luxury, as a concept and field, is of interest as it speaks about the values of a given society. The historian Maxine Berg refers to luxury in the eighteenth century as a ‘catalyst and a signpost of social and intellectual change’ (Berg 2003). In a contemporary context, high-end image making and advertising give luxury goods, bags and shoes a plastic, hyper-real, glossy surface, which has now become generically associated with luxury products. Leather is one of the materials associated with luxury goods. Selected from the highest grade, un-marked and homogeneous, all trace of the animal skin from which it is made obliterated, luxury leathers are expensive in financial ethical and environmental terms.

By contrast, this homogeneity of surface is a source of frustration in the world of 3D animation. Hours are spent re-creating the detritus of human life. Wear and tear patina is applied to objects intended to look real, which in their raw digital form would otherwise look too perfect and therefore unrealistic.

Whilst the world of luxury goods attempts to remove all trace of reality from its vision of perfection, animators are trying desperately to re-introduce it. The point of convergence for both these practices is the skin or surface, and the site of value is the patina. Patina and value – A historical context

Before fashion became the predominant cultural system of status, there was a system of status in England which utilised similarly encoded and nuanced information provided by patina. Novelty and the ever-changing tastes of fashion are a product of a consumer society, which exploded in the eighteenth century. Before this, English society revolved around family, honour and the transition from what was known as ungentle to gentle standing – to become a gentleman. This process followed a ‘fi e generation’ rule (Ferne 1586). Patina was one of the indicators that possessions – and therefore wealth – had been in the family for a long period of time. Patina helped to maintain the social hierarchy by converting money into status very slowly. The PhD research, which provides a context for part of this paper, examines the potential of patina as a site of value linking objects and people. The value of objects and our relationship to them is particularly important in the sphere of sustainable design. For an object to be traded as authentic or preserved in a museum collection, it must have the signs across its surface of the narrative denoting its age and heritage. Similarly, for products to be kept, saved, and cherished by consumers rather than quickly discarded due to perceived obsolescence, we need to find systems of design which both activate and harness the bonds that connect us to the objects we own and use. Value is not simply housed in the cost of a precious material or the quality of workmanship; beautifully crafted work is destroyed every day to make way for the new or fashionable. Value is attributed through a network or constellation of qualities, of which materiality and craftsmanship may be important, but not exclusive aspects.

Figure 1. ‘Patina provided individuals with a visual manner of determining where families stood in the process of gentrification and mobility.’ (McCracken 1988)
The historic emphasis on slowness and inter-generational ownership is in many ways echoed in the move towards sustainable design thinking. Perhaps the notion of patina deserves re-examination in this new light.

Could patina help to preserve an emotional bond, and if so, how could patina be utilised in a sustainable design process today?

**Patina in 3D animation**

In the technology and design of animation, sustainable principles are less relevant. However, patina is also a tool for evoking emotive and narrative quality. Patina is a physical quality of material culture that is used to establish authenticity. What is patina in a digital context? In the field of computer generated imagery (CGI) the author Bill Fleming (1999) states that the following qualities should be considered to represent patina:

- Clutter and chaos
- Personality and expectations
- Believability
- Surface texture
- Flaws, scratches and dings
- Dirt, dust and rust

Digital artifacts are by their nature sharp, clean, crisp and do not age in the same way as physical products. In their purest construct, they lack any kind of patina, texture or surface quality. An analogy can be made with the advent of digital photography in the later part of the twentieth century. According to Christopher Nolan, for all its promise, digital filmmaking appeared soulless (Kenneally 2012) and is too squeaky clean. Digital images lack the warmth of analogue, or the “film look” itself, soft grainy, somewhat blurry appearance of a photographic image which is so different from the harsh and flat image of a video camera or the too clean perfect image of computer graphics (Manovich 2002).

The noise and grain of analogue might be seen as a form of patina on the film negative, and therefore something digital images lack. Indeed, if true digital patina exists (as an inherent property in a digital context, in the same way continuous tone is an inherent quality of film), it might be seen to be the result of some image degradation, such as jpeg compression. Therefore digital patina, showing the status or property of the surface or form, must be applied, and this can be seen in the popularity of ‘apps’ such as Instagram, which apply a retro looking filter to the image to recreate an analogue aesthetic.

Virtual patina has played a vital role in producing convincing CGI for all aspects of 3D modelling and scene generation. Early in the evolution of 3D animation, it was clear that to increase surface detail more polygon data was required, but this needed additional computing power. Later bitmap images were ‘mapped’ to 3D objects in the form of textures with other material qualities, such as glossiness or reflectivity. Reality recreation became a secondary but parallel craft, as once a scene was modelled it needed to be dressed with textures such as dirt, dust and rust via ‘photorealistic surfacing techniques’ as there are ‘very few clean surfaces in reality’ (Fleming 1999).

**Authenticity**

The *Oxford English Dictionary* in part defines the word authentic as:

- Of undisputed origin and not a copy; genuine
- Made or done in the traditional or original way, or in a way that faithfully resembles an original
- Based on facts; accurate or reliable

Authenticity is a term used widely in the field of luxury, craft and making. It has become part of the mythology surrounding notions of heritage, tradition and tacit skill. At what stage, though, does a process or a way of working become a tradition? At some point most processes used in the making of an object were new. All craftspeople evolve their skills and tools to suit their individual style of working, and most will incorporate new elements when appropriate without concern that they are losing the authenticity or integrity of the piece they are making.

Computer-aided design (CAD) and manufacture (CAM), and 3D printing, being a relatively new technology, can suffer from a perceived inauthenticity. Comparing a piece of rapid prototyping to a hand-crafted wooden object does not appear to be comparing like with like, no matter how long the CAD model took to draw and render. The material quality of the objects produced may seem low grade, in some cases, when compared to a sophisticated handcrafted object. The democratising element has also been widely publicised. With
a maker-bot machine now retailing at less than the price of the latest laptop, the possibilities for everyone to 3D print their own designs appear to be endless. However, the sites where enthusiasts can upload their creations display unappealing pieces of jewellery and trivia. Such sites and communities have a clear focus on the process of 3D printing, where the end product seems of lesser importance than the process itself. The resulting plastic objects often lack the appeal and commitment of something well crafted and made by hand.

As part of her MPhil at the RCA in 1998, Wallin utilised CAD and rapid prototyping technology to re-design an archetypal product along closed loop principles. Stereo-lithography models were produced which then needed to be finished with filler and sanded by hand to remove the traces of the support structures around the forms. The additional hand-skills of model making were necessary to achieve a high level of surface finish. Rapid Prototyping sector has evolved since then into Additive Manufacturing, with the machines now using complex materials to a far higher quality, but the hand finishing of surfaces is still required today.

In the last decade, specialists have begun to use both hardware and software with more subtlety and nuance, to effectively ‘craft’ using the technology. In 2010 the Crafts Council held an exhibition called ‘LAB Craft: Digital Adventures in Contemporary Craft’ which looked at the idea of a new craftsperson fully engaging with the opportunities of digital technology to ‘move beyond the limitations of the hand’ (Crafts Council 2010). Makers such as Nina Tolstrup, Drummond Masterton and Tavs Jorgensen showed work which demonstrated a way of using new technology with a craft maker’s sensibility.

The V&A and the Crafts Council followed with ‘The Power of Making’ in 2011 which, although not directly concerned with technology, did show new and traditional technologies given equal footing in a bid to problem-solve using the categories of adding, subtracting and transforming.

Research clusters such as Autonomatic at University College Falmouth continue to push the boundaries of what crafting digital technology could mean, including research into how to overcome, subvert and individuate the standardising process that CAD software necessarily operates, and develop human centred interfaces for 3D design tools.

Screen based design, 3D modelling and animation has also evolved in recent years. Digital animation has grown from a relatively niche market to large-scale productions – such as Pixar’s Toy Story movies. Similarly, computer games now feel more like films in terms of their use of cinematography, narrative structure and a ‘filmic’ quality. The level of detail and commitment ‘digital craftspeople’ apply to virtual creation is equivalent to craft in the physical world. At the time of writing the fifth instalment of Rockstar Games’ Grand Theft Auto video game series has been released to much critical acclaim. Despite controversy about its content (violence, etc.), the game is genuinely beautiful and exquisitely detailed (Rose 2013). From the dazzling sunsets to the level of detail and patina in the sidewalks, digital ‘patina’ has been crafted to photographic level. The accepted process – or workflow – in this field is to ‘build from scratch’ or replicate the physical, but the question remains if this is in fact the only way to evoke an authentic experience.
Sustainability and emotional durability

... design, in any guise, sustainable or otherwise, is instead the root of the environmental crisis, and that only when the scope of design’s complicity is understood, can anything like ‘sustainable’ human environments be conceived. (Hill 2008)

This was the controversial statement at the beginning of Glen Hill’s 2008 book *Design, Heidegger, and the Earth*. The role of the designer has never been under such attack. If Victor Papanek, the grandfather of sustainable design principles, was not exactly complimentary in 1971, he instead opted for a call to arms to designers to become real world problem-solvers rather than merely stylists. Hill (2008) takes the argument further, making designers fully responsible by describing design as the ‘engine of consumption’. (Hill, 2008)

Sustainable design principles are no longer new, with architects, vehicle and product designers all being forced to adapt, as corporate social responsibility (CSR) policy becomes the norm for every large corporation. However, sustainable design principles deal with how we consume products now, and can fail to radically re-imagine the relationships between designer, producer, consumer and waste beyond the now well established principle of closed-loop manufacture and recycling.

In 2005 Jonathan Chapman used the phrase ‘emotional durability’ to describe a new way of designing products that would enable consumers to feel more attached to the things they buy, reduce the consumption cycle and avert an imminent environmental crisis. He talked about the need to design ‘cherishability’ into products, and outlined proposed strategies for allowing ‘the relationship between subject and object to become evolutionary’ (Chapman 2005). (Chapman, 2005) (Chapman, 2005) Designers, he said, have a responsibility to produce goods which will not be quickly discarded but will evolve and change with the user without impacting further on precious finite resources.

A deeper analysis of our emotional attachment to objects could reveal some starting points for further design experimentation, to move beyond sustainable design principles into proposals for radical sustainable design strategy.

Harvesting value – Skinning, casting and transforming

To create a pelt is to take the skin of an animal, with all that is attached to it in terms of hair, wool or fur. The origin of the word ‘pelt’ is from the old French word *pel* or skin and the Latin *pellis*. The skin houses both information and value. An animal pelt can be used to make a fur coat, for example, whilst the skin, once stripped of hair, wool or fur, can be used as leather, in products as diverse as shoes, bags and car interiors. Furs and skins are used widely in the luxury industry due to their literal expense and semantic value as a signifier of wealth. Some designers such as Stella McCartney or Beyond Skin refuse to use leather in their collections, believing that man-made materials will provide a more sustainable product. However, the processes involved in making many faux-leather materials can, in fact, be even more damaging to the environment than ethically produced leather, so the issue is complex.

Figure 3. Martin Margiela, Maison

Designer Martin Margiela has played with the concepts of skins, patina, trompe-l’œil and recycling in his deconstructivist approach to clothing collections. He might print one type of garment onto another or one material onto another as well as re-fashioning discarded items into new configurations, subverting their original use into another. He deliberately plays with the meaning of old and new, and directly manipulates fashion’s self-referential habit of copying and re-interpreting ideas. In designing the interior of the Maison Champs Elysees Hotel, ornate antique doors were screen-printed onto new ones, and a modern interior was decorated with the greyscale-flat ened outlines of the past.
What is left behind, the remainder and human traces, are regularly seen in fine art. In 1991 Gabriel Orozco measured his weight in black plasticine and rolled the resulting large ball in the streets to take the imprint of the surfaces it rolled across. The piece was called Yielding Stone and created a literal and metaphorical bridge, imprinting the space between the artist and the world he inhabits.

Rachel Whiteread’s controversial 1993 sculpture, House, was a cast of the inside of a Victorian terraced house in East London. By casting the interior, Whiteread collected the human traces left in the space and transformed them from positive to negative, negative to positive, and in doing so created new meaning.

New technologies have allowed human traces to be used in new, dynamic and interactive ways. In 2011 Jay Watson designed a table and bench with a heat sensitive coating, which responds to not only the food and utensils used on its surface but also the heat of the human bodies sitting at the table. The marks fade over time but leave a ghostly imprint of the people and activities, which have both inhabited and taken place upon it.

Whilst Margeila with his trompe-l’oeil prints is in a certain sense using the idea of a skin of an original garment or space, the effect remains rather 2D, photographic and flat. Whiteread, however, by casting objects and spaces in three dimensions takes everything with her. Refusing to be satisfied with a flat representation, she wants to preserve the entire void and essence of a space. One removes data from the original to leave an imprint while the other grapples with the entire complexity and topology.

This duality is present in the two digital approaches re-appropriating the surface of the scanned object in Experiment One. The first uses an imprint method to re-create a faux-topology and the second uses all the information available in an advanced digital sculpting package widely used in CGI.

### Reality capture and replication

Throughout history artists have tried to render reality in a variety of mediums. This has traditionally been comprised of figurative painting and sculpture, where a master craftsman studied his subject and acted as the vehicle from which a facsimile was produced. Typically, painters were commissioned to produce artworks by patrons for cultural, religious or social financial status.

There is much contemporary evidence that artists of the Renaissance increasingly turned to science to aid the development of accurate perspective in two-dimensional artworks. The Hockney-Falco thesis, a theory maintained by the artist David Hockney and condensed matter physicist Charles M. Falco, argues that rapid advances in ‘realism and accuracy’ between the fourteenth and fifteenth centuries were due to the use of optical devices such as the camera obscura and curved lenses (Hockney and Falco 2003). (Hockney & Falco, 2003) Hockney’s theories are still strongly contested, in part because there is little physical evidence to support them. However, they remain important to this paper by providing an early reference to the use of lenses in ‘capturing reality’ via a drawing made over a projection, well before the advent of photography.

A further reference in the history of reality-capture is provided by the engineer James Watt. Watt invented the first device to copy documents as some...
intriguing ‘sculpture duplicating machines’ (Schils 2008). The machines where later perfected by Benjamin Cheverton, who adapted them to copy, enlarge or reduce sculptures accurately. The machine worked to a similar principle of the 2D pantograph – a device used for exactly copying drawn images or text. This copying machine bore similarities to the modern day CNC milling process, and the 3D pantograph approach is not dissimilar to Contact 3D scanners.

Current 3D scanning processes may now be maturing to allow for ease of use and increased accuracy. Both Autodesk and Maker-bot seem intent on reaching the goal of replication for a domestic end-user.

**The evolution of contemporary 3D scanning**

Whilst scanning objects for the purposes of reverse engineering and digital replication has been commonly used in engineering and product design companies for decades, two contemporary examples show a level of detail and surface capture particularly relevant to this paper.

- **Factum Arte** – a group of artists and conservation specialists renowned for cutting-edge use of digital technologies
- **Shipping Galleries 3D Model** – An extensive laser scan commissioned by the Science Museum London

**Factum Arte**

One of Factum Arte’s core strengths is obsessive interest in the qualities that make things specifically what they are. (Lowe 2013)

Factum Arte are a digital conservation company who specialise in historical works of art. They use non-contact 3D laser scanning and digital photography to collect massive amounts of data on their subjects, which are then translated into 2D and 3D for ‘the production of facsimiles as part of a coherent approach to preservation and dissemination’ (Factum Arte 2013). (Factum Arte, 2013) Their work is at the forefront of technological processes used in conservation and fine art. Their approach begins to redefine the qualities that make up a surface patina and its importance when making an authentic reproduction.

Adam Lowe, Director of Factum Arte, states:

For me the key is that we are interested in surface. We are interested in the noise and peculiarities and details of a surface. But most three dimensional applications are interested in shape and sacrifice the subtle details of surface. (Lowe 2013)

**Figure 6: Factum Arte**

This rigorous attention to detail, viewing the surface as of equal importance to its overall shape and form, has opened up intriguing possibilities for future collection of physical reality data. In a sense, it might be suggested that these rich, full-colour, detailed scans are a form of ‘3D photography’. In the past the most accurate method of recording an object might have been achieved by taking a photograph and capturing the light in the scene. Now it is possible to capture large sets of three-dimensional and colour data simultaneously, providing a full virtual experience of a scene or object.

In its book *Mediating Matter – Returning the Digital to the Physical World*, Factum Arte Foundation states that it is:

dedicated to the development and use of non-contact high-resolution digital recording as part of a coherent approach to the preservation, dissemination and public exhibition of diverse types of cultural artifacts. (Factum Foundation 2012)

**The Science Museum, London – Shipping Galleries laser scan**

In 2012 the decision was made to close the Shipping Galleries in the Science Museum London, in order to make way for new exhibits. The collection of maritime models and artifacts had been on display since 1963, and before the models entered storage...
the Science Museum made the decision to have the entire space laser scanned. The Shipping Galleries curator describes the reasoning and experience of scanning the space:

We wanted some way to preserve the old shipping galleries, and I was really excited when we got the chance to have the display laser scanned ... now we can make a virtual model of the galleries, we can see them in an entirely new way. It's a unique permanent record of a unique and historic exhibition. It lets us fly through the galleries. (Roney 2013)

Watching the animated fly-through of the Shipping Galleries 3D model is an ethereal experience. The entire geography of the space is captured and at points the model is transparent, allowing for multiple levels to be seen. ScanLab, who carried out the scanning process in conjunction with University College London, captured 1800 objects from the display in high detail.

Experiment One – Object

Undertaken by: Rosemary Wallin

Objectives

The purpose of the experiment to was to capture and utilise patina from an existing object using 3D scanning technologies and computer-aided design (CAD) software packages. The investigation was multi-factoral, in attempting to look simultaneously at materiality in terms of aesthetic quality and sustainability, emotive value as well as transforming the use-value of the object.

The key objectives were:

- Harvest the emotive value of a family heirloom to encourage emotional durability
- Transform the value of an unsustainable material into a sustainable one
- Reconfigure a historic object to modern-day relevance
- Explore the boundaries surrounding the materiality of an object by connecting the digital and physical realm

The object chosen was a small crocodile leather suitcase made in the late nineteenth century by North West Tannery Co Cawnpore (now Kanpur) with nickel-plated fittings and own cotton lining. The case has value to a particular family, as the crocodile used in its production was shot by the great grandfather of the current generation. This connects the case to a particular time in history, a particular
person and a particular event. The case, however aesthetically appealing, has fallen into disuse, as it is small, heavy and unsuitable in a contemporary working context. It also represents – by current standards – an unappealing and unsustainable method of production.

Could the skin be harvested and re-used in a sustainable context, and could the narrative and emotive value held in the patina be retained (Alberge 2013) whilst simultaneously re-making the object into a useful, modern equivalent product?

Creating a ‘digital pelt’

Before the skin could be re-used, it first had to be captured. This was done with a scan made using a nextengine scanner, which produced a high resolution PLY file. The higher the resolution of the scan, the more surface detail information is retained. Then the case was unwrapped in 3D studio max by taking the 3D scanned data and using an unwrapping tool, which flat ens it into a template. The digital skin or pelt is now data – 4.5 million polygons – that can be used in a number of ways. This unwrapping tool is commonly used in animation to make more believable surfaces for complex 3D objects where planear mapping would lead to distortion (i.e.: imagine wrapping paper over a complicated shape).

Methods

Displacement mapping – ‘the imprint method’

3D Studio Max

The unwrapped case or ‘digital pelt’ was a huge file, and in 3D Studio Max very slow to manipulate, repeatedly crashing the computer. Whilst a ‘digital pelt’ had been created, it was unusable in a software which uses vertex and polygons (4.5 million is very high density). At this stage, another approach was attempted – that of displacement mapping. Here, a 2D image of the unwrapped case was created in Photoshop, which allows the software to convert the greyscale values to create a topology. This is not the same as the original topology of the patina, but it is visually similar. The new ‘skin’ can then be wrapped around another 3D object – in this case a CAD model of a laptop case (the modern-day equivalent, perhaps, of the small suitcase). The result has a skin-like effect and mimics the texture of the original case. The case has been converted from the original to a 3D scan, flat ened into a 2D image and then re-formed into a 3D object. When 3D printed, the loss of patina quality is evident, but an interesting new texture is created.

Digital sculpting

ZBrush

ZBrush is an alternative CAD software which is capable of using the high resolution scan and sculpting the mesh around a new 3D model without difficulty. The software was created to work with high density meshes (up to a billion polygons) and is used in CGI (computer-generated imagery), games, movies and sculpture. Zbrush is a popular tool in digital aesthetics but is not as accurate as other softwares in terms of measurement (e.g. Solid Works...
Zbrush uses pixols rather than pixels, which are able to carry more information than simply the x and y position. They can contain light, colour, depth, material and orientation information in addition. The high resolution 3D scan of the case was imported into Zbrush and the bottom of the case cropped and removed as excess material.

The top of the case was placed over the 3D model and the laptop case was projected on top of the skin in order to acquire the same volume and topology. Twelve million polygons were active during the sculpting process, and the skin took the new form in a manner similar to the leather lasting process used in the manufacture of shoes. As the object or ‘digital pelt’ remains 3D from the scanning to the sculpting, there is little or no degradation of patina quality. A 3D printout of the case demonstrates the more accurate rendering of the patina quality on the new form.

Figure 11. 3D printed model of the Zbrush sculpted case

Traditional casting process

Lost wax and silicon moulding

To contrast with the digital processes, a traditional process was employed to achieve the same result. Used in the production of sculpture and jewellery, lost-wax casting is an ancient process, versions of which can be traced back 5,000 years. In a sculpture foundry, a silicon mould was made of the original, enabling a wax to be made. This was surrounded by fireproof material and the mould heated so that the wax is ‘lost’, leaving a cavity in its place. To harvest the skin of the crocodile case a silicon mould was made of the surface, and a series of wax ‘skins’ were made from this. These are the most accurate copies of the patina, as even the highest resolution scanning results in some loss of information. The wax ‘skins’ can now be heated and moulded to a new form and an aluminium press mould can be made. The wax ‘skin’ is taken from the mould.

Figure 12. A wax ‘skin’ being taken from the mould

Transforming use and material

Using the silicon mould and the potential of the aluminium press mould, experimentation can be undertaken creating the patina surface onto alternative materials. Biopolymer experiments yielded promising results, with the surface of the original case successfully transposed onto a new useable product form in a new sustainable material.

Figure 13. The re-formed case in sustainable materials

Findings and conclusions

Displacement mapping – ‘the imprint method’ – 3D Studio Max

Displacement mapping provides a quick and simple method for using patina on a new surface. It can be applied to an infinite variety of forms and does not require a 3D scan but can be realised from a 2D source (such as a photograph). However, there is a loss of quality and detail, as well as a uniformity across the surface which might not exist on the real object as it is essentially a re-creation of the surface rather than a direct scan of it.

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Digital sculpting – ZBrush
This provides a much more detailed solution and retains the patina surface in a more direct way (the surface is never flatened into 2D but retains all the data from the scan). However, the sculpting process is more time consuming and, as the software is more specialised, greater expertise is required to achieve a satisfactory result. Despite the learning curve with such complex software, the advantages are immense, as the data can be used and manipulated without limitation. The potential for a ‘digital pelt’ to be fully exploited into other product possibilities is very exciting.

Traditional casting process
The lost wax method uses silicon moulding to take the detail of the patina or the form of the object, or both. Whilst this method provided the most accurate method of harvesting the information (superior to the scanned data) it was also very time consuming, employed multiple processes and was not fully interactive like the digital process. Once each wax skin had been used, it was necessary to create another, as each could only be used once. There was, however, partly as result of the time involved, and partly due to the nature of the material, a more direct intimacy between the material and the maker, which is undoubtedly lost between the computer screen and the software user. It is arguable whether this intimacy translates to the final object, but the tacit knowledge involved in the physical act of moulding the wax skins is certainly replicated in the skill of the software user in the digital process.

Applications – Future luxury
This experiment was concerned with the value of a luxury item and whether it was possible to take an existing object and harvest the narrative and emotive value whilst transforming some of those values no longer relevant in a sustainable context. The technology is certainly available to do this in the form of scanning, sculpting and 3D printing processes, as well as in material advances. However, beyond these answers, the research throws up some further areas to be explored:

- Will consumers become active participants in the creation of their own luxury goods?
- Might luxury brands become service providers, providing the means to produce rather than being the producers?
- Could the reclamation of patina provide a system of value for future luxury, designed for inter-generational use, rather than obsolescence?

Experiment Two – Space
Undertaken by: Florian Stephens

Objectives
The purpose of the experiment was to investigate the use of 3D scanning technologies to capture densely patinated surfaces and spaces. The intention was to build upon and complement existing 3D animation practice and research by focusing on a number of key objectives – listed below:

- To democratise the process via inexpensive and readily available scanning technology
- To increase the authenticity and emotive potential of digitally-reproduced environments
- To potentially offer a faster, more accurate and efficient workflow to existing 3D animation practices

Methods
In order to undertake the experiment a suitable subject was needed. It was decided that an interior space was needed, in contrast to experiment one, which was object focused. A richly patinated space was sought and selected for irregular form and surfaces. The resulting space chosen was a room in a seventeenth-century Cumbrian farmhouse. The test was to recreate the interior using three 3D modelling and reality capture methods.

Figure 14. Space
3D modelling – Industry standard workflow with 3DS Max
A section of the space was recreated in 3DS Max. This was modelled by eye with measurements and photographic reference (the photographs were also used to recreate the texture). The process of modelling all the objects in the scene took approximately five hours to complete; 3D rendering was another two hours.

Photogrammetry – using Autodesk Catch 123D iPhone application and desktop software
Photographs were taken ‘freehand’ and uploaded to the Autodesk cloud systems to create 3D models using the principle of photogrammetry – which is the practice of determining the geometric properties of objects from photographic images. The model was available to download several hours later.

Handheld Laser Scan—Microsoft Kinect Sensor and Skanect capture software
The Microsoft Kinect is a sensor accessory for the Microsoft Xbox, whereby a player can interact with games via body movements. Increasingly, Kinect is used by developers to create inexpensive 3D laser scanning solutions. Therefore, for the third method, a Kinect was used in conjunction with 'Skanect' – a reality capture software.

Findings and conclusions

Traditional 3D modelling
Using software such as 3DS Max to produce architectural space is an accepted workflow, used regularly in the 3D animation industry. Other benefits include the user’s ability to model any form. 3D models are efficient to work with and can be modified to client needs. Whilst the workflow can be fast, the software is complex and an experienced artist is required to operate it. It can also be inaccurate – both visually and spatially. The patina needs to be recreated – indeed all the qualities discussed in this paper that make up surface patina must be painstakingly analysed and reproduced by hand with the addition of Adobe Photoshop.

Photogrammetry
The Autodesk 123D Catch software suite requires minimal technical experience to operate. The iPhone application consists of a two-step operation – the user photographs the subject from all angles and, after review, the images are uploaded to the Autodesk Cloud server for processing. When the models are ready they are viewed in software and exported to alternative formats and uses. This method showed some initial promise, especially with individual objects – accuracy of geometry and patina captured was extremely good on an object basis. However, larger spaces and the subject interior were much more problematic – whilst some areas were accurately captured, many others had missing sections and distortion, and an efficient workflow eluded the experiment.

Laser scan
From its first use it was clear that the Microsoft Kinect–Skanect setup was going to provide the most accurate and efficient 3D scanning workflow. The Kinect was by far the most immediate and easy to use method; both 3D modelling and photogrammetry methods did not provide particularly fast results. In comparison, the Kinect could be swept across a surface, which would materialise in the software as a fully textured 3D model almost immediately.
although the room needed to be captured in sections and pieced together at a later stage. The method provided accurate spatial capture – although low resolution in parts, in general the patina was authentically replicated. With this procedure the emotive qualities of patina seemed to come through the scanning process and were somehow held digitally in the final artefact. Nevertheless, there were inherent drawbacks to this method; it produced heavy 3D models with large files, which could hinder potential digital applications. This is due to the difficulty in manipulating massive amounts of 3D data for animation and games purposes. Unlike the 3D modelling approach, the files were inefficient.

- Will the process provide new ways of capturing essence, memory and place?
- Could this research allow for a re-evaluation of what a surface is in a digital context?
- Does this research offer new pathways for 3D content generation in video games, film and virtual spaces?

**Conclusion**

This paper has uncovered a number of potential areas for development of practice-based digital making and its relationship to traditional craft. It is clear that digital patina is more than just a virtual reproduction of its physical cousin; it is a site of emotive, poetic and narrative quality. This was especially true in the object experiment, where scanned data was reform into a new artifact, whilst retaining the history and character of the original surface. The surface is the meeting point where digital and physical worlds converge and patina is the rich, accrued narrative and emotive value housed within its topology.

With current technology we can scan an object and replicate its form, but the pursuit of the qualities that make up patina are key to investigations about the meaning of authenticity in a digital environment. Fast developing scanning technologies and 3D sculpting applications such as Zbrush have prompted an intense interest in digital authenticity. This can also be seen in headlining projects such as the Van Gogh Museum’s commercial replication of a number of paintings using an advanced 3D printing technology by Fujifilm. The replica Van Goghs are claimed to be indistinguishable from the originals. These duplicates are called ‘relievos’, super-accurate reproductions, even extending to the frame and the back of the painting. Every relievo is numbered and approved by a museum curator (Alberge 2013). (Alberge, 2013)

Where, exactly, is the value housed in this perfect replica when situated next to the original handmade work of art?

When we persist in trying to substitute virtual experiences for embodied ones, we end up with the worst of both worlds. Digitisation speeds the flow of data, but impoverishes our lived experience. (Thakara 2006) (Thakara, 2006)

**Applications – Future visualisation**

The experiment was in essence a comparison of three forms of digital making, with a focus on ‘reality capture technologies’. The following questions were raised by the research:

- Could scanned data provide an alternative to traditional forms of 3D modelling, photography and film as a way of documenting a space or environment?

Figure 17. Kinect laser scan – Space

When we persist in trying to substitute virtual experiences for embodied ones, we end up with the worst of both worlds. Digitisation speeds the flow of data, but impoverishes our lived experience. (Thakara 2006) (Thakara, 2006)

Is it really the case that the digital world must impoverish our lived experience? Is it not possible that with considered design strategy a complex conversation between the two might allow...
for a deeper, more enriched experience? The contemporary production of sculpture provides a good example of an industry where craft and technology, the physical and the digital, work in tandem. Objects travel between the sculptor’s hand and the computer screen, the virtual and the bronze, without either lessening the value of the other, but supplementing, adding to and enabling each other. This crossing back and forth, never before so easily and quickly achieved, has implications for all areas of design. The diagram below shows the divergent areas of the authors’ work, and how this paper is situated in the intersection, a new area of practice-based research. The experiments and examples highlighted in this paper all involve a fundamental ‘de-materialisation, transformation and re-materialisation’ (Factum Foundation 2012) process which conceptually provides a new frontier for design in both the digital and real world. If the relationship between a consumer and an artifact is to be maintained and valued, perhaps the level of scrutiny and detail of the surface in a digital context might begin to rectify. New ways of conceiving of and using digital patina could begin to provide a poetic new language of making across the digital/physical divide.

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Transformative Practices in and through Textiles

In association with the Crysalis textiles network, funded under the EC INTERREG IV A 2 Seas Programme.

Recognising the scale and diversity of the textiles sector, this workshop invited contributors from across the field to explore multiple viewpoints, from traditional artisanal practices to high-end design, and from the global value chains of high-volume fast-fashion retail to the activism associated with DIY ‘craftivism’ and ‘slow’ thinking. In doing so the workshop sought to uncover the points of convergent thinking around textiles related economic, social and sustainability issues from multiple overlapping perspectives. These included whether traditional textile methods necessarily provide for more ecologically sustainable practices than modern industrial systems, and where textile crafts sit in relation to new emerging materials and innovative production techniques and technologies.
I propose to present an illustrated case study, in a cross-cultural context, of interactions between craft production, design and manufacturing, and the positions of the craftsperson and designer in the value chain at Making Futures III.

The presentation will draw upon my experience, over the last four and a half years, living and working as a British textile designer for an international luxury brand in Shanghai. During the course of my work I have established close understanding, and professional partnerships, with producers of artisan cashmere, yak, silk, felt and embroidered textile in China, Nepal, India and Mongolia, regularly visiting workshops in these regions, communicating with, and learning from, local masters.

Alongside my professional practice as a designer, I have undertaken research related to the traditional textile, natural dying and embroidery techniques of the Miao and Dong ethnic minority peoples, visiting several villages in Guizhou, China. My inquiry immediately opened questions regarding the place and significance that crafts have traditionally held in local cultural tradition, and how these artisan practices are changing under the growing influence of the dominant Han Chinese culture, bringing with it the new economic environment of modern state capitalism. How does the gathering cultural momentum of modern China affect the previously relatively isolated peoples, and how might such isolated textile cultures gain future sustainability (in social and economic terms) in an increasingly global economy?

This research has also led me to question the notions of luxury and value for both rural Miao and Dong societies and in urban Chinese or more global European markets. How do we define value in terms of materials, techniques, design, cultural significance and fashion? How is value ‘added’, or inherent, and how is ‘luxury’ perceived either as essential quality or indulgent excess?

How also does the definition of, or regard for, the value of an object differ between the craftsperson and the consumer, or (in terms of cultural identity) the insider or the outsider?

With reference to weaving, felting, embroidery and dyeing traditions across Asia, I will address how the notions of craft, sustainability and cross-cultural exchange interact with society, and how these questions affect and inform my practice as a contemporary textile designer. I will illustrate the contrast between urban and rural contexts and the social and cultural dimensions of textile design, and the ways in which the ‘layering’ of textile culture through craft society produces sharply contrasting ideas of value in textile artefacts in markets and boutiques around the world.

I will highlight the problems facing many rural isolated groups producing traditional textiles in Asia - issues arising from mass migration from rural areas to emerging megacities, and the social and environmental consequences of this.
In this paper I propose to present an illustrated case study, in a cross-cultural context, of interactions between craft production, design and manufacturing, and the positions of the craftsperson and designer in the value chain.

Fig. 1. A Dong village in Guizhou.

Fig. 2. Pudong skyline, Shanghai.

I have spent the past five years living in China, working as a British textile designer for Shang Xia, a new Chinese luxury brand in Shanghai. Shang Xia’s aim is to establish the first international Chinese luxury brand. Run by Jiang Qiong-er, its Chinese creative director and CEO, with the backing of Hermès International, the aim is to reverse the general perception of ‘Made in China’ to celebrate Chinese and Asian artisan traditions, and draw on China’s rich 5,000-year history of craft and design heritage. Such workmanship and quality has the significant brand advantage that it cannot cheaply be imitated.

I was lucky to be employed right at the beginning of the development of the company, so have been fortunate to see its growth and the changing of attitudes towards locally-made luxury goods within China.

As an emerging superpower China is one of the most fascinating places in the world, especially today. With its ancient and incredibly rich history, mighty but unorthodox political system and now rapid modernisation, it is a country of sharp contrasts that is changing fast. In the West we had the Industrial Revolution with the introduction of new manufacturing techniques that propelled development into fast forward. Three hundred years later, after vast advancement in science, we are now going through a post-Industrial Revolution with pioneering green technology, and high-tech cleaner production techniques. On an industrial level China is carrying out both of these revolutions at the same time, at a speed that is unheard of in the developed world. This causes many problems as well as opportunities in a country with a population more than 2.5 times the size of the European Union.
Whilst living in the fast-developing mega city of Shanghai, through my work I have also developed relationships and established an understanding of traditional crafts in India, Nepal, China, and Mongolia. I have learnt first-hand from producers and local masters an array of techniques, including artisan cashmere and yak-wool weaving and felting, block printing, embroidered textiles and natural dying. I have had the chance to visit and research in rural areas, to study craft techniques and learn about how the changing culture and gathering momentum of modern China and its opening up to the outside world has affected and is affecting previously isolated peoples.

China opened its doors to the rest of the world in the 1980s. Thirty years ago it was a country isolated from the outside and any western influences. This led me to questions regarding the place that crafts have traditionally held in culture, and how these artisan traditions are changing under the growing influence of not only the western world but also the dominant Han Chinese culture and the onward march of state capitalism. How does the cultural momentum of modern China affect previously isolated peoples, and how might such isolated textile cultures gain future sustainability in an increasingly global economy?

One example I looked at is the Miao and Dong ethnic groups in Guizhou, China. Researching their traditional textile, natural dying and embroidery techniques and culture brought up questions about the notion of value. How do we define value in terms of materials, techniques, design, cultural significance and fashion? How is value ‘added’, or inherent, and how is ‘luxury’ perceived, either as an essential quality or indulgent excess? How also does the definition of, or regard for, the value of an object differ between the craftsperson and the consumer, or (in terms of cultural identity) the insider and the outsider?

Fig. 3. Various Miao and Dong textile techniques from Guizhou.

The Miao and Dong peoples are two of the fifty-five (non-Han) minority ethnic groups officially recognised by the People’s Republic of China. They reside primarily in the mountainous areas of southern China, with the majority living in Guizhou province. As semi-migratory agricultural societies – subsistence farmers who are largely self-sufficient – the Miao and Dong traditionally grow and produce their own food, paper, jewellery, textiles and clothing. Their houses and community buildings in each case have unique architectural styles, built from wood without the use of nails, with distinct eaves and roof details. Their textiles are world-renowned for their decorative beauty and for extraordinary skill in the use of many different weaving, dyeing, batik, embroidery and embellishment techniques.
The Miao and Dong use several similar techniques to create the base of their garments and textiles. Embroidery and embellishment, as well as the use of dominant colours, vary between the groups and indeed the various sub-divisions of the larger of the two peoples, the Miao. These sub-divisions are often named after the colour of the skirts made and worn by the women in their society, for example ‘Black Miao’ in south-eastern Guizhou, ‘Large Flowery Miao’ in north-western Guizhou, and ‘White Miao’ and ‘Green/Blue Miao’ in western Guizhou. This underlines the cultural significance of the various textile techniques and clothing styles in their use as the distinguishing characteristic between the different groups.

The creation of textiles is a cyclical process, with different stages dependent on the seasons. The cotton is grown and harvested amongst other crops grown for food, to sustain the villages and to sell at market. Silk is also collected from silk worms in the area. Both cotton and silk are then hand spun into yarns of varying thicknesses and woven on small wooden looms in the home. This is done during quiet times in the farming calendar. The patterns woven vary from a simple cotton plain weave to more complicated brocades (as seen in Fig. 3 above). The most important of all the dyes, indigo, is also grown in the villages. The woven fabric has to be dyed at a certain time of year when the weather is at an optimum temperature to create the richest and deepest colour. Each stage is labour intensive and entirely handmade using techniques passed down through generations.

Fig. 4. Details from an elderly Miao woman's clothing in Xijiang, Guizhou.
The photos (Fig. 4) show clothing worn by village elders in the Miao village of Xijiang, Guizhou. The elderly woman wears clothes that she handcrafted herself. All the fabric used to make her outfit was hand woven and dyed, from the silk brocade surrounded by a cotton plain weave fabric on her apron to the cotton woven in a diamond pattern on her top and the ribbon used to tie the belt around her waist. The sleeves and collar of the top are all hand embroidered and appliquéd. The entire costume would have taken years to complete, and will be passed down through future generations of women. This lady takes pride in what she wears and the fact that she made it all herself. These details are not merely personal but have always been strong social signifiers, part of the intrinsic cultural identity of Miao communities.

The development of roads and infrastructure around the village, whilst good for the economy, has led to relatively easy access and influences from outsiders. The women welcoming visitors in the photo above (Fig. 6) are all wearing matching ‘Miao’ costumes. However, instead of hand-woven cotton, their tops and aprons are made from synthetic velvet fabric, with machine-embroidered ornate designs. You can also see that the style of the embroidery is much more figurative compared to the more abstract designs on the handmade costume of the woman in Figure 4. From a distance they may look similar, but these women wear a mass-produced imitation of a traditional outfit whose techniques have been taught and learned for generations, reducing a process from fifty separate stages to only five: a kind of wholesale reproduction that would be at home in a museum gift shop.

Xijiang has traditionally been one of the larger Miao villages in Guizhou, and its picturesque traditional houses and rice paddies, along with the riverside setting and surrounding countryside, made it a prime location for development. It is now designated as a ‘historical cultural ancient town’ and, although it still functions as an authentic Miao village, the local authorities have turned the town into a tourist attraction with many hotels, restaurants and the ubiquitous karaoke bars that are found throughout China – it is advertised as a ‘living fossil’ of Miao culture. This phrase is particularly unfortunate, indicating a petrified culture, something entirely defined and closed into its past.

The man above (Fig. 5) wears much simpler, less ornamental clothing, but the fabric used to make his tunic was also hand-woven and hand-dyed for a prolonged period of time in natural indigo dye. The Miao use indigo in many of their everyday clothes and ceremonial costumes. It is prized for its aesthetic beauty and also for its natural anti-bacterial, anti-fungal, cooling properties.

The photos above (Figs 7–10) show traditional wax resist designs dyed with natural indigo and then embroidered in certain points. Each design takes several days, if not weeks, to complete the application of the wax before they can start the dyeing process. The traditional Miao designs are very intricate with large patterned white areas meaning that more wax has to be applied. These panels form parts of costumes used for ceremonial occasions. In Figures 9 and 10 the Miao craftsman is preparing wax resist patterns on T-shirts that are commercially available to tourists and visitors to
the area. The patterns are much simpler, with less white space, making them much quicker to complete. As a result they are accessible and the craftspeople are able to make a living by producing more labour efficient designs for people who want something to show they have been to the area but aren’t prepared to pay for the labour involved in creating the traditional patterns. They function almost like postcards, but with less emotional depth. With postcards the writer needs to take time to think about their experience a little in order to convey the feeling of the area to their friends.

The opening-up and industrialisation of China has had a huge impact on the traditions and livelihoods of the Miao and Dong peoples. Many of the centuries-old craft techniques are becoming rarer and in danger of dying out as younger generations are leaving their rural homes in search of relatively unskilled but often better paid work in the many restaurants, karaoke bars and, of course, the factories of China’s cities. These jobs can be learnt in one day, as opposed to practising and studying embroidery for many years. However, the money and ease of work are not the only thing drawing the youth to the cities. Young people want to ‘go out’ and see the world. In Factory Girls: From Village to City in a Changing China (2009), Leslie Chang talks about the desire, of young women especially, to experience more and see the world. There is huge optimism in the general perception of what can be achieved if they move to the city. Seeing cities, urban life and overseas culture portrayed on television and in films exerts a huge influence, and now they want to experience it for themselves. This mass rural-to-urban migration is by far the largest ever seen in history.

As Figure 11 shows, the development of infrastructure has also made previously difficult to access mountainous regions open for development and tourism, and this in turn is affecting the local customs and traditions in Miao villages. As I mentioned previously, the influx of tourists creates new revenue for the Miao and Dong craftspeople, but this comes with compromise, and the traditional designs and patterns are affected. The visitors to the area value the local craft and want a piece for themselves but aren’t prepared to pay for the time it takes to create the authentic works of art. And how do the craftspeople know what value to put on these textiles? For centuries they have been creating costumes for use in ceremonial occasions that they work on over years and wear for a lifetime. How do you put a monetary value on something that has never been sold and only ever made for personal use? In one village an elderly woman stated the price of ¥100RMB (around €12) for an embroidered top as this was the highest-value banknote she had seen. This kind of value would make creating new pieces as detailed as the old totally unsustainable.

Outside influence can also encourage innovation, like the birdcage in Figure 12. Here an upturned plastic wastepaper bin has been converted into a makeshift birdcage, and hangs alongside its handmade wooden neighbour. It illustrates how the outside world influences craft, where a traditional part of Chinese culture has been adapted to use cheaper products from outside.
Traditionally, embroidery is used in simple everyday clothes, like the stitched shoes to the right where the grandmother in Figure 13 is sewing them for her grandson. But with the shamanistic religion of the Miao, embroidery is also used on special garments like baby carriers, ceremonial jackets and burial clothes. In his study ‘The Hmong Cross: A Cosmic Symbol in Hmong (Meo) Textile Designs’ (1987) Erik Cohen suggests that the various interpretations of the cross pattern used in most of the Miao embroidery are protective symbols, blocking the dangerous spirits from moving freely between this world and the spirit world. This would explain why the embroidery is used on garments or objects of importance, to protect weak babies and spirits of the departed travelling to the next world.

For the Miao, value is in the making, in your community, who you are, what you do and your cultural language. It is not what market you are in, what commodities you exchange and what you can consume. The artisan economy of the Miao and Dong is traditionally about making, not consumption.

I would like to use the process of creating the shiny indigo cloth as an example of one of the techniques that is extremely labour-intensive, and in danger of being lost unless more incentives are created to keep younger generations interested in learning the skills that their parents and grandparents have used before them.

In her study ‘Pleated Skirts of Miao in Guizhou Province, China’ (2004), Tomoko Torimaru states that when egg white is used as a glaze on the indigo fabric, ‘The key ingredient, a liquor of two types of medicinal herbs that is also sometimes ingested as a healthy elixir, is added to the beaten egg whites’
(Torimaru 2004: 56). The creation of this shiny fabric for ceremonial wear is also related to the medicines and foods eaten in the area, which is something that cannot be replicated by a cheaper, more convenient chemical substitute that is used to create a similar surface on the textiles. It is part of a way of life.

Figure 15 illustrates examples of some of the textiles I have collected, showing natural colours and effects that can be achieved through the techniques that Tomoko Torimaru mentions in her study. The quality, colour range, sheen and feel of the fabrics is much more intense and, I believe, superior to the synthetic coating used in the textile in Figure 16. The use of natural ingredients rather than chemicals has environmental benefits. But of course natural techniques require a great deal more time, patience and skill.

Another example of where the life-cycles of the craft and the maker are intertwined is found in the burial rituals of the Dong people. During a visit to the Dong village of Dimen in Guizhou I came across these handmade coffins served underneath the grain stores on the outskirts of the village. As the Dong, like the Miao, are farming peoples, the grain collected at the end of their harvest acts as a deposit in a bank account as it is their livelihood and sustenance for the coming winter. The specially designed grain stores are built on stilts above pools of water to protect them from fire and to deter mice. They are built on the outskirts of the village so that if a fire starts in one of the many wooden houses, they are a safe distance away. Underneath these ‘bank accounts’ lay the coffins easily created for members of the family. A local resident explained that in Dong culture a tree is planted when a person is born; when this person reaches the age of fifty, the tree is felled and a coffin carved from the wood. At the end of the coffin a design is carved that signifies which family the deceased belongs to, almost as crests are used in the West. The coffins varied in shape and size dependent on whether they were for men or women, and were custom-made to fit
To me this signifies a luxury, not in terms of commercial or monetary value but that of rarity. The ingredient of ‘excess’ in this kind of luxury is an excess of care, of respect, of time and attention: it takes fifty years to grow a tree before the crafting of the coffin even begin; its rarity is that of skilled craftsmanship (each one is handmade specifically for the user); and, lastly, luxury in terms of meaning and cultural significance (the shamanistic religion of the Dong includes a belief in the afterlife and a cycle of crafting and creation in one life that is carried over to the next).

Fig. 18. Embroidery from Guizhou

What we witness in the textile cultures of the Miao and Dong peoples might well count as retail luxury in a Shanghai or Paris boutique. But in its native culture what is important in artisanal tradition has to do with careful craft: costly in time and skill and understanding; refined and refined with meaning and significance; and indispensable in an afterlife. All this is lost in cheap tourist fakeries of the real thing.

It seems that there are three directions in which the crafts traditions of groups like the Dong and the Miao can be sustained and developed for future generations. Firstly, as we have seen, there is the option to develop cheaper, simpler versions using synthetic machine-made fabrics that are then embroidered and sold easily to tourists as souvenirs. This preserves some elements of the craftsmanship but also means that many of the techniques are likely to die out. Secondly, the women of villages like Xijiang could develop simpler everyday items such as the stitched shoes or belts. These are smaller and more labour-efficient as the traditional techniques remain the same. They are at the same time useful for the villagers and suitable for selling at a reasonably cheap price to visitors of the area. Thirdly, the traditional techniques can be continued and developed using innovative designs, but in order to keep this sustainable they will need to be sold at a high price, reflecting the amount of time and skill that has gone into making them, and making it worthwhile for younger generations to stay at home to learn and innovate the craft.

This is where the luxury market comes in. The intricate, graphic patterns used in the traditional Miao and Dong weaving, wax resist, dying, embroidery and appliqué are hundreds of years old, yet their designs remain relevant and suitable for contemporary brands and designers. The three photos above (Fig. 18) show details of embroidery and appliqué techniques found in a museum of Miao and Dong textiles near Kaili, Guizhou. The painstakingly small cross-stitch in the middle photo is timeless as well as culturally significant. The layers of folded silk triangles appliquéd to create the panel in the photograph on the right could easily be seen in an haute couture collection of a major fashion house, or adapted to be used in contemporary garments.

As an example to show how the luxury industry could help preserve traditional crafts like that of the Miao and Dong peoples I have chosen three different craft specialities that Shang Xia has worked with. These artisans have chosen high quality over quantity and worked with designers to innovate products rather than sticking to traditional designs and methods. This makes them more relevant for contemporary living. It is important to create a balance between traditional techniques and the contemporary finished product.
The first of the e techniques is felted cashmere. The goats from which the best quality cashmere comes are found on the Mongolian plateau. Collecting the cashmere is a difficult job as each goat has to be combed by hand during springtime when they start to shed their winter fleece. The finest ashmere from these goats is then cleaned and carded into a light, fluffy, even texture so that it can be felted in layers without lumps and impurities. These fluffy fibers are then sprinkled with water and soap and rubbed by hand until they felt together as one fabric. The felt is rolled in a towel to rid it of any excess water. To create three-dimensional garments, the felt is rubbed and sculpted into shape on a mannequin so the finished piece can be made without the need for seams.

Traditionally the nomads living on the Mongolian plateau would use wool from sheep or yak to felt fabric for tents as well as clothes. The felt they used was extremely hard-wearing and multi-functional. For example, some of the coats they made would be so dense that they could be used to transport water when not being worn.

This hard-wearing fabric is extremely useful for life on the steppe, but not so comfortable or necessary in urban life. Combining this traditional technique with cashmere, an exquisite fiber found in the same area, the design is updated and made relevant to contemporary life. Using the know-how to inform the construction of the garments – buttons and pockets felted into the garment, colour blocks, seamless shapes – combined with the cashmere hand-feel makes it smoother and more appealing to wear. The cashmere adds another level to the clothes and accessories: not only are they warmer but amazingly soft.

Training craftspeople in Shanghai and learning from masters in Mongolia enables the designer, artisan and producer to work and learn together. Cashmere is traditionally felted on the Mongolian plateau because of the lifestyle requirements of the area, but it can also be woven. For that it is sent to Nepal where the weaving tradition is stronger. The spinning, weaving and finishing is all done by hand.
Highest quality weaving craftsmanship has always taken place in Nepal. Rural Nepalese used to make all of their clothes themselves. This allowed them creative flexibility. It encouraged competition and innovation and distinguished each person from others in their village. Once industrialisation is introduced, it becomes more about making sales and pricing that compromises on quality. People care less about what they are making.

One hundred years ago high quality products were handmade 'inside' Nepal for Nepalis. Meanwhile, within the context of globalisation, opening up and development, 'outside' in the West mass production was growing. Now, as Nepal is open and becoming more globalised, mass production from 'outside' is becoming popular inside Nepal, and high quality handcrafted products are being sent outside. The Tibetan apron is an example. Worn by many mountain-dwelling Nepali women, it used to be that even the wealthiest women in the village might have only two handcrafted aprons to wear for their whole lives, where now even the average women will have five aprons to choose from, but these have been mass produced.

The luxury sector has the freedom to pay higher wages to the artisans, meaning that they can spend more time and take more care over each product to achieve a higher quality and a more beautiful, refined outcome. The craftsperson is valued for the quality of their craftsmanship rather than being a cog in a machine to produce as many products as possible for the lowest price. This in turn makes the craft more sustainable.

Fig. 21. The making of a hand-woven cashmere shawl. Photo ©Shang Xia 2011

Fig. 22. A hand-woven cashmere scarf from Shang Xia
But not everyone can afford to buy everything handmade. It is important to strike a balance between readily accessible, innovative, mass-produced products and special items that you can use for a lifetime, in your daily routine, that bring some emotional enjoyment. If you have a few products that you are very happy with and enhance your day, the thirst to buy and consume more is quenched. William Morris was criticised for making things that people could not afford to buy. But if your relationship with the product is through making and not through buying, if you cannot afford to buy an item you might be able to afford to make it. This value in making is crucial for the survival of craft and for encouraging the continuation of craft heritage.

Note: All photographs by Ruth Brewerton unless otherwise stated.

References


Commentary in the area of sustainable textile design suggest that all forms of colour either natural or synthetic are environmentally detrimental. Research suggests that the most sustainable way to produce garments is to use unbleached, un-dyed organic fabrics (Black, S. 2011). We are programmed to react to colour on a psychological and physiological level and by removing colour from sustainable textiles we are suggesting a world full of beige is enough. However, from the perspective of both designer and consumer this conclusion though environmentally focused sacrifices any textile design influence. Colour-less textiles would not be enough to stimulate our psychological and physiological needs to meet our human desire for colour. The paper raises the importance of exploring the environmental impact of creating colour for textiles through ‘how we use and design with colour’ which is rarely addressed within sustainable design.

The paper illustrates a textile designers approach to these specific colour associated issues which were carried out in collaboration with Lenzing, global fibre manufacturers. The emphasis of the project was to explore innovative ways of colouring textiles that would lead to methods for sustainable coloration. The research was underpinned by textile and coloration technology to work in parallel with the design approach to establishing the most sustainable options for colouration.

The use of Lyocell fibres (Tencel) enabled exploitation of their strong environmental credentials and provided a cyclical model for sustainable colour based on life cycle design thinking. The model is focused on the ‘Lyocell process’, the manufacturing process of Tencel. Natural colour was extracted from the leaf and bark, by-products of the sustainably forested Eucalyptus. No harmful chemicals were used at any point and only water was used in the extraction process. Colour was applied to fabrics by screen-printing using gum tragacanth as a natural thickening agent for the print paste; fabric was then tested with and without mordants. Technical evaluation of the printed fabrics demonstrated a remarkable set of fastness properties, at a level comparable with those provided by many synthetic dye classes for samples printed without the need for mordant.

The research has highlighted that for sustainable design to be truly successful it must incorporate and balance aesthetic value with environmental value, not sacrifice one for the other. The collection of textile design samples produced using a cyclical (life cycle) method conclude eucalyptus dye to be suitable for commercial use. The process presents potential for future innovative design development and illustrates how the incorporation of traditional craft knowledge within current production processes can create solutions for sustainability.

The paper will conclude by suggesting future applications of this research.

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Abstract

This paper introduces initial findings from a more extensive programme of research at the design/technology interface carried out in the School of Textile and Design, Heriot-Watt University, in collaboration with Lenzing, Austria. The PhD research is focused on the use of design methodology as a means to address the environmental impact of colour for fashion textiles, addressing the challenges and limitations in creating sustainable colour.

Recent literature commentary in the area of sustainable textile design reinforces our opinion that all forms of coloration, using either natural or synthetic colours, have some adverse environmental impact. On the basis of a previously-reported research project, it has been suggested that the most sustainable way to produce garments is to use unbleached, undyed organic fabrics. We are programmed to react to colour on a psychological and physiological level. Removing variety of colour on the grounds of sustainability is effectively suggesting that a world consisting only of light beige would be acceptable. However, from the perspective of both designer and consumer this conclusion, though environmentally justifiable, sacrifices any textile design influence. Such textiles would not be enough to satisfy our human desire for colour. This paper raises the importance of exploring the environmental impact involved in creating colour for textiles through ‘how we use and design with colour’, an area which is rarely addressed within sustainable design.

The use of Lyocell fibres (Tencel) enabled exploitation of their strong environmental credentials and provided the basis of a cyclical model for sustainable colour involving life-cycle design thinking. The model is focused on the life-cycle of the Lyocell manufacturing process. Natural colour was extracted from the leaf and bark, which are by-products of the sustainably-forested eucalyptus from which the fibres are derived. No harmful chemicals were used at any stage and only water was used in the extraction process. Colour was applied to fabrics by screen-printing using gum tragacanth as a natural thickening agent for the print paste. The process was evaluated both with and without the use of mordants. Technical evaluation of the printed fabrics demonstrated a surprisingly good set of fastness properties, at a level comparable with those provided by many synthetic dye classes.

The research has highlighted that for sustainable design to be successful, it must incorporate and balance aesthetic value with environmental value, rather than sacrificing one or the other. The collection of textile design samples produced using a cyclical (life-cycle) method concludes that the natural eucalyptus-based dye may be suitable for commercial use. The process presents future potential for innovative design development and illustrates how the incorporation of traditional craft knowledge within current production processes can create solutions for sustainability. The paper concludes by suggesting future applications for this research.

Keywords
Sustainable, textiles, design, colour, Lyocell, life-cycle

Introduction

Textiles for fashion, at many stages of their life-cycle, contribute significantly towards environmental pollution, for example in terms of extensive

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Better than Beige: Sustainable colour for Lyocell

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consumption of chemicals, energy, water, and generation of waste. As an industry, fashion textile production is heavily reliant on diminishing, non-renewable natural resources. With increased awareness surrounding the use of these finite resources, there is ongoing debate, particularly in the scientific community, as to how much longer chemicals based on fossil fuels will continue to be available for use. While opinions range from 50 to 500 years, it is agreed that the reserves are limited and that research into new energy and material resources for textile production will be essential to satisfy future needs (Bechtold and Mussak 2009).

This growing awareness within the industry has led to a developing vocabulary for fashion and textile products that aim to be more environmentally responsible throughout the life cycles of clothing items. Terms such as bio, eco, natural, organic, slow, conscious and responsible are being used to categorize a variety of features of this type of ‘green fashion’. Research in the area of sustainable design has gained momentum in recent years, aiming to provide innovative solutions for an industry that needs to evolve into more responsible and efficient systems of production. The focus of research and development has generally been to address fibre choice, garment design and production processes. In contrast, approaches to introducing colour have been largely overlooked. Developments in the area of textile coloration have been led by scientists and technologists with focus primarily on the chemistry involved, for example aiming to reduce the requirements for water, energy and raw materials used for dyeing and printing processes.

Colour is the most immediately visible feature in the design of textiles. It is often the main aesthetic concern for both the designer and consumer. It can also be the reason for financial success or failure of products within the marketplace. The main motivation for the use of colour within design is to create desirable aesthetics to ensure the commercial appeal and financial success of the product. Designers commonly demonstrate only a limited understanding of, or regard for, the environmental impact caused by the production of colour and its application to textiles. The global textile industry uses more than 700,000 tonnes of dye each year. Depending on the particular dye class used, the percentage of dye that remains unfixed to the fibre during the dyeing process and finds its way into the environment ranges from 5 to 50 per cent (Hardin 2007: 191).

There are two broad sources of chemicals which may be used to create colour: natural and synthetic. It is a common misconception to presume that natural inevitably means good and synthetic bad in terms of its effect on the environment. Until the mid-nineteenth century, when the development of synthetic dyes began, all textiles were coloured using dyes from natural sources (Cardon 2007: 20). The lower cost, better reliability, reproducibility, and larger scale of operation that was achievable with synthetic dyes, together with the development of new technologies that have taken place over the years, have meant that the traditional processes used for natural dyeing and knowledge and experience of the methods have been largely eliminated. Modern industrial processes use natural dyes only in specific niche markets. The dyes currently used for the industrial coloration of textiles are almost exclusively synthetic products of the chemical industry, manufactured from finite, non-renewable petrochemical sources (Christie 2001: 118). Application of these synthetic dyes to textiles generally involves intense use of chemicals, water and energy, with inevitable environmental consequences (Bide 2007: 74).

Current opinion within the research community is increasingly concluding that all methods of coloration of textiles have environmental consequences (Better Thinking 2006). The current systems for introducing colour must be considered as unsustainable over the longer term. This leads to the fundamental questions which have motivated the research programme reported in this paper: how would we produce colour without the use of chemicals derived from fossil fuels, and what happens when reserves run out?

While it may be argued that natural dyes offer some environmental benefit compared with synthetic dyes, for example in terms of cultivation from renewable natural sources, biodegradability and low toxicity, their use is not completely free of environmental impact (Glover 1998: 4). The cultivation of plants specifically for the production of natural dyes would require the use of a significant area of arable land, for which food production is a higher priority. In addition, natural dyeing of textiles commonly requires treatment with a mordanting agent, usually a metal salt, to fix the dye to the fibre as many natural dyes have little direct affinity for fibres, and this mordanting process has inevitable environmental consequences (Bechtold and Mussak 2009: 319). Commonly, natural dyes also show inferior fastness properties, limiting their suitability for use on textiles, especially fashion. In aesthetic terms, the range of colour and depth
of shades that are capable of being produced from natural dyes is limited, and in no way comparable with the rainbow of possibilities achievable from the use of the modern range of synthetic dyes.

There is, however, evidence of recent re-investigations of natural dyeing processes aiming to address some of these negative issues (Bechtold et al. 2003). It is proposed that, in striving to achieve sustainable colour, we must re-consider the use of renewable resources for textile coloration, and in doing so incorporate the aim towards a future zero waste, zero emissions society. The development of agricultural production of plants used purely as a source of colour, and the use of the currently established methods both for extraction of natural colour and its application to textiles, do not provide alternatives to dyeing with synthetic dyes that are necessarily sustainable or environmentally responsible. This paper provides an example of a new approach to sources of colour that incorporate the utilisation of waste and by-products. The broad aims of the research programme are essentially to design processes which link production with design so that they incorporate life-cycle thinking in order to produce sustainable colour, and to establish a model from which opportunities and limitations for creating colour within a product life-cycle may be evaluated.

Sustainable beige?

It has been suggested that ‘the perfect t-shirt’, in terms of sustainability, would be constructed from unbleached, undyed organic cotton (Black 2011: 82). While there is technical and social justification for the conclusion from this study (Gwilt and Rissanen 2011: 79), the removal of colour from the process of design for textiles is arguably unsustainable from a design perspective, based on the very nature of design. After all, how desirable can beige be? It is questionable as to whether the plain light beige ‘eco-fashion’ look would appeal widely to both designers and consumers who have higher expectations in terms of colour. This approach to colour prioritises environmental concerns over aesthetic value.

In striving for a solution beyond beige and also questioning whether sustainable colour can be created, the research described in this paper has explored definitions or the meaning of sustainable. It is suggested that the term has more than seventy definitions (Holmberg and Sandbrook 1992: 20). The use of ‘sustainable’ in the context of design, fashion and textiles has been steadily increasing, and this has resulted in frequent confusion and misinterpretation in terms of its meaning (Galvic and Lukman 2007). The Oxford English Dictionary cites the meaning of the word sustainable as ‘able to be maintained at a certain rate or level’ and, in an environmental sense, as ‘conserving an ecological balance by avoiding depletion of natural resources’. There have been a number of specific initiatives to address the issues in the context of textile products, for example that they may be labelled as ‘sustainable’ if the raw materials originate from organic farming and if the manufacturing processes comply with ecologically and socially acceptable production methods (Ganglberger 2009: 353). This statement is rather specific in that it may exclude other valid alternatives, including the approach described in this paper.

In questioning whether sustainable colour can be created we have adopted the concept that the essence of sustainability concerns ‘learning to live in harmony with our planet and to take from it only what we are able to give back to it’, which is our modification of an original suggestion in a Design Council paper (Thompson 2011: 2). On the basis of this principle, the textile designer is encouraged to balance aesthetic and environmental value of products.

A cyclical approach towards sustainable colour

To establish a method for sustainable coloration an experiential methodological approach was used in which life-cycle design thinking was incorporated into the creative practice of the printed textile designer. In engaging with product design from concept to end of life, the designer gains experience and understanding of environmental implications of design decisions, incorporating this new knowledge into the future design process.

In aiming to unite aesthetic value with environmental value within the design process, design decisions are made not only on the basis of aesthetic, tactile and technical qualities of materials, but also on the environmental credentials of raw materials used to produce sustainable products (Hallet and Johnston 2010: 167). Fibre selection is the first decision that impacts on both aesthetic and environmental performance of textile products. An important approach to sustainability within the fibre industry involves mimicking the natural regenerative cycle of nature by production methods in closed loop systems. Closed loop fibre production has provided the initial foundation for the cyclical process that is required within the research described in this paper from which to achieve sustainable colour.
Lyocell, marketed as Tencel by the manufacturers, Lenzing AG (Austria), is a regenerated cellulosic fibre which has strong environmental credentials (Taylor 1998: 191; Mather and Wardman 2011: 115). The manufacturing process uses as its raw material wood pulp derived from eucalyptus species, particularly *Eucalyptus Grandis, Urophylla, Nitens and Dunnii*, all of which are hybrids. These species are farmed on land described as ‘marginal’, i.e. unable to sustain agricultural crops. They are fast growing and have low requirements for water and pesticides. The manufacture of Lyocell involves dissolving the pulp in N-methylmorpholine-N-oxide (NMMO) containing a small amount of water. The fibres are formed by a dry-jet wet spinning process in which the viscous, concentrated solution of cellulose is extruded through a spinneret into a water bath. The organic solvent, which is claimed to be essentially non-toxic and biodegradable, is recovered at a rate of 99.5 per cent (Mather and Wardman 2011: 115). Unlike other regenerated cellulosic fibres, such as viscose, there is no chemical conversion involved and the cellulose content of the pulp used to feed the Lyocell process remains chemically unchanged in the final product.

Thus, sustainability may be claimed for Tencel as a fibre, until coloration and finishing stages. However, there is inevitable environmental impact occurring at the stage in the life-cycle when colour is applied to the fabric, with a consequent effect on sustainability. In the approach to sustainable coloration of Tencel adopted in this research, it was considered a requirement that no exterior materials should be brought into the production process, and that the colour should ideally be derived from materials already existing within the closed loop production process.

Analysis of the Lyocell process for Tencel identifies a potentially sustainable source of natural colour as the leaves and bark of the particular species of eucalyptus used for its production. Currently, the trees are debarked in the field and the leaves and bark are left there as natural compost. Precedent for the use of eucalyptus as a source of colour for textile dyeing was evident from publications in the colour technology area (Ali et al. 2007: 559; Mongkholrattanasit et al. 2009: 319; 2010: 272), as well as its use in craft-based natural dyeing processes (Flint 2008).

As these by-products are being utilised as natural fertiliser within the production process, the aim was to optimise the resource by extracting colour from them before they are returned to the ground as fertiliser. Working in collaboration with the Tencel fibre manufacturer Lenzing, quantities of fresh bark and leaves of the species of eucalyptus that are used in Tencel manufacture were obtained from the farms in South Africa where they are grown.

For a successful method leading to sustainable coloration, it is important that the colour available within the closed loop is able to be extracted and stored for later application on to fabric when desired. A simple extraction of the dried leaves and bark using boiling water, with no additives in both cases, provided a reasonable quantity of an orange-brown crystalline material after evaporation, a process adapted from a previous report (Ali et al. 2007: 560). The process is illustrated in Figure 1. In principle, the solid residue from the leaves and bark after the extraction process could be returned into the life-cycle to fulfil their purpose as a composting material.

![Figure 1. Images of the extraction process](image)

A popular method for producing naturally dyed textiles is to combine the plant source with boiling water in a large vessel to create a dye bath. The dyeing process as a method of coloration, using either natural or synthetic dyes, is water and energy intensive and in terms of natural dyeing it is more suited to small-scale production. As an alternative method for colour application, screen printing was used in this research. Using this method, localised coloration and creative pattern formation may be achieved to create attractive colour effects while minimising the use of dye. The print paste was prepared simply using gum tragacanth as a natural thickening agent. This material selected as a natural gum is obtained from the dried sap of the plant species *Astragalus Tragacanthus*. It is biodegradable and readily available at low cost and it was found that the dye extract dissolved readily in an aqueous solution of the gum to provide a paste suitable for screen printing.

The grade of fibre known as Tencel A100 was selected because it is known to be highly receptive to coloration. Initial print trials using this print paste on untreated Tencel gave prints that exhibited a degree of non-uniformity, creating a blotchy appearance across the fabric surface. Consequently, a light
scouring of the fabric at 40°C was carried out using a dilute aqueous solution of an environmentally-responsible surfactant. This process contrasts with the rather vigorous scouring procedure, often supplemented by bleaching, that is commonly employed as a print pre-treatment for other natural cellulosic fabrics, such as cotton.

Screen prints of the scoured Tencel A100 with the pastes derived from the eucalyptus extracts were finished by a traditional steaming process to promote fixation. Attractive golden-yellow prints on a clean white fabric background were produced, as shown in Figure 2. The colours of the initial prints derived from extracts of the eucalyptus leaves and bark were virtually identical, as shown in Figure 3, presumably because the compositions of the coloured materials from the two sources are similar. Previous studies of eucalyptus extracts have identified the principal coloured components as flavonoid species, found in association with tannins and polyphenols (Monkholrattanasit et al. 2010: 346).

In view of the fact that natural dyes commonly require a mordant treatment for adequate fixation on textiles so that they are resistant to washing, rub-off or fading with exposure to light, printing was also carried out on a range of fabric samples pre-treated with a selected group of mordants. The mordants selected included alum, which is traditionally the most commonly-used and most effective mordant, although its use introduces some environmental consequences as a metal-containing agent (Cardon 2007: 20). The other mordants used were tannic acid, proposed recently as a natural botanical alternative to metal-containing mordants (Burkinshaw and Kumar 2009: 53), calcium carbonate and soya milk, which are commonly used in natural craft dyeing, in particular for eucalyptus (Flint 2008: 87).

Technical evaluation of the printed fabrics found that there was essentially no difference between the performance of fabrics treated with the range of mordants and the unmordanted fabric. This is an extremely important result in the context of sustainability as the need for mordanting is one of the main negative environmental consequences of natural dyeing. An explanation for this observation is provided by reports that eucalyptus contains natural tannins, which are capable of acting as fixing agents for the dyes (Mongkholrattanasit et al. 2010: 346).
A visual evaluation of the effect of dye concentration in the print paste on developed colour showed that the optimum level for dye strength was 4 per cent. Higher concentrations (8 per cent and 16 percent) did not produce an increased colour depth and there was evident undesirable colour loss into the substrate during wash-off. Optimised samples for technical testing were printed using unmordanted fabric with print pastes at a concentration of 4 per cent of the dye obtained from both leaves and bark. Results of a technical investigation into the dye performance demonstrated that the printed fabrics showed excellent fastness to washing and rubbing with very good light-fastness, remarkable results for unmordanted natural dyeing, and comparable with the level given by many traditional synthetic dyes (Ellams et al. 2013: 5). Figure 4 illustrates an example from the final prints produced.

Figure 4. Image of print sample – striped vest

Cyclical coloration: Designing beyond beige

A method which incorporated life-cycle design thinking into the creative process has been developed as an approach to creating sustainable coloured fabric on an industrial scale. This design process was integrated into the closed loop production process which ensures that the coloration was sustainable. A transferable model which may be referred to as ‘cyclical coloration’ was developed. Natural colour is produced within the sustainable product life-cycle by extraction of natural dyes from the leaves and bark of the eucalyptus from which the fibre is derived, and screen prints produced from these dyes show remarkably good technical performance. The research provides an example of the potential to utilise by-products or waste from industrial scale manufacturing in an existing system for textile production to produce sources of colour.

The process presents potential for future innovative design development and illustrates how the embedding of traditional craft knowledge within current production processes can create adaptive processes and solutions for sustainability. It has subsequently been demonstrated successfully that the technology is transferable to modal, another regenerated cellulosic fibre produced by Lenzing from beech; screen printing of modal using the natural colour extracted from the beech leaves and bark in this case provided an interesting nude pink colour.

In our opinion, and that of Lenzing, this research could be feasibly introduced into commercial industrial practice. The simple extraction process to produce the dye would be easily achievable on an industrial scale. Lenzing are manufacturers of the fibres, not fabrics, and so are not in a position to utilise the possibilities directly, but they would be supportive of proposed developments in the fabric production industry to commercialise the concept (Taylor 2013).

Better than beige, but no rainbow?

A significant limitation of the system developed is that it is capable of providing only one colour, although the attractive colour and the level of performance offer exciting design possibilities leading towards fashion fabrics, and a process which offers significant advantages in terms of sustainability. Currently, in terms of colour variation it is possible only to vary shade depth through altering the number of passes across the fabric during screen printing, illustrated in Figure 2. Research is ongoing into extending the range of colours available, while taking due consideration of sustainability.

The research presented in this paper provides a foundation model that has been used to inform subsequent stages of ongoing research with the
focus progressing on to the relationships between fibre, structure, colour and their use in the garment life-cycle. It explores the role that design can play in limiting environmental impact through life-cycle extension utilising a range of design practice concepts to address the environmental issues and evolving the design process in order to incorporate responsible, informed design decisions with production processes at the outset of a life-cycle.

It is envisaged that this focus on incorporating colour into life-cycle considerations and encouragement of designers to make informed, responsible design choices at the initial stages of development will impact positively on the environmental credentials of a textile products.

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Dr Kate Goldsworthy

Designing Cyclability: re-active and pro-active approaches to lifecycle design for textile products

Design for Cyclability is something of a holy grail for sustainable designers - the promise of a contained and never-ending supply loop of material resources which don't require further materials extraction from an already depleted global supply promises a more sustainable future. But the reality of designing in this context presents the designer with many challenges. In order to consider a product's eventual incorporation back into the materials pool, the designer must understand the processes at end-of-life and create products which are truly recyclable. Often, on the journey from raw material to product, previously recyclable resources are transformed and inextricably fused together to create material mixes or ‘monstrous hybrids’ as coined by McDonough and Braungart (2002) which ensure a one-way route to landfill.

How can designers begin to approach working with materials differently, designing them with a recycling system in mind at the outset? Suren Jelinski et al (1992) and Erkman (2007) describe a need for this approach in their papers on ‘Industrial Ecology’, even suggesting that new roles will emerge in the future purely for the interpretation of material systems so that we can work better with them.

There are two ways to approach material recycling for designers: they can either work with existing material waste streams - a ‘re-active’ approach - or they can design from the outset for the product to be ‘closed loop - a ‘pro-active’ systems approach. Many design approaches to recycling are reactive and could be described as ‘extended life techniques’ rather than true ‘design for recycling’. In order to design fully recyclable textile products, potential barriers to recycling needed to be identified and ‘designed out’ at the production stages.

At end-of-life there are many ways to recycle garments/textiles, and ‘closing the loop’ is obviously the ultimate state. However, it is important to consider what the other options are: re-use; recycling at garment level; recycling at fibre level; recycling at chemical level, and how they relate to each other. This ‘Hierarchy of Recycling’ will be layered over the two approaches described above, to further define design strategies.

Although pro-active strategies are a key area for designers to develop, a re-active approach will continue to be needed to address the waste already in the system. Both of these options are vital areas for innovation and will be discussed in the context of design strategy.

We need to shift the act of design from a ‘product’ focused activity to a more systems-based approach. This paper will introduce lifecycle thinking as a visual framework for design ideation that allows for a deeper understanding of the key issues and barriers to closing the loop on textiles. By mapping the varied routes around and through the lifecycle we can define new briefs for the designer working in this field. The author has tested and reflected on this model through a series of case studies of designer-maker and industry projects and also through her own studio practice, developing new production techniques for recyclable textiles, towards a more connected materials economy.
Abstract
The holy grail of sustainable design is to develop products whose materials can be eternally re-used. When they reach end of life, they could be taken back to their base materials and transformed into a completely different form or function. In short, a product lifecycle that behaves just like a natural one, repeatedly transforming materials for new cycles of growth.

Whilst certainly attractive, this vision of a never-ending supply of materials that doesn’t further deplete our global resources presents a number of challenges. At present, many design approaches to recycling are re-active as they attempt to work with existing waste streams. However, on the journey from raw material to product, previously recyclable resources are often inextricably fused together to create material mixes or ‘monstrous hybrids’, as coined by McDonough and Braungart (2002), and this ensures a one-way route to landfill.

Designers need to adopt a more pro-active, systems-based approach that truly ‘closes the loop’. In order to design fully recyclable textile products, potential barriers to recycling should be identified and ‘designed out’ at the production stage. This means designers must start to understand the processes that occur at a product’s end-of-life in order to ensure it can be fully incorporated back into the materials pool. The author calls this ‘Design for Cyclability’, a pro-active approach to material preservation which respects materials as borrowed resources, ours to use for a limited time and return for future use.

Here this approach is reflected on through a series of case studies of designer-maker and industry projects and also through the author’s own studio practice, developing new production techniques for recyclable textiles, towards a more connected materials economy.

Although pro-active strategies are a key area for designers to develop, re-active approaches will continue to be needed to address the waste already in the system. Both of these options are vital areas for innovation and will be discussed in the context of design strategy.

This paper will introduce lifecycle thinking as a visual framework for design ideation that allows for a deeper understanding of the key issues and barriers to closing the loop on textiles. By mapping the varied routes around and through the lifecycle, we can define new briefs for the designer working towards a more connected material economy.

Introduction
‘Design for Cyclability’ is the conceptual framework developed for the author’s PhD project and on-going research relating to designing closed-loop material systems. Her research interest led her to expand the limited concept of ‘recycling practices’ into a much broader range of activity ‘cyclability’ which incorporates now, near and far scenarios enabled by design. This is a long view of material recovery which acknowledges the long life-cycle of many materials and products as compared with a human-centric timeframe, with the average polyester product likely to survive in landfill over 200 years. The term ‘cyclability’ expresses this long view and is explored in the following paper.

The idea of a contained and never-ending supply loop of material resources that don’t require further materials extraction, from an already depleted global supply, promises a more sustainable future. But the reality of designing in this context presents the designer with many challenges. In order to consider a product’s eventual incorporation back into the materials pool, the designer must understand the processes at end-of-life and create products which are truly recyclable. Often, on the journey from raw material to product, previously recyclable resources are transformed and inextricably fused together to create material mixes or ‘monstrous hybrids’, as coined by McDonough and Braungart (2002), that are guaranteed a one-way route to landfill. How can designers begin to approach working with materials differently, designing them with a recycling system in mind at the outset?
Design for cyclability has been explored through case studies from industry and design and also tested through Goldsworthy’s own practice projects (Mono Finishing, Laser Line and Twice Upcycled). There is much evidence of designers working effectively with ‘upcycling’ strategies, but this only postpones the arrival of the discarded material at landfill without consideration of future cycles. The problem of biodegradability and harmful substances introduced into the environment could still be present. As part of a design brief for cyclability, materials are made to be recycled indefinitely without losing value, and ultimately to consider the ‘material ecologies’ to which they return. In this interconnected process, unlimited materials can have unlimited life cycles, and the material exchange would be open, dynamic and include all material resources.

Through visual mapping it became clear that there are two ways to approach material recycling for designers: they can either work with existing material waste streams – a ‘re-active’ approach, or they can design from the outset for the product to be closed loop – a ‘pro-active’ systems approach. Many design approaches to recycling are re-active and could be described as ‘extended life techniques’ rather than true ‘design for recycling’. In order to design fully recyclable textile products, potential barriers to recycling needed to be identified and designed out at the production stages.

In the following text case studies are discussed in the context of these re-active and pro-active approaches.

**A re-active approach (end-of-life interventions)**

A ‘re-active approach’ begins at the ‘point of disposal’ with a waste stream as the raw material, and this is by far the predominant approach today. The selected waste stream can be redesigned and reprocessed in many different ways in order to return materials back into use. It is the point on the lifecycle map at which they ‘return’ that is key in determining the impacts of each particular process. The ‘hierarchy of recycling options’ (Gertsakis and Lewis 2003) states that the further back in a product’s lifecycle journey the recycling process extends, the more energy is used in that transformation. However, as the energy required increases, the value of the resulting material can also be seen to increase.

The diagram in Figure 1 illustrates these ‘re-active’ journeys which start at the point of disposal. Where the cycle fades along its path represents a decreasing material value during subsequent cycles. This will always be the case unless the material goes through a process of ‘recovery’ which returns it to virgin quality raw materials which can be repeated endlessly. As shown in the figure, this is the only path which ensures retained material value.

![Figure 1. Re-active approaches to recycling, with point of disposal as starting point. Graphics by Louise O’Brien (2013)](image)
Re-use [at product level]
Extend life through prolonged ownership

The least impactful approach is re-use, or in other words extending product lifespan. Here I use the term re-use to refer to prolonged ownership rather than passing on to another user (which I discuss in the following section – ‘re-distribution’). Although this has obvious environmental benefits it is arguably the strategy which has the least potential for design input. Tactics for prolonging use could include repair and care processes that preserve the value in the product for as long as possible. Environmental impacts avoided with this approach include impacts at every stage of the product lifecycle (materials, energy, emissions and wastes), but changes in consumer habits are very difficult to achieve and potential losses in sales for manufacturers through a reduction in economic transactions often make it a difficult sell to the commercial world.

Re-distribution [at product level]
Re-sale/re-distribution of garments through second-hand markets

Re-use through re-distribution involves the redirection of products which have been discarded in a useful state of repair, to new owners, again without the need for design intervention. Charities and commercial enterprises both play a role here, along with the rising popularity of community-based swapping events such as the Ethical Fashion Forum’s ‘swishing’ or online auction sites such as Ebay or ASOS’s Marketplace. A second or subsequent life for these products can be achieved with virtually all the environmental impacts associated with the production of new products cut, bar transportation costs (use of fuels, air emissions) and perhaps laundry between customers (water and detergents). Avoided environmental impacts with this approach include impacts of materials processing and product manufacture (materials, energy, emissions, wastes) plus avoided landfill impacts (air emissions, leachate, visual impact). Again, changes in consumer habits are needed here and economic considerations also include new business opportunities to establish collection and refurbishment services. Ultimately the garments will become too worn to allow further distribution and become waste.

Re-manufacture [at material and product level]
Upcycling or downcycling of materials and products

By far the predominant design approach we see is what I would call ‘re-manufacture’, which is an end-of-life approach to material recycling with design as the agent for transformation. As with the other re-active approaches, it begins with a waste stream at the point of disposal and returns it ‘transformed’ to another stage in the lifecycle through some process of redesign. The lifecycle stage it returns to can broadly be described as ‘manufacture’, but this can relate to processes which occur during a broad range of production stages, including fibres, yarn, fabric, finishing and construction processes.

At product level, re-manufacture is used to convert a waste product into a new product of value. This relates to a wide range of activities from updating or refurbishing a product right through to a more complete deconstruction and reassembly, but always starting and finishing with a finished product. It is usually hoped that the process will add value to the re-manufactured product resulting in ‘upcycling’. Many of these processes are downcycling the original materials, although value can be elevated through design and aesthetic qualities.

Example: Earley and Goldsworthy (Twice Upcycled)

Rebecca Earley and the author collaborated in the development of a series of Twice Upcycled garments (2008). Here the original shirt was bought and worn by a consumer, and then handed on to a second-hand or charity shop, from where Earley purchased it for her Top 100 project. This first upcycling occurred through simple reshaping and overprinting with Earley’s heat photogram print technique using re-active dyes, to create an overprint that hides any staining or soiling from the garment’s first life. A second life is thus given quickly and stylishly to a polyester shirt that would otherwise take more than 200 years to decompose in landfill. Allowing a period of wear by the same or next consumer, the shirt can be returned and its third life can be created. For the second upcycling stage, the shirt becomes a quilted waistcoat, where it has been re-cut and lined in recycled polyester fleece, and then laser-welded and refinished, by Goldsworthy. The materials are fused together according to a preset digital pattern, which creates a permanent bond between the layers with surface decoration achieved as part of the same process. It might be possible for this process to be repeated several times as part of a service system.
Example: Natalie Chanin (Alabama Chanin)

Natalie Chanin initiated Project Alabama in 2000, a community revitalisation project that combined traditional local craft with re-manufacturing. In 2006, the project was re-formed as Alabama Chanin to maintain the uncompromising, community-based vision for the project. Based in Florence, Alabama, where the designer herself grew up, the company employs local women aged twenty to seventy, to help sew one-of-a-kind, handmade garments, preserving the region's dwindling tradition of quilting. Chanin initially used only vintage fabrics found at local thrift shops, but now relies on bulk shipments from the Salvation Army to fill all the orders. From low-value waste garments the new products created here have value imbued through the skills of the workers and the story told through the label.

At material level, re-manufacture design relates to any activity that attempts to take a waste material back to a fabric product either through mechanical or chemical means. This can include everything from shoddy fabric production to certain polymer recycling technologies. But processes that fit this category still relate to downcycling. An example of this would be recycling plastic bottles into fabrics through mechanical recycling. The initial recycling produces a quality product; however eventually, over subsequent recyclings, quality is lost to such a degree that eventually further recycling is not possible. For this reason, these approaches can usually only be applied for a limited number of cycles. Avoided environmental impacts with both re-manufacture approaches include impacts of materials processing and product manufacture (materials, energy, emissions and wastes) and landfill impacts (air emissions, leachate, visual impact). However, potential for negative environmental impacts to occur in any reprocessing include transport (use of fuels, air emissions), manufacture of replacement parts (materials, energy, emissions, wastes), re-manufacturing process (materials, energy, emissions, wastes). One of the main challenges is the need to engage the consumer and change their
waste disposal patterns, but there are also new business opportunities in re-manufacturing that make this economically attractive.

**Example: Michelle Baggerman (Precious Waste)**

Michelle Baggerman succeeded in processing used plastic carrier bags without heating or added chemicals and turned them into durable but fine theads with which she created a new fabric, for her graduation project, *Precious Waste*. The plastic was transformed by pure hand-work into a beautiful new material, much stronger than the original. Poor-quality waste materials are transformed into a sophisticated and high-value product.

![Figure 4. Precious Waste (2010), Michelle Baggerman, www.bureaubaggerman.com](image)

**Example: Luisa Cevese (Riedizioni)**

The original ‘upcycler’ Luisa Cevese has been innovating with waste materials since 1999. As Head of Research for a major Italian textile company, she became aware of the amount and consistency of textile waste. This led her to consider the possibility of a design and production project using these scraps as a resource: large blocks of unusable end pieces, damaged fabric, yarns and threads, salvages, small pieces of uneven cloth and cuts from garments. Having gained some understanding of the plastics industry and technology, she started to combine textile waste with plastic of different kinds, seeing in this new material an opportunity for development which neither a textile- nor plastic-producing company could fully exploit. Different kinds of textile waste, plastic with different properties and different production facilities resulted in different finishes. Although beautiful and enduring, these materials would be problematic to recycle further due to their mixed-material construction.

![Figure 5. Riedizioni (2014), Luisa Cevese, www.riedizioni.com](image)
Recovery [at chemical level]

True recycling [cradle-to-cradle] with infinite recovery loops of raw materials or ‘nutrients’ according to material metabolisms.

The only way to retain material value in all future recycling journeys is to create ‘closed loops’ of material recovery where the inherent value of materials is retained for unlimited future lifetimes. Recovery [at chemical level] follows the principles of ‘cradle-to-cradle’, as promoted by McDonough and Braungart in their 2002 book of the same name. Cradle-to-cradle processes return materials to their raw chemical components which can then be rebuilt (or grown) into new materials without ever losing quality.

The best example of this is nature’s own process, biodegradation, whereby biological nutrients are returned to a form which can support new growth, thus completing the cycle. In our man-made material world the closest we have to this is chemical re-polymerisation, where technical nutrients are returned to manufacturing systems for the production of brand new materials. Avoided environmental impacts with this approach are the most impressive: impacts of manufacturing virgin materials (materials, energy, emissions, wastes), landfill impacts (air emissions, leachate, visual impact), impacts of fertiliser and pesticide manufacture (materials, energy, emissions, wastes, water conservation), carbon sequestered in land or reprocessed into new polymers. There are environmental impacts to be considered in the transport (use of fuels, air emissions) and chemical processes used (materials, energy, emissions, wastes) and again consumers are required to change their waste disposal patterns. But new business opportunities lie in composting services or the re-polymerisation industry, where there is currently a large amount of activity around innovations in chemically recycling mixed-fibre materials for closed-loop systems.

Example: Teijin (Eco Circle)

One example of where it is possible is in the re-polymerisation of thermoplastic polymers, in particular polyester, which represents as much as 70 per cent of global fibre use (Engelhardt 2010) and therefore is significant. The Eco Circle process was developed by Teijin Ltd, a Japanese chemicals company, in 2000. The process uses a reverse chemical engineering process to return polyester fibres back into the building blocks needed to produce virgin polyester. This means that in comparison to the usual mechanical recycling processes, it can work as biodegradation does in perpetual cycles, ad infinitum. The process first breaks down polyester products and granulates them into small pellets. These pellets are decomposed using chemicals and returned into the raw material DMT (dimethyl terephthalate) which can then be polymerised again and finally spun into new polyester fibres (DEFRA 2009: 21).

These two processes are usually mutually exclusive and the natural and technical cycles are, at this point in time, to be kept separate in order for either to be achieved effectively. However, recent developments are challenging this polarity by using biological agents to deconstruct synthetic polymers, and one designer has even managed to demonstrate this potential through a critical design project which seems to achieve the impossible – to reclaim synthetic materials as natural nutrients.

Figure 6. Eco Circle (2006), Teijin, www.teijin.com
Example: Maurizio Montalti  
(Bodies of Change)

Maurizio Montalti worked with a group of scientists on his graduate project Bodies of Change to explore the possibilities of using fungi to literally ‘eat’ synthetic polymers and return them as nutrients to the soil. Considering the length of time it usually takes plastic to decompose, and the harm it causes when it does, these experiments could have enormous benefit. Maurizio focused the project on an iconic object: the plastic monobloc chair. The ‘bio cover’, intended as a decomposition tool, literally feeds on the plastic – the fungus gradually chews and substitutes the material, until the new organic material, once plastic, can be used as a natural fertiliser, providing extra nutrients to the soil for the growing of new life.

But, ‘recycling by itself, only postpones the arrival of the discarded material to landfill, where it may never biodegrade, may degrade very slowly, or may add harmful materials to the environment as it breaks down’. A genuinely sustainable future depends on creating closed-loops, ‘where materials would never lose their value and would recycle indefinitely’ (Livingstone 2003).

The thing that links all but this final example of re-active approaches to recycling design is that none of them can be repeated endlessly to create new materials. Even in the cases of ‘upcycling by design’ the materials themselves would be ‘downcycled’ with each reincarnation until eventually they end up on landfill, albeit much later than perhaps they might have done. It is for this reason that re-active approaches alone cannot provide a lasting solution for our finite materials, unless they take materials back to the original chemical building blocks as they do in recovery processes (which on the whole are technology rather than design innovations). In re-active design approaches, the best we can hope for is a series of upcycling stories which will extend the lives of the materials involved through multiple (though not endless) reincarnations. Eventually the materials will be lost to landfill or incineration where their value can never be reclaimed.

A pro-active approach  
(Design for Recovery)

So, what if we flip the problem on its head? What if we identify the best possible routes for materials value retention (recovery) and begin our design process from that point forward? Rather than using waste as a starting point, what if we start from the best possible virgin quality materials and design them to be recovered and retained over and over again? This needs a complete rethink of the design brief to include these aspects at the outset. Design for Recovery is a closed-loop approach which embeds future recycling into the very DNA of the products we design.

Figure 8. Pro-active approaches to recycling, with raw materials as starting point. Graphics by Louise O’Brien (2013)
In order to do this and to build in true C2C recyclability as part of the design process, a designer needs to understand the systems or metabolisms of the materials they are using and the barriers to recovery for the process they are designing for. The C2C framework described creates systems of consumption and production in which materials move cyclically into appropriate biological or technological nutrient cycles, consistently replenishing themselves. These are closed cycles in which materials are broken down and used as the ‘nutrients’ for new products. Thus, in this process, ‘waste equals food’. Suddenly the brief for design changes completely and becomes design for recovery at the chemical level.

This promotes a methodology which, rather than focusing on logistics and technology to solve our resource problems, places the designer at the centre of the solution (Goldsworthy and Lang 2010). Designers working to this end can adopt many different routes to get there, but there are two main strategies which need to be integrated into the very start of the design process, setting a brief which ensures all materials involved in a product’s construction can be recovered through either technical or biological means.

Natural fibres and biopolymers belong to a biological metabolism (the cycles of nature). The source material is usually supplied through agricultural methods such as cotton growing; therefore products should be able to biodegrade and become food for biological cycles. This is not to say that biological textiles cannot be recycled, but due to the processes required they tend to be downcycled into lower quality products. The ideal recycling scenario for these fibres is to be returned to the earth where they harmlessly decompose and become food for plants and animals while rebuilding nutrients in the soil.

Technical fibres or synthetic polymers belong to a technical metabolism (the cycles of industry). These products are predominantly made from non-renewable resources such as petroleum and should stay in closed-loop technical cycles and become valuable nutrients for industry to recycle. It is possible for these materials to be taken back to their original elements through re-polymerisation in order for the material to be of equal quality to the virgin material. These fibres should be returned to industrial cycles when no longer useful, thereby supplying high-quality raw materials for new products.

These two subsets relate to intrinsically different materials with varied properties and recycling needs.

For the cycles to function one must not become contaminated with the other. If materials from both cycles are present in one product, such as in blended fibres, separation becomes problematic. If we continue to design blended fibre products without finding a solution to the problem of their disposal, then this problem will endure. Textile production has been moving steadily towards blended fibres in order to produce new functionality, and this has been a serious barrier to recycling levels. Design needs to find solutions which are 100 per cent mono-material without sacrificing functionality.

**Design for Recovery: The biological cycle (biodegradation)**

There are some inspiring examples of this ‘designed in’ approach for biological materials. Designing with materials that harmlessly biodegrade back into the environment is the most fundamental example of C2C thinking. However, this is not straightforward; all materials derived from living sources (animal and vegetable) are ‘biodegradable’, but few decompose in an ecologically safe manner if dyed and finished with chemicals. For example, an organic cotton printed with biologically safe dyes is C2C compliant; the same textile overlaid with even the smallest spot of gloss or metallic finish is not. Therefore, designers working with this idea need to find new ways to achieve the desired design effects that are also environmentally considerate.

**Example: Hyun Jin Jeong (Earth dyeing)**

Ancient and mostly forgotten, the art of earth dyeing uses soil from different geographic regions to create a varied yet subtle colour palette. Chemicals in the textile-dyeing industry have a troubling legacy, but natural dyes are often seen as niche or impractical and in many cases need heavy-metals to fix or usability. For her master’s project at Central Saint Martin’s, Jeong collected forty-five different soils across South Korea and the United Kingdom. She was able to categorise them into seven different colour families, creating a range of vivid dyes. The benefit of this technique is that no additional mordant is needed to fix the colour, thus removing harmful chemicals from an otherwise natural process. The resulting materials are also completely compatible with natural systems when the time comes to return them to the soil for biodegrading – from soil to soil without harm.
Example: Suzanne Lee (BioCouture)

The BioCouture research project investigated the use of bacterial-cellulose, grown in a laboratory, to produce clothing. The ultimate goal was to literally grow a dress in a vat of liquid. Designer and researcher Suzanne Lee collaborated with material scientist Dr David Hepworth to develop a process whereby fibre is formed in a vat of liquid consisting of a mixture of yeast and sweet tea. When dried, this forms a compact leathery papyrus-like substance. Colour is then achieved with simple food substances such as turmeric, port, curry powder and cherries. The experiment began in 2006 and is still undergoing tests. Eco Kimono, shown at the Warp Factor 09 exhibition at Central Saint Martins, explored an ancient Japanese technique for waterproofing paper in order to bring the material one step closer to a wearable solution. The material is water and bug resistant whilst being completely organic and biodegradable.

Example: Trigema (Edible fabrics)

A more commercial example is Trigema's edible T-shirt. Trigema partnered with Dr Michael Braungart of the Environmental Research Institute in Hamburg and suppliers, including dye-stuff manufacturer Ciba, to develop a T-shirt which can end its life on the compost heap. They only used components which can be fully biodegraded to substances which are part of the known biological cycle. To achieve this, Trigema used 100 per cent cotton, from the USA and Pakistan, which was free of pesticides and fertiliser residues, and the yarn was spun with natural paraffin. They also used dyes which were specially developed to be biodegradable and also reported to be longer-lasting and truer than standard dyes in addition to their eco- and human-friendly properties.
Design for Recovery: The technical cycle [re-polymerisation]

The above examples represent materials compatible with the biological cycle. However, there are far fewer examples when we are tackling technical materials, primarily because of the complexity of the material systems we have created (as compared to natural materials which are all governed by one system – biology). The key with recovering material for re-use in a technical system is whether or not the recovery can be repeated ad infinitum as it an in nature. In most cases it can’t.

Example: Patagonia (Common Threads Programme)

In 2005, Patagonia launched a line of recyclable polyester base-layer garments, and announced a five-year goal to make all Patagonia products recyclable through the Common Threads Garment recycling programme (Patagonia 2009). This program invites customers to return used clothing and delivers the retired garments to Teijin, a fibre manufacturer that uses them to make new products through their Eco Circle chemical recycling process. By 2005, Patagonia had been using recycled polyester for several years. However, this was the first product that – at the end of its useful life – could be collected, chopped up, chemically recycled and spun into new polyester yarn to then sew into a new first-quality garment. Moving to Eco Circle recycled polyester reduces CO2-emissions by 77 per cent and energy consumption by 84 per cent (this relates to fibre and textile production in comparison to using virgin polyester).

Several brands have since joined Patagonia with this approach, including Houdini, a Swedish performance wear brand who became Teijin’s first European partner in the closed-loop polyester recycling system Eco Circle in 2006, followed by Finisterre, a UK-based sportswear brand, and more recently Puma, who launched their ‘Incycle’ range to include products designed for full C2C recycling.

Example: Kate Goldsworthy (Mono Finishing)

The author’s own practice project Mono Finishing (2008–2011) was a series of monomaterial experiments designed for the technical cycles and in particular for polyester re-polymerisation. The major barriers to this cycle are impurities, chemicals, adhesives or mixed fibre composition. The aim was to explore the potential for new finishing processes to be developed which could improve environmental performance and recyclability. The original work consisted of a series of fully finished textile samples, each demonstrating a different technique developed through access to a new laser-finishing technology at TWI (The Welding Institute) in Cambridge between 2008 and 2009.

Lasers have been used in the apparel industry for some time for cutting, scouring and etching textile materials. Here the laser was used to create surface finishes and new textile composites replacing traditional methods. The environmental advantages of this are clear – no glues, no mechanical stitching, no print pastes or finishing chemicals – making it cleaner than traditional production. Additional benefits include the programmable nature of the technology. These materials are not only recyclable into virgin-quality fibres but each piece can be a design original.

This project also provided the basis for ongoing development of these monomaterial techniques in the Laser Line project (2010–2013) that proposes monomateriality could be extended from the finishing of a fabric through the entire production supply chain of a garment (or other textile product). The first prototype garment demonstrated how the Mono Finishing technique could allow the designer to add surface patterning and seaming to a synthetic textile product in a single process. The end products are constructed from a monomaterial fibre (100 per cent recycled polyester), making them completely recyclable at ‘end of life’. It could also help textile manufacturers to reduce their use of materials, water, energy and chemicals whilst permitting shorter production runs, thus reducing cost and risk of wastage. Effects including quilting, flocking, gloss coating and transparency can all be created without added chemicals or adhesives. The technique possesses the advantages associated with digitally-driven manufacture by allowing customised production, finishing and construction to occur close to market and in small production runs.
Conclusion

As this paper sets out, there are multiple and complex approaches to recycling design both re-active and pro-active. As a designer it is essential to shift the act of design from a ‘product’ focused activity to a more systems-based approach. By adopting ‘lifecycle thinking’ as a visual framework and mapping the varied routes around and through the lifecycle we can define new briefs for the design of materials which can be eternally reclaimed in industrial and biological cycles.

As the paper illuminates, there are currently few truly C2C solutions which can convert waste materials into the highest quality raw materials, but technologies are constantly being developed to address this shortfall in industry, so technology-driven re-active approaches are essential in order to supply new solutions to waste. This technology landscape is changing rapidly and a designer needs to be fully aware of new developments as they occur so they can adapt their practices accordingly.

There are four key pro-active approaches to ‘designing for recovery’, outlined in this paper, which correspond to current possible recovery options for textile materials, without losing the value inherent in them.

Design for Recovery in the Biological Cycle: design with materials that biodegrade back into the environment safely without leaching harmful dyes and chemicals.

Design for Recovery in the Technical Cycle: design with materials that can be infinitely recycled without compromising original quality. Use Monomaterials: the simple use of one material makes for a clearer path to recycling for both cycles. Design for Disassembly: if monomateriality is not possible, use construction methods that use reversible fixings to ensure easier re-use and recycling of monomaterial components.

In conclusion, as long as a C2C framework is followed then all other extended life techniques also become essential and important activities in order to celebrate a diversity of approaches and the slowing down of material cycles. In this way design holds the key to a future of abundance and true cyclability for all valuable material resources.
References


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**Machine-Crafted: Investigating form and aesthetics in the seamless knit environment as a sustainable textile design practice**

The introduction of electronic, seamless knit technology in the mid 1990s enabled a new mode of industrial textile production. Shaped 3-dimensional knitted forms could be produced entirely by machine. While widely adopted by garment manufacturers for its economic efficiencies, the design capability of this advanced machinery and its potential for more sustainable textile production practices has remained largely unexplored.

This unrealised potential is highlighted in a small, emerging body of literature, which has begun to identify factors limiting design exploration. The complexity of the machinery and its interface, designed to reflect the specialised designer/technician roles fundamental to the traditional industrial knit production system, is recognised as constraining access to the technology’s design capability. While cost initially limited this technology to commercial sites of production, more recently access and expertise to support education, experimentation and research into seamless knit design and applications has become available through centres like the Auckland University of Technology’s Textile and Design Laboratory (TDL). This has allowed students, designers and researchers to develop a more hands-on approach, gaining a deeper understanding of the technology beyond the norms of design for mass production inherent to the available design software, to explore original, value-adding, sustainable, design opportunities.

Immersion in a domain more commonly associated with a ‘knit technician’ allowed the capability of the technology to be better understood before being explored through a designer’s creative process, an approach akin to that of a digital craftsman. Along with developments in online manufacturing capability, it presents opportunities for more localised and customised design production, waste reduction and higher product value. Further, in the use of woollen yarn, a natural, renewable and biodegradable fibre that is produced locally is embodied in the design process.

The research resulted in a series of seamlessly-knitted, home interior product prototypes including soft furniture, couch squab covers, double-ended chair covers, and cushion covers. The prototypes are composed of a complex assembly of 3-dimensional constructs such as corners, shaping, closings and layers translated via 2-dimensional knit diagrams. Extensive experimentation with stitch structures within the seamless environment allowed visual elements important to the ongoing development of a South Pacific design aesthetic to be retained. This aesthetic has been applied through varying stitch combinations throughout the form, resulting in pieces that exhibit blended compositions of hue and texture within the fabric producing a lasting appeal.

Establishing a deep knowledge of this advanced digital technology has allowed for innovative 3-dimensional forms while maintaining the warmth and softness inherent in woollen knitted textiles in meaningful products that invite user interaction. As such, this research showcases possibilities for high-value, distinctive aesthetic expression through considered materials and process choices in machine-crafted knitted production.
Abstract
The introduction of electronic, seamless knit technology in the mid 1990s enabled a new mode of industrial textile production. Shaped three-dimensional knitted forms could be produced entirely by machine. While widely adopted by garment manufacturers for economic efficiencies the design capability of this advanced machinery and its potential for more innovative and sustainable textile design and production practices has remained largely unexplored.

This unrealised potential is highlighted in a small, emerging body of literature which has begun to identify factors limiting design exploration. The complexity of the machinery and its interface, designed to reflect the specialised designer/technician roles found in industrial knit production systems, is recognised as constraining access to the technology’s design capability. While cost initially limited this technology to commercial sites of production, more recently access and expertise to support education, experimentation and research into seamless knit design and applications has become available through centres like the Auckland University of Technology’s Textile and Design Laboratory (TDL). This has allowed students, designers and researchers to develop a more hands-on approach, gaining a deeper understanding of the technology beyond the norms of design for mass production inherent to the available design software, to explore original, value-adding, sustainable, design opportunities.

This paper reports on practice-led research focused on the integration of seamless knit technology into a small-scale textile design practice. The exploration focused on developing a practitioner’s comprehension of the seamless knitting environment and on the acquisition of both design and technical skills. Immersion in a domain more commonly associated with a ‘knit technician’ allowed the capability of the technology to be better understood before being explored through a designerly, creative process, an approach akin to that of a digital craftsman. Along with developments in online manufacturing capability, the technology presents opportunities for more localised and customised design production, waste reduction and higher product value. Further, in the use of woollen yarn, a natural, renewable and biodegradable fibre that is produced locally is embodied in the design process.

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Establishing a deep knowledge of this advanced digital technology has allowed for innovative three-dimensional forms while maintaining the warmth and softness inherent in woollen knitted textiles in meaningful products that invite user interaction. As such, this research showcases possibilities for high-value, distinctive aesthetic expression through considered materials and process choices in machine-crafted knitted production.

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approach, is key to innovation. Alongside this, a
deepen technical knowledge of the seamless knitting
environment and its interface, gained through a
more hands on, designer/maker approach, will allow
designers to envision and access these opportunities.

This paper addresses these issues through a
detailed case study based on a one year research
project concerned with developing a designer’s
understanding of the seamless knit environment
with the aim of better integration so that the creative
capability of seamless knit technology could be
exploited in innovative, three-dimensional knitted
forms. This inquiry led to the researcher being
deeply embedded in the world of the knit technician,
requiring a greater investment of time through cycles
of discovery that unearthed new methods, outputs
and areas for exploration.

**Knitted textile design and production**

Though industrial textile production has outgrown
the craft discipline it originated from, the elementary
skills and foundation of these practices are still
relevant to the contemporary designer (Gale and
Kaur 2002). Knitting techniques, whether by hand
or machine, are still commonly learnt through verbal
instruction. There are many tacit aspects to knitting,
such as fabric handle and tension, which are diicult
to articulate and best learnt experientially. Both
learners and researchers also benefit f om a wealth
of printed resources due to knitting’s survival as a
domestic practice.

In both hand and machine production, the design
of knitted textiles is considered a complex process.
As a constructed textile, visual and textural
elements emerge from its fabrication, with designers
synthesising knowledge of technical construction
elements, such as stitches, tensions and yarn
properties, along with creative design skills. Further,
knit design often involves designing the construction
of the fabric and the form of the end product in
parallel – a process that requires simultaneous
consideration of aesthetic, functional, two-
dimensional and three-dimensional characteristics
(Glazzard 2012; Challis et al. 2006).

Traditionally knitted clothing and products have
been created through manipulation of two-
dimensional fabric into three-dimensional forms. This
manipulation may include actions such as folding,
cutting, sewing and bonding; essentially the piecing
together of a flat fabric into a three-dimensional
shape relating to the body or product form.
Previously, there were two common methods for
construction of three-dimensional garment forms. In
the first, cut, make and trim the front, back, sleeves
and trims for a garment are cut from lengths of
knitted fabric using flat-pattern making techniques
and are then linked or sewn together.

![Figure 1. Kalyanji, J. (2013). Knitted textile garment production.](image-url)
This method is labour-intensive, with numerous steps in the construction phase and considerable fabric waste. The second method, ‘shaped’ or ‘fully-fashioned’ knitwear design, involves knitting garment panels to the exact pattern shape required and then linking them together. This approach produces less waste, but often requires more time and technical skill in the programming and production of the shaped pieces. With both these methods, the seams produced when joining the various knitted pieces together add weight to the garment and affect the stretch, drape and comfort.

**Seamless knitting technology**

The introduction of computerised seamless knitting technology in the mid-1990s enabled a new mode of production. Using a tubular knitting technique, shaped, seamless, three-dimensional forms could be produced directly from the machine with minimal finishing required. Under development for over 40 years, the advanced capability of this knitting technology results in one of the most sophisticated computer-controlled textile production processes used in high fashion (Black 2002). It offers a new platform able to produce ready-to-wear clothing with little or no post-production make-up necessary, in the form of seamless knitwear. With few or no seams, the garments produced generate no fabric waste and are lighter, more flexible and more comfortable than seamed garments. Further, labour costs of traditional knitwear construction are reduced or eliminated, offering considerable savings to the knitwear manufacturer. This aspect is key in allowing local manufacturers to compete against low-cost, offshore production.

Seamless knit technology comes to the market via two leading manufacturers and is being adopted by garment producers globally for its economic efficiencies. However, the standardised way in which this advanced machinery is used has generally reduced the degree of design sophistication in the products being produced. Despite the opportunity this technology offers for form and shape innovation, its potential has remained largely unexplored, primarily due to complexities associated with its use and the subsequent difficulty designers and manufacturers face in understanding and integrating this complexity into their practices (Hunter 2004a; Black 2002; Challis et al. 2006).

The current constraints of seamless technology are not fixed. Traditional craft and design practices have often been disrupted by the emergence of new technologies. In other areas, new digital design and manufacturing technologies have led to radical shifts, disrupting what were previously highly specialised, mass production and distribution systems. Strategies such as customisation, participatory design and on-demand production, evident in areas such as digital textile design and printing, are challenging older production methods, economies of scale and their associated environmental impacts (Joseph, Fraser and Cie 2010). Maker movements and open knowledge systems are giving designers, artists and hobbyists access to new design and productions systems that are no longer reliant on technical specialists and industrial scales of production. Associated with these developments are new aesthetic and conceptual possibilities that are being explored through deeper understanding and experience gained in the craft or skills of designing and making with such technologies.

However, with seamless knit technology, the development of proprietary knit systems for commercial garment manufacturers has driven a focus on the time and labour saved in standardised production rather than enabling design innovation. Similarly, industry’s adoption of the technology for cost reductions in high volume garment production has restricted user access for research, development and innovation. The limited research that has been conducted is largely technically focused on aspects such as quality and comfort.

**Design in the seamless knitting environment**

This paper reports on an alternative approach to the use of seamless knit technology, focusing on those aspects that have a significant impact on the knitted textile designer’s ability to access the creative capability of the technology.

The existing divide between knitted textile designers and technicians is exacerbated in the WHOLEGARMENT™ environment. Though this is a radically new technology its software structure echoes the old industrial roles of knit designer and knit technician. A lack of shared knowledge or common language between these roles leads to ambiguity in ideas and instruction when translating design into production. In the commercial environment, a designer’s limited time and inability to problem solve often results in technicians resolving discrepancies, which can leave a designer’s intentions unrealised and subsequently contributes to standardised outputs from the
technology. This communication gap was observed throughout this research, where continued correction and confirmation as required in communication between the textile lab's technician and external clients (both students and industry).

Occasionally, the client would develop the product alongside the technician, and this generally produced a more favourable result, but it became obvious that a shared understanding of the seamless environment would be beneficial in achieving an innovative, design-focused product. There have been varied suggestions to remedy this situation, ranging from intelligent design support systems (Eckert 1999) and increased technical learning in academic institutions (Challis 2006) to changing or merging the traditional technician/designer roles in industry (Yang 2010).

Generally these solutions share an expectation that a designer’s increased technical knowledge as well as a common language between a designer and technician lead to improved design outcomes. This expectation is central to the approach adopted for this research. Acquiring technical knowledge was a key part of the research practice, and is considered to impact directly on a designer’s ability to realise expressive design outcomes. This shift in a designer’s skillset has been seen across the design discipline as practitioners seek to take advantage of the continued onset of advanced technologies (Kettley 2012).

Shima Seiki’s WHOLEGARMENT™ user interface is built around established approaches to knit design and production, remaining entrenched within traditional industrial models. Eckert (1999: 6) notes that the software has proved restrictive for designers and that, ‘Despite marketing claims to the contrary, these CAD systems are mainly built for knitwear technicians to program the knitting machines, rather than as design tools for designers. Using these systems requires considerable understanding of the technicalities of knitwear design.’

The specialised nature of this software, expensive licensing restrictions and limited learning resources make it difficult for designers to attain the experience and knowledge required to effectively use the design interface. Shima Seiki acknowledge this complexity with continued revisions to simplify the interface and improvements to their help menus and user guides. However, a trade-off of a simple, automated user system is an increasingly inflexible and modular garment set-up that, in turn, restricts access to the technology’s vast design capability.

Though the technology itself, accessible through the technician interface, has enormous potential to be used for new spatial, structural and textural configurations, its design interface is based on pattern libraries of standardised garment shapes and uses traditional two-dimensional cut-and-sew visualisation of front, back and sleeves. It follows a scripted design process of swatch, stitch structure and colour-way development added onto these flat, two-dimensional silhouettes. Newer features, such as three-dimensional simulations, show stitch movements and knitting techniques and can also visualise the final product. These simulations are effective as learning tools, but are insufficient or showing drape, volume and texture in a form useful for design decisions.

There is significant potential to extend beyond these software limitations to explore and develop radically new three-dimensional garment shapes, product applications, textile aesthetics and systems of production. In this paper we argue that, pending future software redesign, this innovative potential can be explored by knit designers taking a more craftsmanship-like approach, engaging with both the technical and design dimensions of the technology and distributing this knowledge to enable further innovation, accessibility and change.

As with many new technologies, initial use of seamless knitting merely replicated basic knitwear forms and constructions (Black 2002). Philosophers of technology refer to this pattern, whereby new technology is initially recognised for the ways in which it can imitate or perform the familiar functions of established technologies, before eventually gaining recognition for their new and unique capabilities (Baron 1999). In the case of seamless knit technology, this ‘diffusion of innovation’ (Rogers 1962) is in its infancy.

In addition to seamless capability, WholeGarment™ technology also offers new scope in its ability to shape three-dimensional forms – which may or may not be seamfree. Recently, both researchers and practitioners have started to explore the three-dimensional aspect of the technology and the design possibilities this allows. Challis et al. (2006: 41) note that seamless technology ‘forces a conceptual shift in the way knitted garments are designed and created’, requiring an understanding of three-dimensional design concepts. Research in this area has taken varied approaches: some have explored new design processes, recognising that the traditional flat fabric panels devised for seamed construction are no longer
a necessity, while others focus on achieving variation in form through stitch structures, volume or design features (Yang 2010; Evans-Mikellis 2011). The most inventive and accomplished three-dimensional work in garment form is often created for exhibition, or through collaborations reflecting the expert technical knowledge needed to realise such innovation. For example, Shima Seiki have provided extensive technical support for selected international designers such as Yoshiki Hishinuma to showcase the strengths of the technology for the high-end fashion sector. More recently, Kotoba has been established in the US as a knit collective promoting Shima Seiki Wholegarment™ technology in local design and production of high-end garments.

Examples of non-garment three-dimensional applications are rare and often limited to one-off, customised designs or art-based works. It is significant that much of this work is in single colour, plain stitch fabrics. The tubular knitting technique for creating shape and three-dimensional forms has proven particularly restrictive with regards to the design of the textile itself (i.e. fabric colour, pattern and texture). However, Dr Shima argues that vast patterning possibility does exist, and that this is an area of Wholegarment™ that has not yet been fully explored (Mowbray 2002).

Exploration of the technology’s potential has begun to gain momentum in recent years with some sophisticated applications in highly technical or artisanal design outcomes beginning to emerge from textile research centres, often in collaboration with industry. These outcomes are generally underpinned by the expertise of knit technicians, engineers and industry funding. Perhaps the best example is Nike’s use of seamless technology in its revolutionary Flyknit running shoe.

The Nike Flyknit shoe (2012) and the newly released Free Flyknit shoe (2013) have used seamless knit technology to rethink sports shoe-making. Nike has developed a light, one-piece knitted upper that not only simplifies construction and minimises waste (by an average of 88%) but provides an extremely comfortable ‘barefootlike experience’, in part through the minimisation of seams but also through engineering the knitted textile to correspond to different areas of foot pressure and stress. Nike’s designers used data from pressure mapping technology to inform the knit structure to zones on the top of the foot to enable areas of natural flexibility along with tighter stitch structure at the perimeter to stabilise the forefoot and heel. The use of knit has also allowed for the introduction of startling and highly distinctive new colourways. However, the design and technology development took Nike many years (reflected in the current price of these shoes). The complexities of the seamless environment still prove prohibitive for smaller scale, design-driven experimentation and outcomes.

**Situating the research**

While the investment cost of seamless knit technology initially restricted its use to commercial sites of production, more recently access and expertise to support education and research into seamless knit design and applications has become available through centres like the Textile and Design Laboratory (TDL) at the Auckland University of Technology, where the research reported in this paper took place. The TDL was established in 2006 with funding from the New Zealand government to support capability development and innovation through design and new textile technologies. Investment in digital knit and print technologies, supported by specialist technical and management staff, is a cessed by academic researchers, postgraduate students and industry. This has allowed designers and researchers to develop a more hands-on approach, gaining a deeper understanding of the technology beyond the norms of design for mass production inherent in its design software, to explore original, value-adding, sustainable, design opportunities. These industry and educational initiatives have in turn supported internal research capability, reflected in a growing interest in three-dimensional knit shape development for knitwear (Smith 2013) and for homewares (Kalyanji 2013).

This research also references the small-scale knitted textile designer and considers whether computerised seamless knitting technologies could be integrated into a creative, design-focused practice to support innovative and effective outcomes. Such outcomes are not only concerned with expressive and creative product, but also economic feasibility and the sustainability of the designer’s practice. Cochrane (2007) acknowledges the limited size and isolation of the Australian and New Zealand domestic markets and suggests that a sustainable practice for small-scale designers and craftsmen could result from focusing on a higher-value product, one that can be produced by machine in small batches for a particular discerning customer either locally or internationally. Similarly, Livingstone (2002: 41) proposes that the survival of crafted product in the twenty-first century is reliant on transition to a ‘craft’ relationship with
batch production, and Kettley (2012) notes that a number of small design practices have emerged, bringing ‘craft’ and new technologies together to appeal to consumer values with a more feasible business model than ‘traditional’ craft allows.

Such adoption of seamless technology by small-scale knitwear designers is in part demonstrated by their engagement with the TDL. Commonly these designers commission the laboratory to produce small batches of garments; however, these are usually in standardised shapes. Often, their product is differentiated through the use of luxury fibres such as alpaca and possum and is targeted at a tourist market.

**Project methodology**

Bye (2010) has observed a loss of tacit knowledge and skill in the clothing and textile field resulting from the displacement of traditional apprenticeships. Further, with increasing use of technology, details and nuances of design and production processes are being hidden in CAD systems, along with the opportunity to understand their value and impact. To emphasise the importance of retaining the unique knowledge of this field, Bye (2010) offers a framework for the establishment of a clothing and textile knowledge base. The research from which this paper draws was conducted as a one-year practice-led project for a Master of Art and Design degree and falls within Bye’s (2010) conception of ‘research through practice’, whereby the ‘research is initiated based on a problem or question that is derived from practice’ and ‘practice is the main method of discovery’ (Bye 2010: 214). As such, the researcher is directly involved in establishing connections and shaping the research object.

Reflective practice has a significant impact on how far designs are progressed, reinforcing the need for constant engagement across the design and production processes. Initial work produced at the TDL revealed that a compromise often resulted from designs being produced without a strong feedback process between designer and technician. It was difficult for the designer to see the production choices being made or to offer any input, and an early iteration of the product was generally regarded as acceptable. By contrast, maintaining engagement throughout, and gradually developing a more hands-on approach, enabled reflection during design and production and an ability to continuously modify and steer the development of products through many reflective, iterative cycles to develop design outcomes further.

Central to critical reflection is tacit knowledge, an intrinsic part of a designer’s practice, linked to their ability as a creator. The extent of tacit knowledge in the knitting process became clear when learning from the technician. Dormer (1994) suggests that learning by instruction, demonstration or written word is limited to what can be articulated. When the technician was unable to articulate an explanation, or the researcher unable to understand the reasoning, the aspect in question was investigated by attempting to design or produce it. In the process of doing this, the researcher would inevitably access the tacit, experiential knowledge that addressed the issue. In the seamless environment, tacit knowledge often relates to the three-dimensional characteristic of knitted forms. With forms being programmed and constructed in a two-dimensional space, it is difficult to explain or understand how the third dimension of the form is produced between two parallel needle beds only millimetres apart.

**The research framework**

The researcher’s design practice was informed by a four-year apprentice-style learning approach. Design skills and knowledge of knitted textile construction had been acquired through the act of making, initially under the guidance of those more skilled and knowledgeable — in this case AUT design lecturers and knit technicians — and later through self-directed practice. Throughout this practice, different types of knitting machinery had been explored, starting with domestic flatbed, then manual V-bed Dubied and Shima Seiki’s electronic V-bed and, for this research, Wholegarment™.

Although working with progressively more industrialised and automated technology, a direct relationship with the design and production of the work had developed by exploring the machinery’s potential before narrowing the exploration into a textile collection. This engagement is a key aspect of the researcher’s practice and places them as a designer-maker within Gale and Kaur’s (2002) four categories of textile ‘types’.
Alongside production knowledge, established aesthetic values that leaned towards those of a crafts-person were established. Particular importance was placed on visual and haptic experience, with an intention to produce expressive, unique and engaging fabrics that invite viewer interaction. Further, techniques were adopted that allowed for some variability and, subsequently, a uniqueness in each piece.

The project was focused on developing a practitioner’s understanding of the seamless knit environment with the aim to integrate the technology into the researcher’s design practice so that the creative capability of seamless knit technology was exploited in innovative, three-dimensional knitted forms. The approach was informed by findings from across the design discipline, where the use of industrial technology and the prevalence of CAD/CAM interfaces has been seen to result in a designer’s detachment from design and production processes. A number of issues can result from this detachment, including a loss of exploratory process and an inability to realise original intentions (Kettley 2012; Cochrane 2007; Smith 2013). This detachment can be addressed by approaching technology in a more craftsman-like way, so that its use is accompanied by a deep working knowledge of materials and making processes (Cochrane 2007). It is also suggested that improved understanding of design and production processes enables the designer’s hand and associated creativity to be applied more directly throughout the entire process.

For this research, the TDL provided a facility where engagement with design and production processes could be supported. Exploration of the technology was focused in three areas: the textile’s surface design resulting from yarn and stitch composition, the textile’s form relating to its shaping and volume, and the textile product which combines surface and form to create a seamless, three-dimensional artifact. The project aim was to explore creative capability in each of these areas, with an intended outcome being knitted object prototypes for the home. The choice to focus on non-garment forms for this research encouraged its exploratory aspect. With such forms falling outside the modular garment shapes offered by Shima Seiki’s automatic software, learning and the use of the technology were pushed beyond common approaches, requiring a broader exploration of Wholegarment™ capability.

The project focused on innovative and crafted high-end design, aiming to meet Cochrane’s suggestion that a sustainable practice is achievable through focusing on higher-value product for a discerning global consumer (Cochrane 2007). Craftsmanship is difficult to define and its use in varied contexts, debate surrounding the essence of craft, and subjectivity in assessing craftsmanship. This research recognises that craftsmanship contains authenticity and individuality aspects often cited as being lost in the transition from handmade to machine. There is a common perception that both the identity and

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**Figure 2. Kalyanji, J. (2013). Four roles of textile design, adapted from Gale and Kaur (2002).**

<table>
<thead>
<tr>
<th>Design Approach</th>
<th>Craft Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DESIGNER</strong></td>
<td><strong>MAKER</strong></td>
</tr>
<tr>
<td>Batch, could contract out / use pre made parts</td>
<td>Design vision any achievable through craft process</td>
</tr>
<tr>
<td>Develop prototypes through craft process</td>
<td>Retain personal control of each item. Handmade</td>
</tr>
<tr>
<td></td>
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"textile works" can exist in galleries etc. like sculpture / painting / installation

Tensioned between 'craft' and 'fine art'

Increasingly textile sculptures
integrity of the maker and the uniqueness of the product are lost in machine production. Niedderer (2009) has recognised that attention and care are needed in producing craft and that ‘through this care, which is put into a craft object to achieve its integrity, we encounter something of the maker’ (p. 169). This suggestion aligns with Zaccai’s notion of ‘visionary generalist’ and the approach underpinning this project, whereby maintaining a direct relationship with the work during design and production allows care to be applied throughout the entire process. Further, the small-scale batch production possible through this digital knit technology supports product individuality, which can be achieved by varying set-up and production methods. Uniqueness can be introduced through manual interventions to alter set-ups or by actions such as allowing yarns to mix and feed randomly, resulting in natural variations in the textile. Small adjustments can also be made on multiple parameters of the design through the CAD interface, ensuring uniqueness.

The project

Full engagement in design and production processes required a deep understanding of the seamless knit environment. To acquire this understanding, the project first focused on the acquisition of technical knowledge through immersion in a domain that is more commonly associated with a specialised knit technician. This progressed through two paths of replication. The first path involved a repetitive process of working through the Shima Seiki user interface to explore the making of a variety of the three-dimensional garment forms on offer. By repeating the computerised development phase for a single garment, with varied design parameters in each repetition, an understanding of seamless knitting techniques was developed alongside the language describing these techniques and their impact on the shape produced.

The second path involved replication of another practitioner’s work. Jenny Underwood’s PhD thesis (2009) includes high-level documentation of selected shaping techniques alongside programming directions. Guided by these directions and with assistance from the labs technician, knit programs were written and shapes replicated, assisting the acquisition of basic programming skills. These paths of replication resulted in a small collection of shaped seamless samples, and greater understanding of the environment and medium of seamless knitting.

The process of converting selected samples into large-scale finished products prompted a second phase of experimentation and learning, focused on developing three-dimensional forms and aesthetic expression. Stitch structures and yarn combinations were explored to determine feasible options. Also, these forms required closures. With nothing to replicate, it was necessary to generate knit programs in order to test ideas. This was a time-consuming process involving a great deal of trial and error. Most often, knit programs were tested in production to determine whether they worked as intended. This ability to prototype through iterative development cycles, and the experiential knowledge gained from each cycle, was significant in progressing the project. The knitted forms could not have evolved to the same extent without this direct engagement and growing knowledge base. It is difficult to write effective knit programs without an understanding of such aspects as needle movements and carrier arrangement and it was through this phase of the project that a deeper understanding of the mechanical operation of the machine was gained – essentially relating programming instructions to the physical action of the machine. This also involved exploration of techniques for better understanding these aspects. In some instances, recording needle and stitch positions in a notation similar to that used in hand-flat machines as the most effective means of comprehension.

Forms were initially produced on a small scale. The programming and production of large-scale prototypes generated another area of learning relating to the manual operation of the machine. These large-scale pieces often used the full width of the needle bed and all needles. In this phase settings and mechanical adjustments that could be made at the machine to encourage effective knit production were essential. As such, this phase was more sensitive to the materials being used and understanding the impact of aspects such as the weight of a yarn or the take-down applied during production. These phases combined to a point where procedural knowledge was combined with tacit knowledge and a deeper understanding of the seamless environment. In the earlier stages ideas were derived from what had already been seen. Now ideas could be generated from understanding what was possible. This was highlighted in the development of knitted corners – something that had not previously been explored or even imagined possible.
In synthesising the research findings, the relationship between the designer and the technology was reframed through greater technical understanding of its capability, and of how this capability could be utilised to develop original seamless forms – essentially designing to the creative potential of the technology to produce a series of seamlessly knitted, three-dimensional home interior prototypes. More specifically, exploration in surface design was initially focused on textile designs that would be difficult to produce using other knit technologies. Domestic flatbed knitting allows for considerable versatility in stitch manipulation, and resources for this machinery are often used as inspiration. A pile fabric documented in Lewis and Weissman’s (1986) book, *A Machine Knitter’s Guide to Creating Fabrics*, was investigated. This is a textural fabric that can be produced on a hand flat machine through use of a specific attachment.

![Figure 3. Kalyanji, J. (2013) Variations of ‘pile’ fabric (L) and comparison of non-felted and felted versions (R).](image)

Through experimentation, knitting instructions and the function of the attachment were translated into a Shima Seiki program for application on a tubular form. Although this fabric was technically challenging to produce, it added weight to claims that patterning possibilities within seamless existed but have not yet been adequately explored.

The aesthetic of these pieces was influenced by the on-going development of a distinctive ‘South Pacific’ design aesthetic. Stitch combinations were varied throughout the form and different coloured yarns were used in single row striping, resulting in pieces that exhibit blended compositions of hue and texture within the fabric. Producing pieces with a distinctive and subtle aesthetic that sits outside of trends and seasons and can fit into multiple interior settings has been a key goal of the project; the intention is for the pieces to have lasting appeal, with the quality of product and its distinctive aesthetic creating a strong bond between the artefact and the owner. This will help ensure sustainability. Other surface aspects explored include the fibre composition and treatment. Woollen yarn was preferred both for its properties as a natural, renewable and biodegradable fibre which could be sourced locally and for the warmth, flexibility and softness inherent in woollen knitted stitches. This allowed for the creation of fabric which was inviting to touch – an important factor in producing objects intended for human interaction. Further, a small amount of elastane was included to aid in fabric recovery. Machine felting after production was found to produce a denser, more durable fabric.

Form development was focused around shaping, volume and structured features such as corners and closures. As knowledge and understanding increased it became easier to generate design ideas for which feasibility could be determined prior to programming, though determining effectiveness of the idea would require production. For the most part, shapes and closures paralleled existing patterns from cut and sew production. Significant opportunities with seamless technology were suggested by features that are difficult, or not possible, to produce using traditional, two-dimensional cut-and-sew methods – for example, forms containing curves, volume and tubular joins that could lead to innovative product shaping. These areas are the focus of ongoing research.
The shapes for the final product forms evolved from parallel developments in surface and form, with the products intended to showcase a range of features. Essentially, the collection represents a complex assembly of three-dimensional constructs such as corners, widening, narrowing, curves, closures, and layers designed and translated via two-dimensional knit diagrams. The products include soft furniture, couch squab covers, double-ended chair covers, and cushion covers.

In relation to the three specific areas of inquiry – surface, form and product – the following conclusions were reached:

**Surface**: Perceived constraints on textile design were addressed in the development of a range of textural and patterned fabrics in multiple colours, suggesting room for creative expression exists but has not yet been fully explored. A growing understanding of feasible stitch types in the seamless environment will lead to further exploration resulting in increased variation and expressiveness in the textile design of seamless or shaped product.

**Form**: Shaping and three-dimensionality were explored through an experiential learning process. Understanding of this area progressed through different stages, moving from procedural knowledge focused on reproduction to an understanding of the environment and ability to self-generate

**Conclusion**

Through this project the constraints of design software interface in seamless knit technology were overcome by deeper engagement with its technical interface to realise the aim of developing innovative three-dimensional forms for homewares and furnishings. Yarn and stitch selection and their effect on the visual and tactile aesthetics of the textiles were also important aspects of this project. The forms developed maintain the warmth and softness inherent in woollen knitted textiles in expressive products that invite user interaction. As such, this project demonstrates possibilities for high-value, distinctive aesthetic expression through considered materials and process choices in machine-crafted knitted production. This project highlighted some of the limitations of the technology in terms of software/hardware relationships, as well as identifying some of the fuller potential of knit design and production applications.
feasible designs. The practice considered application of shaped knitted forms in soft furniture and homeware. This work has accessed a limited aspect of the technology's shaping potential but has generated numerous ideas for further product development. The greatest potential comes from characteristics such as seamless curves, volume and tubular joins that are not easily constructed through other methods such as 'cut-and-sew'.

Product: The design and production of soft furniture and homewares in this project depended on existing forms or structures. Reuse (of old furniture or of existing forms such as cushions) effectively supported and set parameters for the early development and understanding of three-dimensional shaping. While the products in themselves were not innovative, the surfaces, forms and modes of production were highly original. Realising such products through this technology also recognised a cultural dimension. Kettley (2007: 5) has noted that ‘Critical design is an approach that recognises the cultural roles of artefacts beyond their technological function, and in the case of novel computational technologies, there is a need to examine and critique the trend for innovation as an end in itself.’ In the future, working collaboratively with skilled designers from other fields such as product and interior design will encourage the shaping potential of the seamless technology to be exploited more fully in developing innovative and meaningful forms.

The approach adopted for this project focused on the acquisition and application of technical knowledge as a method for retaining engagement in design and production processes. Cochrane (2007: 81) suggests successes can evolve from a designer’s ‘willingness to meet industry half way; to listen to and learn from those particular specialists and to respond to the mutual challenges that emerge as design ideas become objects’. This inquiry led to the researcher being deeply embedded in the world of the knit technician, requiring a greater investment of time through cycles of discovery that unearthed new areas for exploration. Two aspects of significance arise from this.

The first concerns the importance of this knowledge to the designer as designer-maker, with emphasis placed on their ability to realise designs. The tactile and haptic qualities of textiles suggest that the ability to touch and see the textile throughout the design and production process is significant to its development, and that requisite technical knowledge is necessary to retain this engagement.

The second concerns the amount of time invested in the learning process and that for most small-scale textile designers such an exhaustive investment of time would not be viable. Numerous iterations were required in terms of experimental and prototype development – these were vital for understanding software and hardware parameters. However, the sharing of this knowledge would be better supported through refinements in the designer software interface, more formalised teaching and learning pedagogy and better resources – like shape databases – made available in the seamless knit design area. This would require a shift from the closed proprietary model adopted by the technology’s manufacturers to a more open, collaborative model.

In conclusion, this research suggests that design and production are heavily linked within the electronic seamless knitting environment and that, with technical understanding, the technology’s creative capability can be accessed. While there is a risk that excessive technical concern can restrict creativity as designs are produced to fit within known constraints, realising the vast potential of seamless knit technology will require deeper technical engagement, understanding and knowledge sharing by designer/craftsmen. The understanding of three-dimensionality, distinct from the traditional two-dimensionality to three-dimension knit design approach, is key to such innovation. Alongside this, it is the technical knowledge of the environment and its interface which will allow designers to envision and access these opportunities.

Notes
1. By way of comparison, textile design processes such as print, dye and embroidery are applied to the surface of a constructed fabric and are categorised as surface design.
2. For an account of the evolution of computerised seamless flatbed knitting technology see Yang (2010: Ch. 3) and Hunter (2004a, 2004b, 2004c). Choi and Powell (2005) provide a detailed description of the seamless knitting process.
3. Computerised seamless garment technology is produced by two manufacturers; Shima Seiki and Stoll GmbH. The technology used in this research is Shima Seiki WHOLEGARMENT™ model N. SES 183-S WG.
References


In this submission we address the theme of Craft as Social Practice through textile craft activities located in regional European textile production. The focus of the enquiry will be provided by two case studies produced through Plustex, an INTERREG IVC project, at University of Southampton. The Plustex research team is investigating qualitative data and good practice examples in the European textile and clothing sector with the aim of supporting its fragile communities and helping to sustain a trade in crisis. The objective of the project is to propose to European policymakers textile specific strategies that might shape a more competitive future for the European textiles industry.

The Plustex project’s methodology is anchored on six themes that include increasing creativity in market production, eco-innovation, and enterprise associations. The thematic framework offers the opportunity to investigate many examples of good practice in the textiles industry. Research already completed suggests two examples of current practice that exemplify well the discourse of craft as a facilitator of positive social change.

Teixidors is a co-operative of weavers based in Terrassa, outside Barcelona, which produces one-off, luxury home and fashion accessories. Founded in 1983, the company has a clear social vocation. It aims to improve the economic independence and social integration for people with learning difficulties while maintaining the tradition of local textile skills.

The exceptional products benefit from hand weaving, artisan practices, tools and attitudes but, most importantly, the humanity of the maker. At Teixidors each weaver is encouraged to select materials with which they have sympathy, build familiarity with their equipment, and according to their character and physique. In this way gender, strength and sensibility inflect the textile to create products with unique features; collections differentiated by the individuality of the maker: a maker embedded in his or her community.

In Scotland, after a period of serious decline, the Harris Tweed cottage industry has repositioned itself as a protected brand. Harris Tweed is a unique product produced in the Outer Hebrides by weavers who work in their own homes. The industry supports an employment cluster of around 140 self-employed weavers, and a network of artisans and designers that produce niche designs and products for a growing international market. Synonymous with longevity and heritage, Harris Tweed is increasingly both the skilled expression of a local community and the foundation of that community’s future.

Teixidors and the producers of Harris Tweed demonstrate not only a shared commitment to ethical, resilient and indigenous community building but also a debt to historical practices. Between them, they amply demonstrate the transformative practice of craft textiles as an agent for social change and economic success.
Over the last ten years, reduced competitiveness especially among European industry specialists, changing priorities in the international textile and fashion market, and world-wide financial uncertainties have caused a global restructuring of the textile and clothing sector. Manufacturers have revised employment patterns and worsening socio-economic conditions have prompted regions to rethink their plans for economic development.

In response to the pressures of a global transformation of the sector, some regions of the European Union with long-standing expertise in the textiles and clothing industry, have joined forces to capitalise on best policy initiatives and to creatively support small to medium sized enterprises or SMEs, in the textile and clothing sector. (Plustex Project 2012)

This paper presents, through reference to the Plustex project, two case studies of good practice in business enterprise that demonstrate the advantage of local knowledge economies that maintain, retain and exploit specialist and traditional community skills. The case studies suggest a number of factors that might contribute to securing the competitiveness of an enterprise while sustaining the community that supports that enterprise.

Plustex is an acronym for policy learning to unlock skills in the textile sector. It is co-financed by the Interregional Cooperation Programme INTERREG IVC through the European Regional Development Fund and has nine partners drawn from across northern and southern Europe. The partners include, among others, the Municipality of Prato, Lille Metropole, the Museo del Tessuto, Italy, and the University of Southampton. The project’s methodology is anchored around six themes which were developed in consultation with companies that represent regions and communities with a long history of textile production; companies such as Faliero Sarti, based in Prato, Italy, who have a long history of specialist regional production of fabrics for haute couture and pret-a-porter. The six project themes are:

- The support of young entrepreneurship and innovative business models
- To foster textile and clothing incubation and business start-ups
- To increase levels of art, design and creativity in market production
- The clustering and internationalisation of small to medium sized enterprises
- The diversification of production towards high-quality and high-tech textiles and niche products
- Eco-innovation and social responsibility

The project’s thematic framework offers the opportunity to investigate many examples of good practice throughout Europe. Research already completed suggests two examples of current practice that successfully demonstrate how the maintenance of local knowledge economies and the exploitation of specialist and traditional community skills can lead to not only innovative business models but also emboldened communities. The two examples of good practice in business enterprise are Teixidors and Harris Tweed.

**Teixidors**

Based near Barcelona, the Teixidors cooperative produces hand-woven products for fashion and interiors that include blankets and scarves made from wool, linen, cotton or silk. Informed and inspired by its surroundings, Teixidors has developed its own way of working and its own style, one that is intrinsically different to any other textile business currently operating in Spain. The Teixidors style is underpinned by the cooperative’s mission which is to create hand-made design products using traditional and sustainable production methods while promoting social action and self-sufficiency. Teixidors create ‘unique … [woven] products made with high quality materials that always follow an entirely manual process’ (Teixidors Project, 2012).
Founded in 1983, Teixidors is a cooperative of circa forty-five people with a social vocation, namely the social integration and economic independence of people with learning difficulties. According to Teixidors:

Sustainability is a global concept that has to incorporate environmental and social parameters. The integration of people at risk of social exclusion and the commitment to responsible consumption form part of the sustainability of Teixidors. (Teixidors Project, 2012)

The Teixidors social objective is carried out through the extraordinary creative work of its workers and the unique products they produce on manual looms. At Teixidors, the industrial process does not disavow difference; it is celebrated. Each weaver is encouraged to select materials with which they have sympathy, to build familiarity with their equipment, work to their strengths and according to their character and physique. In this way, gender, human physical strength and sensibility, not the industrialised mechanics of production, inflect the textile to create products with unique features: collections diffused entailed by the individuality of the maker. Distinctiveness is sought in the expert mixing of yarns to both realise the design and to explore new textures. The resultant products are sober, honest, timeless and always modern.

The quality of the Teixidors product can be demonstrated by a recent collection called 03AM® made in collaboration with Pensando en Blanco and Modern Alchemy, and developed in collaboration with Christian Zuzunaga. The 03AM® collection is based on details recovered from an artisan bakery in 1913 and inspired by anecdotes recalled by bakery workers who worked on a daily basis with the standard ingredients of bread and cake making: chocolate, wine, oil, eggs, yeast and bags of flour. The collection consists of sacks, poufs and plaids, designed to enable moments of repose and rest, and to be evocative of a recovered time. Hand-made by traditional upholsterers from high-quality linen and cotton woven on traditional handlooms, the sacks and poufs function as a neat piece of furniture and a tribute to past labor. The imperfect finish of the Teixidors’ hand-weavers’ craft add authentic character to the industrial – utilitarian – inspired objects, while original graphics, applied in labelling, add to the individuality of the objects by suggesting a historical narrative.

Teixidors’ collaboration with Christian Zuzunaga on the development of the home accessories collection – Integrate: Time and Space – represents a further stage in Zuzunaga’s Alchemy series. For Zuzunaga, alchemy is a process of transformation. In the Alchemy series, each design starts from an analogue image taken from the urban environment. This image is then transformed through the digital lens and creatively explored in terms of colour, shape and scale before being applied to products through different materials, printing and manufacturing techniques. The Teixidors collaboration with Zuzunaga extends this palette of transformation by introducing the interpretation of the skilled crafts person and the character of hand weaving with its associated unrefined finishes. This can be seen in a blanket made in the series which combines highly saturated, intense bands of colour, with more greyed colours that appear affected by the ‘white noise’ of screen interference. Clearly influenced by screen transmissions, this blanket is suggestively haptic but also made unique by virtue of the imprecision of the repeated bands of colour.

**Harris Tweed**

Tweed is the nearest thing the British have to ethnic national dress. Espoused by Edwardian gentlefolk and the new middle classes, it became the uniform for peacetime pastimes and spoke of heather-coloured hills and fragrant glens. A fabric that looked and smelt like the land, its historical production was the work of artisans and skilled craft-workers in the sort of rustic industry that has all but disappeared from the British mainland. (Harper and McDougall 2012: 76–99)

Harris Tweed is the UK’s oldest trademark and the only fabric in the world that is protected by its own Act of Parliament (1910). Harris Tweed is only made from pure virgin wool and hand-woven in the homes of the islanders of the Outer Hebrides, Scotland. To ensure the authenticity of the product, all production is inspected by the Harris Tweed Authority, the industry’s governing body, and issued with the Harris Tweed Orb Mark.

The history of textile production in the Outer Hebrides is notable for both slow evolution and a considerable step change. For centuries, the islanders of Lewis, Harris, Uist, Benbecula and Barra wove cloth which they called the Clò Mór or ‘the big cloth’ simply so as to protect themselves from the harsh climate of the north of Scotland. The cloth each
weaver produced was almost exclusively for home use or for a very limited local market; surplus cloth was used only for barter or as a form of currency in trade amongst the islanders. By the end of the eighteenth century, however, textile production in the Outer Hebrides had changed significantly. The spinning of wool yarn from local raw materials had become a staple industry for the crofters. Finished hand-made cloth was exported to the Scottish mainland and traded as a product along with other commodities produced by the islanders, such as dry hides of goat and deerskins. In the nineteenth century, through the advocacy of Lady Catherine Herbert, who recognized the potential market for country sports jackets produced from the highly durable cloth, tweed not only became the fabric of choice for the landed gentry but also, through the careful nurturing of the communities, weaving skills quickly became a successful export industry. At its peak, the Harris Tweed industry produced annually over seven million metres of cloth.

Today there are around 140 self-employed Harris Tweed weavers and a network of three mills that apply finishing processes to the fabric. The combination of brand-specified materials, specialist weavers, and the application of market-sensitive finishes ensures high-quality products suitable for an increasingly competitive international market place. Harris Tweed has however not always been successful. Prior to 2006, after decades of under-investment, poor sales, an ageing workforce and the loss of traditional skills, the future of Harris Tweed looked bleak. Annually, the volume of material produced had slumped to around 500,000 metres and many feared the industry was in terminal decline.

A renaissance of Harris Tweed began through a five-year initiative partly headed by a former Labour energy minister, Brian Wilson. Wilson and others reopened the Shawbost Mill and, in a spirit consistent with the passion of the American industrialist Ed Bain, who was also committed to securing a future for the beleaguered industry, set about producing not the drab tweeds that had become synonymous with the years of decline but instead, the multi-coloured tweeds desired by the tailors and customers of London’s Savile Row.

Although Wilson and Bain took different approaches, through their efforts, tweed began to secure new audiences. Bain persuaded Alfa Romeo to introduce tweed as a high-quality supplement to a limited edition of luxury cars so as to add value to its brand; while Wilson entered into collaboration with Deryck Walker, a soon-to-be Scottish Designer of the Year, to manufacture a range of outdoor wear inspired not by the heather of the Outer Hebrides but urban Glasgow.

Between them, Bain and Wilson laid the foundations for a brand repositioning of Harris Tweed. Rather than simply a stalwart of Scotland, Harris Tweed became a contemporary niche product, attractive to a diverse audience and adaptable to multiple uses. There are now more than a thousand Harris Tweed designs and, in 2012, production had dramatically increased to exceed a million metres – the biggest production run for fifteen years.

The success of the repositioning of the Harris Tweed brand as young, vital and adaptable can be exemplified in many ways. Blogs such as Need for Tweed encourage a virtual community to participate in the concept of tweed as a feature of contemporary fashion and style; the cloth is now commonplace attire for media personalities such as Doctor Who star Matt Smith and the rapper Tinie Tempah; and tweed is now included in such fashion must-have accessories as hand-stitched ‘hi-top’ trainers and handbags produced by cottage businesses in Scottish market towns, which are then sold in Italian and Japanese luxury boutiques alongside Louis Vuitton and Marc Jacobs. One such enterprise, Jaggy Nettle, works with freelance Harris Tweed weavers to design shoes and accessories to make an anti-traditional fashion statement.

Although Teixidors and Harris Tweed are obviously very different businesses and companies based in two very different countries, these two case studies suggest a number of factors that might contribute to securing the competitiveness of an enterprise while sustaining the community that supports that enterprise. These factors are sustainable social capital, collaboration and leadership.

**Sustainable social capital**

Alejandro Portes notes that the first systematic analysis of social capital was produced by Pierre Bourdieu, who claimed that social capital is composed of two elements: first, the social relationship that allows individuals to claim access to resources possessed by their associates, and second, the amount and quality of those resources (Lesser 2000: 45). Through social capital, Bourdieu states, actors can gain direct access to economic resources; they can increase their cultural capital through contact with experts, or affiliate with institutions that confer valued credentials.
A commitment to the value of the social relationship and the quality and range of its resources can be seen in the success of both Teixidors and Harris Tweed. For example, Teixidors is clearly a textile producer that offers a product informed by its social capital. The materials utilised to produce its products are sourced as much as possible from local farmers, and the skills and physical attributes of their workers are celebrated as important to the uniqueness of their goods. By sourcing materials from within the locality, Teixidors can not only support local affiliated industry but also garner the value of the assured provenance of their supplies. As a cooperative that values the individual contribution of its employees, the value of people is intrinsic to the success of its products.

Harris Tweed provides equal evidence of investment in the social capital of its community in that the time-honed artisan skills of its workers and the uniqueness of its location are core to its success. Indeed, Harris Tweed offers perhaps a more wide-ranging example of investment in the social capital than Teixidors. This is because investment in the Harris Tweed community of textile producers is sustained not only by the company but also by the politics of the region. By way of illustration, in 2011, the economic and community development agency for Scotland, the Highlands and Islands Enterprise (HIE), published a document that described how the HEI propose to take forward their priorities. The document outlines a vision for the Highlands and Islands to be a highly successful and competitive region in which increasing numbers of people choose to live, work, study and invest. It states that achieving the vision will require a range of approaches and interventions by the HIE, partner organisations and the businesses and communities across the region (Highlands and Islands Enterprise Ambitions for Scotland: Operating plan 2011–14). The vision outlined is clearly not geared towards just supporting innovation and business enterprise but instead, recognises a link between strong communities and the delivery of sustainable economic growth. The vision commits, for instance, to assist communities to maximise the benefits to be derived from renewable energy projects through direct ownership and creative partnerships with the private sector ... to support communities to invest in such things as asset acquisition, skills for young people, and ways of adding value to locally generated energy. (Highlands and Islands Enterprise Ambitions for Scotland: Operating plan 2011–14)

The HEI plan also included proposals for new business premises and supported the further development of the University of the Highlands and Islands. Central to the new university project is the Inverness Campus – a major infrastructure investment that will bring together education, research, business and the community in a new world-class location in the Highland capital.

In its work, the HIE is playing a leading role in developing the conditions that will enable the Highlands and Islands to fulfill its potential as a globally competitive region. Its work suggests that fragile communities, such as the textile workers that underpin Harris Tweed, along with their business community, gain mutual benefit when investment is made in the social capital of a community and when that social capital is sustainable.

**Collaboration**

Stephen S. Cohen and Gary Fields make a case for rethinking the concept of social capital (Cohen and Fields 1999: 108–30). They do not dismiss the power of the concept of social capital outlined and advocated by, for example, Robert Putnam but they do promote a variant, or put differently, an extension to its thinking. According to Cohen and Fields, the conventional basis of social capital is:

The complex of local institutions and relationships of trust among economic actors that evolve from unique, historically conditioned local cultures. Such institutions and social relationships, built on the experiences of a shared deep history, become embedded within a localised economy. They form what Putnam describes as networks of civic engagement that facilitate the activities of politics, production and exchange. In these locales of tight civic engagement, people know one another and one another’s families. They meet frequently in non-work related organisations and activities. They constitute a dense and rich community and family structures. Those structures reinforce trust by sanctioning against, in powerful ways, the breaking of trust. In Putnam’s model, cooperation built on trust propels development. It is rooted in complex and deep social ties and is an inherited historical characteristic. (pp. 178–9)

Although Silicon Valley undoubtedly constitutes a successful neighbourhood, for Cohen and Fields it is not a close-knit community; it does not therefore fit the conventional model of social capital. Silicon
Valley is a place notoriously populated by strangers not friends and it may be more correctly described as transient rather than historically rooted. This is not to say that the inhabitants of Silicon Valley do not share or that there is no network of relationships that build cooperation in a way similar to a conventional community. So how might the underlying architecture of this community be defined?

In Silicon Valley, social capital can be understood in terms of the collaborative partnerships that emerged in the region, owing to the pursuit by economic and institutional actors of objectives related specifically to innovation and competitiveness. It is the networks resulting from these collaborations that form the threads of social capital as it exists in Silicon Valley. (pp. 178–9)

Silicon Valley may not, in other words, exemplify a mutually supportive community with civic pride and a collective spirit but it can be described as a community of collaborating relationships. For Cohen and Fields, despite the lack of intimacy or familial bonds and despite the fact that its relationships are driven not by civic investments but by ‘trajectories of ... competitive choice, the dynamics of successive innovation, and the momentum of economic success’, it is the collaborative network of relationships that underpins the success of Silicon Valley and which constitutes its social capital (pp. 180–1).

Collaboration and functioning networks can be found as critical features of both Teixidors and Harris Tweed. Teixidors collaborate with local materials providers and innovate their products through collaboration with local design companies for an increasingly global audience. The company values its connection with the social community and its customers. It expresses this value by investing in the history and heritage of the region and by promoting the importance of the narrative of the network of making. The stepping-stones that disaggregate the narrative of the network of making include the marginalised maker, artisan skills, individualised products and sustainable resources. Similarly, Harris Tweed is a network of individually employed weavers, mills that apply finishes, and designer that innovate the product. Its success is based on the collaboration between the artisan and the manufacturer: the bond between the company and the community. As with Teixidors, the narrative of the making of Harris Tweed expresses both the value of the network of its participants but also adds incomparably to the value of the product: heritage, sustainable materials, skills embedded in the community, and local products designed for an international audience underpin its narrative.

Leadership

Leadership can be conceived as the ability to transform a situation or a pattern of transactions with a group of followers. There are a number of theoretical models of leadership but two seem particularly appropriate to this essay. The transformational leadership theory draws on the concept of charisma and the force of an individual. Charismatic leaders are normally conceived of as people with vision, a strong sense of mission and the ability to create an emotional bond with their followers. By contrast, the theory of the transactional leader determines that the leader and their followers engage in mutually dependent exchanges that apportion a strong role to less dependent supporters. In other words, ‘leaders may be viewed primarily in terms of their ability to transform their situation or in terms of their transactions with their followers’ (Purdue 2001: 2213).

If leadership models might be conceived as transformational or transactional, what useful conclusions might we draw regarding leadership from the community based enterprises Teixidors and Harris Tweed? Put differently, what can Teixidors and Harris Tweed tell us about leadership in community-based enterprises?

Taken at face value, the success of Harris Tweed appears to demonstrate a transformational leadership model. In the story of the renovation of Harris Tweed, Bain and Wilson win the confidence of their community by developing a reputation for competence in acquisition and management of resources, and establish goodwill in their community of weavers, artisans and finishers through the proven benefits of their vision, commitment and energy. This might be contrasted with Teixidors, which could be judged to demonstrate a more transactional model of leadership. This is because the cooperative business model appears to demand a relationship between leaders and a community that is embodied in transactions. A leader conventionally earns credits through competence, conformity to group norms, length of participation or a prior reputation. In the theory of transactional leadership, however, leaders additionally earn goodwill and trust through an economy of exchange that, by extension, permits risk and innovation. The accumulation of credits allows the leader to innovate without losing any
followers: an outcome that would appear to be an advantage to any business but especially a community based cooperative.

Although we can attribute transformational and transactional styles of leadership to Teixidors and Harris Tweed, if we follow Derrick Purdue, transformational and transactional theories of leadership need not be mutually exclusive (Purdue 2001: 2215). In successful businesses like Teixidors and Harris Tweed in which more than one leader may operate, e.g. Bain and Wilson in Harris Tweed, or where more than one stakeholder collaborates to collective mutual benefit, as in Teixidors, it is possible to propose that transformational and transactional models of leadership are complementary. Indeed, they may be complementary by necessity. Success for Teixidors and Harris Tweed is more than likely achieved through the actions of different people contributing differently at the various stages of the business and communities’ development. Leadership itself, whether embodied in charismatic persuasion or a trusted relationship, functions as a fulcrum through multiple leaders to achieve the different types of social capital critical to success; namely, an internal community and the capital benefits of a network of external collaborations or extended relationships.

That said, to secure the success of a community-based business, a confluence of different leaders and leadership styles alone may not be sufficient to transform leadership into business and community success. Leadership, as Nicolas Gutierrez, Ray Hilborn and Omar Defeo indicate, requires an unmistakable supplement. For Gutierrez et al. (2011), leadership in a co-management situation, in which two or more social actors negotiate, define and guarantee amongst themselves a fair share of the management functions, entitlements and responsibilities (Carlsson and Berkes 2004: 66), requires that at least one manager be entrepreneurial. That is, someone that demonstrates an ability to cope with risk and uncertainty, and a creative ability to solve problems through divergent means; an individual who is highly competitive, collaborative and efficient in the face of all available resources. Teixidors and Harris Tweed’s ability to survive and prosper in an increasingly competitive global market is testament to their capacity to benefit from strong leadership and, without doubt, an entrepreneurial spirit.

To conclude, the case studies of Teixidors and Harris Tweed present a range of practices that operate to the mutual benefit of their businesses and their respective communities. The heart of these practices includes investment in sustainable social capital, a strong commitment to building relationships through collaboration and entrepreneurial leadership. As we have seen, Teixidors and Harris Tweed provide models of social transformation and economic and social innovation in which heritage, artisan crafts and the community are key components to their success. As such, their business models are evidence of very good practice and the value of the European Union policy to promote and secure local knowledge economies while maintaining, retaining and exploiting specialist and traditional community skills.

References


Kirsten Scott

Craft as cross-cultural communication and exchange

The growing market for ethically produced goods provides an additional incentive for designer-makers to use ethically sourced materials. By sourcing new materials through sensitively-built, small-scale development projects, designer-makers in the developed world can have access to new, natural, socially and environmentally sustainable materials with distinctive aesthetics, while enabling makers in the developing world to increase their income by participating in global trade.

In order to source materials for my own craft practice as a designer-maker in accessories, I have established an alternative production model for craft materials: a small development project that considers environmental issues, design and product development, fair pay, quality of life and the institution of collective activities that build social capital amongst the women makers.

My methods have evolved through years of trial and error: less ones of pre-determined strategy and more ones of process. Serendipity, compromise, impulse, innovation and error - all integral to my creative practice - have in parts propelled, constrained, overcome and inspired the outcomes. Through the creative process, the agencies of both the makers any myself have been changed by the activities that have taken place and by the relationships developed.

The results have been the development of a craft culture in a remote region of Uganda that incorporates both indigenous and innovatory handicraft techniques; the development of social relations created through work; and the enrichment of my own practice through a process of engagement and exchange.

If I initially set out to develop new, natural and sustainable craft materials for handcrafted accessories and interior products in as ethical manner as seemed possible, I have had to comprehend multiple and diverse factors in order to navigate the realities and complexities of working with new artisans in Uganda. The textile products we have developed together are hybrid or ‘pidgin’ products, representing both a cross-cultural communication and a means of exchange that hold relevance in both societies. Through research, field work and my own practice I have identified some of the factors to be considered by the designer-makers when sourcing new materials through a small-scale development project in a developing country, presenting the immense benefits and joys and the enormous challenges and constraints of working in this way.
The growing, global market for ethically-produced goods presents crafts practitioners – in both developed and developing countries – with multiple opportunities. Handcrafted objects or textiles in natural, unmediated materials can be a powerful articulation of the value of un-alienated labour. As consumers search for authenticity and meaning in a world dominated by mass-production, the handmade is strongly reasserting itself in the marketplaces of interior décor and of fashion. Many mid- to high-end stores sell ranges of artisanal products, including limited edition items created through collaborative projects between designers and artisans in developing countries, such as Habitat, Designer’s Guild, the Conran Store and Anthropologie. High-profile exhibition opportunities for products made in this way include the New York Gifts Fair, Decorex and Made.

Seven years ago, in order to be able to source ethically-made, natural and sustainable millinery materials with specific aesthetic qualities and for an identifiable niche market, I established an alternative production model: a micro-development project in Uganda that considers environmental issues, design and product development, fair pay and quality of life for the women makers. I am one of many exploring alternative ways of working within the arena of craft.

The project grew from a long-standing personal fascination with both a real and an imagined ‘Africa’; from a love of making; and from a political strategy to build something that challenges accepted modes of practice and trade – in a post-colonial world – that have contributed to the impoverishment and disempowerment of African women.

Through my practice as a designer-maker, I wanted to explore my impressions of Africa – what was real, what was imagined, what authenticity might look like and how it might be communicated through craft. Ideas of ‘otherness’ (those often imperfect and culturally-biased perceptions of another’s identity), of the purity of the handmade and of social justice have all informed this project.

My methods have evolved through years of trial and error, dictated less by pre-determined strategy and more by impulse and inspiration, consultation and response. They reflect my background as a designer, craftsperson, teacher and mother, and my Christian faith. Through this micro-development project, my agency and the agency of the women makers in Uganda have been changed by the activities performed, by the relationships that have been generated and by the craft techniques we have exchanged: the collaboration has been dynamic. Serendipity, compromise, innovation and error – all integral to my creative practice – have in parts propelled, constrained, overcome and inspired the project and its outcomes.

The beginning

I fell in love with a romantic construct of ‘Africa’ as a child, seduced by an aesthetic drawn from fantasy and from those stereotypes originally formed in the colonial and pre-colonial eras (that continued to be propagated in the popular media). The television series *Daktari* in the 1960s, the many *Tarzan* films (1918 onwards, rarely filmed in Africa), *King Solomon’s Mines* (1937, 1950, 1985), *Mogambo* (1953), *Hatari* (1962), *Out of Africa* (1985) and countless others; anthropological and wildlife documentaries; old *National Geographic* magazines; books by Rider Haggard, Buchan, Burroughs, Van Der Post, Conrad and Durrell, all contributed to a homogeneous mental picture of a diverse continent – which in turn formed an aesthetic imprint.

Similar impressions of ‘Africa’ have significantly influenced western designers throughout the twentieth century, and already in the twenty-first. Many have drawn inspiration from African aesthetics that have become codified or western audiences – an impression of an impression. For example, Yves Saint Laurent’s celebrated ‘African’ collection of 1967 was inspired by the material culture of the Bambara people, primarily of Mali and Senegal. His use of raffia, flax, wooden beads and glass-beaded embroidery, and a rich palette of enhanced natural tones, was described rather regrettably by Harper’s...
Bazaar as ‘a fantasy of primitive genius’ (McDowell 2000: 337). Frequently western designers have found the borders between interpretation, stereotype and pastiche difficult to identify when drawing inspiration from the aesthetics of other cultures; some may have crossed them inadvertently. Visual characteristics that have become emblematic of this ‘Africa’ include natural colours and fabrics, khaki, animal skins and certain motifs.

The idea for the Pidgin Plait project crystallised just as an opportunity to visit Uganda was presented. As a maker, I knew that straw plait for hat making was becoming difficult to source and was convinced that the craft could be transported successfully to a rural community in the developing world to become a socially and environmentally sustainable source of income generation for the plaiters.

Mat making from braids of plaited vegetable fibre has been practised in East Africa for many centuries and continues to be an important cultural practice, so related skills were already embedded in the community. The idea was well received by local people in Bubutya, the village in south-eastern Uganda where the project is based. I began with a teaching programme for making a basic, narrow, decorative plait – substituting local palm leaves for straw; this was followed by an introduction to how the plait might be used, and later the development of more plaits and plaited products.

**How it has evolved**

Over the last seven years the project has evolved somewhat. It is still small-scale, built around (and constrained by) the challenging circumstances of the women makers and by their remote location. We have all been impacted one way or another by our engagement through craft.

In extending their skills set and selling work that they have made – and to some extent in the kudos and the premium attached to selling overseas – the women have grown in confidence and in stature within their community. There have been many unexpected outcomes from the project – for example the strengthening of marriages: in a staunchly patriarchal community, women who are able to contribute to household income are valued much more by their husbands. A third of the group are married (polygamously); the fact that they are able to earn makes it much less likely that they and their children will be abandoned or neglected. The women are able to manage more easily the payment of school fees and the purchase of household necessities such as paraffin and soap. Through growing in self-assurance and in bonding as a group, these women – previously isolated and lacking in confidence – have begun to make collective decisions and to take active agency over their futures. For example, they have invested a percentage of their income from the plait in goats; at last count they had nine goats, to be used as breeding stock for further income generation.

Local customers have emerged for sun hats, bags and baskets made from the plaits. Although the makers get a much lower return for their work in the local market, it is important that they are not dependent on the vagaries of overseas trade.

Through networks developed in the capital, Kampala, I became aware of a Ugandan market for occasion headwear. I worked with the plait group to create small, quirky hats in simple, accessible shapes that aimed to embody an urban Ugandan take on contemporary western millinery. These hats were designed to be worn at weddings or the ‘Royal Ascot’ Goat Race in Kampala, and were made from plaits based on indigenous patterns, trimmed with local materials. However, they have yet to be reliably reproduced in my absence and therefore more training is needed to develop the women’s confidence in shape-making with the braids.

Overall, the project is doing well and has been beneficial to all parties: women who were previously mocked by their neighbours for wasting time plaiting are now recognised as industrious and better able to provide for their dependants. They have become good role models for other women and girls in their community.

**Issues**

Before I visited Uganda, I had naively assumed that natural dye processes would still be widely in use. While I was keen to use natural dyes for the plaited braids, this has not proved possible for all. Chemical dyes (often Azo dyes) have been almost universally adopted by Ugandan artisans in preference to natural dyes, because of the speed of their take up by the normally resistant palm leaves and the brightness of the colours achieved. The group and I have spent many days experimenting with local plant matter in order to rediscover natural dyes, but with very mixed results. Annatto, tomato leaves and turmeric have been quite successful, but most things we have tried yield various shades of beige. Much more work needs to be done to find local plant matter than can effectively and sustainably be used for dyeing palm.

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I have found that very fixed deadlines for plait orders may be unrealistic, as they fail to take account of the daily challenges faced by the artisans. Women in rural areas of Uganda shoulder enormous responsibilities: planting, weeding, harvesting, cooking, collecting fi ewood and water, giving birth to and caring for many children and other dependants, managing regular bouts of malaria, etc. Eighty per cent of Ugandan agricultural labour is performed by unpaid women (Tuyizere 2007: 49).

Women are seen as workers who were married so that they could labour in homes and in the fields, or as a necessary source of wealth, as they bring bride price on marriage, or they are perceived as mere reproduction agents. Traditionally, they are expected to fulfil the roles of mother, housewife, family worker and agricultural labourer. (Tuyizere 2007: 49)

They frequently live in precarious circumstances. For example, some 73 per cent of women and girls in the kingdom of Busoga – where the project is based – suffer domestic violence in their lives. They may not see the importance of a timely start to a meeting or an order deadline because it is of less urgency to them in a given moment than taking advantage of rain-softened soil to plant, or tending to a sick child. To those of us from north-western Europe – where punctuality is culturally important – this can be problematic. I have had had to factor in potential delays in my ordering.

Communication with the group, and with local agents trying to help, has been one of the biggest challenges. I speak a very small amount of the local Lusoga language and – although some local people speak good English – there are cultural differences, nuances and habits in the ways that we express ourselves. What I (or they) hear is not necessarily what is being said.

When I am there I have found that showing what I mean (for example, a technique, colour or a style detail) is better than just saying it; therefore experience as a designer, teacher and maker has been extremely useful. But that doesn’t help me when I am trying to place an order from the UK. Even when corresponding with local agents that have a (more or less) regular phone signal or internet access, communication has been a challenge. In order to have a question answered I have learned to include only one question per message. One cannot be clear enough.

Misunderstandings can mean that artisans lose valuable time by making the wrong goods for an order. On several occasions my conscience has prompted me to pay for things that I neither asked for nor wanted, but which have been made in good faith or out of real need; this is unsustainable. As a result, I have had to limit the types of plait we offer in order to ensure clarity and consistency. Communication has improved recently, since I engaged someone from a crafts organisation in Kampala to manage checking orders, packing and shipping.

The materials the plaiters use may be under threat. For example, in the Masaka district of south-western Uganda, some palm trees whose leaves have been sustainably harvested for many decades have been cut down so that their trunks may be used as fence posts – often illegally, but little enforced. As a result, women in that region have been told that they may no longer harvest palm leaves from trees on ‘public’ land, even though doing so need not harm the remaining trees.

Another threat to Ugandan wild date palms is the clearance of the swamps they grow in for agriculture, to feed a growing population. The price of palm leaves is therefore higher in the markets and there are fewer opportunities to self-harvest. I have been considering ways in which to incentivise the growing of these palms, but from a distance and with limited resources this is a challenge.

**Impact on my practice**

In terms of my own practice, the project has had – and continues to have – an enormous impact. I initially set out to develop a sustainable material for western couture millinery that would generate an income for some women in rural Uganda. Through the process of learning new skills in plaiting plant fibres, adapting historic patterns to new contexts, creating new plaits and other textiles – and through immersion in a real ‘Africa’ – my creative practice has been enriched and has taken new directions.

This Immersion in everyday colours and textures on my field rips to Uganda has fed my obsession with irregular surface and a specific palette. From the original, highly textural plaits and from other textile techniques – adopted in response to visual stimuli and local materials – I developed a series of head sculptures derived from historic African hair forms through abstraction and distortion. These entirely handmade pieces – as well as films, textiles and photography – were produced for an exhibition.
called ‘Pidgin Plait’ that explored ideas of ‘artefact’, ‘authenticity’, ‘mission’ and ‘otherness’ and represent part of my ongoing dialogue with these subjects.

Initially, I had not factored in the impact that indigenous Ugandan plaits would have on my work and on the project itself. Through spending time with women mat makers on a series of field trips to Uganda, I learned about local techniques and designs before experimenting to discover how to reproduce and then adapt the traditional wide, multi-stranded braids (used for mat making) into narrower, more flexible braids for accessories. It was a challenge to retain the key elements of certain patterns while using fewer strands – those developed to date are far less complex than most indigenous plaits. However, they are already finding markets in the UK.

In recent years I have become acquainted with some particularly skilled mat makers in the southwest of Uganda, who plait text into their braids. I hope to learn these techniques from them in the near future, to incorporate in my own work and to help them to find new applications and new markets for their products.

Craft research is a dynamic force: each new understanding opens up new ideas and new possibilities. I had not anticipated becoming fascinated with the history of mat making in East Africa, but my research in this area has become part of my life. Another unpredicted outcome is that – as I have come to comprehend the circumstances of the women makers and to empathise with them in the daily hardships they face – I have been considering ways in which craft may be used to vocalise and in part address issues such as domestic violence and the value placed upon women in such patriarchal communities. I am currently drafting a proposal for a project that will use craft, in partnership with other programmes, as an agent for activism and social change.

Conclusion

To summarise, at this point in time the Pidgin Plait project comprises three tangible strands: the production of environmentally-friendly plaited braids; the production of relatively accessible fashion hats for the Ugandan and possibly UK markets; and my own practice as a crafts-person, textile artist and researcher.

Through this project a series of plaits have been created that form a means of communication between the women makers in rural south-eastern Uganda and the western couture fashion world.

In the process of bringing together some historic craft traditions of both cultures I have worked independently in the UK and collaboratively in Uganda to develop textiles and products that represent aesthetic, technical and cultural amalgams. I have chosen – and often been forced – to act spontaneously, embracing serendipity, responding to events in Uganda, and rejoicing as group members have produced work that had not been anticipated but has had great merit of its own. This is one of the joys of collaboration: an exchange of the unknown and the unforeseen. If I went into the project with the initial aim to develop new, ethically-produced millinery materials through a development project in Uganda, I have discovered and learned more than I could ever have imagined.

This project is not solely a design, a development or a craft project, or only about sourcing new materials overseas; it is not just about ‘doing good’ or only about revisioning indigenous craft. It comprises all of these things and more. While many grassroots design-for-development projects are formed (or otherwise supported) by various organisations or institutions, the Pidgin Plait project differs in being established by a solo agent – a designer-maker identifying a market need, then working in a collaborative, holistic, adaptive and mutually beneficial way with a remote community in order to create new materials for a specific market. It shows how design and handicraft have been used not only in the inspiration for and creation of a product but in the formation of the project itself. It therefore suggests an alternative model for ways in which designers and craftspeople can work.

The materials and the artifacts produced through the project (and alongside the project) articulate aspects of our separate and shared histories and our current status quos. Through the process of our interaction, an exchange of related, heritage craft skills from two very different cultures has taken place, in the development of hybrid or ‘pidgin’ techniques and patterns with applications for local and overseas markets.

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Nanci Takeyama

Designing for and with Communities

This investigation is part of the research “From Anthropology To Design, A Heritage Management Project In The New Silk Road”, funded by Nanyang Technological University’s New Silk Road initiative. The aim of this project is to create holistic models for design partnerships with non-profit, craft-based communities in South-east Asia. By working closely with local artisans, this project aspires to promote the crafts in South-east Asia by creating products that preserves cultural integrity, improve the quality of the craftsmanship that will consequently lead to better livelihoods for the communities.

Together with our alumni, I have created “design for” a non-profit organization that provides an open platform for collaborations on social design projects. Utilising scholarly research, we advocate cultural understanding and preservation by using design as a dialogue. Through this dialogue, we aim to translate, re-interpret, adapt, innovate ideas and forms in traditional crafts for contemporary living. By sharing cultural information we aim to promote ethical consumerism and sustainable living with the communities we partner with.

“design for” takes after models of Asian apprenticeships, based on the methods of traditional craftsmanship, and the adoption of a hands-on, process-driven method. By visiting craft villages and learning from the original artisans themselves, we understand their philosophy to life, learn from their techniques and derive a wealth of knowledge that is slowly being forgotten today. This translates to a model of research into meaning, design by making, and embracing human relationships through sharing.

Historically, there is a strong link between craft, design and meaning as the basis to the sense of cultural identity in the Asian cultures where the people live with a respect for nature and an appreciation of tradition. “design for” sees the value in this perspective, and seeks to apply it to our South-east Asian region, rich in heritage, culture and craftsmanship.

Laos was chosen to be site for the pilot project because of its invaluable hand woven textiles. The research in Laos began with ethnographic documentation of its material culture, in order to understand and re-interpret the living culture in present-day Laotian communities through its most important symbol, the Cosmic Serpent (depending on the context, Naak or Ngueak in Laotian, Naga in Pali).

The cultural and visual investigation on the Cosmic Serpent as a symbol has been chosen as an entry point to the project. Believed to be a central animistic figure that predates Buddhism, the Cosmic Serpent was a symbol used in many Shamanistic ritual textiles. Today, it continues to be significant to the cultural identity of the Laotians as witnessed in its material culture. However, interviews conducted during field trips showed that a deeper understanding about this symbol has been gradually lost. Despite that, the weavers still produce wonderful textiles, most of them featuring the Cosmic Serpents, without understanding its meanings.

The aim of this paper is to present the work developed in the last three years, working with weaving communities in Laos, on research, design and community work surrounding the weaving motif of the Cosmic Serpent.

designfor.co
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Designing for and with communities. An exploration of the meaning of Asian forms

Introduction

The Kalachakra mandala of Tibet is a classic example of a visual scripture of the Kalachakra Tantra and the teachings are revealed in the form of a rich symbolic visual language. Through meditation and visualisations, this two-dimensional blueprint is used as a meditational tool that is generated in the practitioner’s mind. The mandala is then perceived as a three-dimensional palace, the living abode of the gods. The word Kala translates as time, while chakra signifies wheel. Therefore, this mandala is a diagram, a visual guide to liberating oneself from the wheel of time. In Buddhist terms, this liberation leads the way to timeless eternity or, in other words, enlightenment. In Asia such models of spirituality express a philosophical understanding of the cosmos and are translated into visual language that is still partially understood by many and found as visual repertoire in material culture even today.

Figure 01. Kalachakra Mandala of Tibet, three dimensional rendering and relations with human body

Figure 02. Scene of Churning of the Milky Ocean
In India we find the burning of the Milky Ocean narrative from the classic Indian epic Mahabharata. In this tale, the great rishi Durvasas curses Indra and, as a result, Indra begins to lose his power. The gods are concerned that if Indra becomes weak, they will be defeated by their enemies and demons. Vishnu instructs them to make an alliance with the demons to churn the Ocean of Milk to create amrita. Demons and gods bring Mount Mandara to the ocean’s edge to stir the waters. They balance the Mount on the back of the turtle king Kuma, and the gods grab the tail, while the demons take hold of the head of the serpent deity, Naga Vasuka, to stir the waters. This motion tears the trees on Mount Mandara from their roots, and the entire mountain is soon ablaze, destroying all plant life. Juices from the trees flow into the ocean and over the gods, making them immortal. Dhanwantari rises from the ocean, holding a cup filled with oma, the elixir of immortality. In Southeast Asia, this is a common visual narrative, and symbolic elements from this passage are evident from ceremonial palanquins in Indonesia to the reliefs of Angkor Wat in Cambodia.

Figure 03. Relationship between mental model, visual language and material culture

**Approach**

In traditional Asian iconography, such mental models or narratives were translated into visual language, and parts of these narratives were represented in material culture. However, as contemporary societies have become increasingly focused on technological advancement, the ability to understand such visual models has diminished, including the visual language, which are merely understood as meaningless superficial ornaments.

It is only in the last couple of decades, with the exchange of information between different fields of expertise that scholars have begun to re-examine these ornaments in Asia. Researchers agree that these ornaments have significance and are part of a visual narrative. The primary purpose of the study described in this paper is to explore methods to re-connect the understanding between the mental model, visual language, and material culture, where research feeds into design inspirations and the knowledge is shared with all members of the community.

![Flower Basket, Shono Shounsai](image1)

Figure 04. Flower Basket, Shono Shounsai

The research is inspired by the sense of cultural identity in Japan, which is reflected in the material culture. In Japan, the links between craft and design are still strong, and craft itself is not considered as a lower form of art.

An example of Japanese craft is a flower basket made in 1969 by Shono Shounsai, a world-renowned artisan who was the first bamboo craftsman in Japan to be named Living National Treasure in 1967.

This is a popular term for those individuals certified as Preservers of Important Intangible Cultural Properties in Japan.

The continuum between craft and design may be observed in the work of Japanese architect Shigeru Ban. Ban was the winner of the international design competition for the Centre Pompidou Metz, which opened in France in 2010. A Chinese bamboo hat inspired the structure of the winning project. As we witness a shift from local to global cultures, this type of unique re-interpretation of traditional form becomes an innovation in design.
Research model

For this study, a research model was developed to connect the values of research, design and the community. The research was conducted from an ethnographic point of view, enabling an understanding of the cultural context of a particular group of people, as well as their material culture, in order to comprehend the meanings of visual forms and symbols relevant to this worldview. The knowledge uncovered through this model is used to inspire the design process to create meaningful and culturally-respectful designs that will remain relevant in today’s world.

In the design segment of this research model, in order to develop an understanding of the methods and materials of traditional craft making, learning by making is the key. The aim is to design with respect to the cultural and material context. The results of the research and design sections culminate in the final segment of the model, the community. Designs are shared in order to give back something to the community where the research took place. The project described in detail which follows, aims to align itself with the values of ethical consumerism and to work with NGOs in Southeast Asia to ensure fair trade for the artisans. Importance is placed on the well-being of communities and maintenance of their cultural heritage in a sustainable way.

This multi-layered project, entitled ‘design for’, is a lifetime framework. Each section -- research, design, and community -- is related to the other. However, a module may also work independently, producing its own results. The dialogue between the segments of the model is where innovation can take place. The uniqueness of this project is the attempt to re-connect these parts that were once united in traditional philosophy but became separated due to the contemporary world’s fragmented worldview.

Project overview

A group of researchers from The School of Art Design and Media at Nanyang Technological University created ‘design for’ as an open platform for collaborations on social design ventures. In creating a network of partners, the team aspires to create design solutions for the good of the individual, a better society and, ultimately, a sustainable world in a holistic way. By visiting craft villages and learning from the original artisans themselves, project members aim to understand the artisans’ philosophy of life and learn from their techniques in order to obtain a body of knowledge for future safekeeping. These actions translate from a model of research into meaning, design by making, and embracing human relationships through sharing.

The study that took place in the Lao People’s Democratic Republic is part of the ‘From
Anthropology To Design, A Heritage Management Project In The New Silk Road', funded by Nanyang Technological University’s New Silk Road initiative. The Lao People’s Democratic Republic or Laos’ population consists of 6.6 million people with 49 officially ecognised ethnic groups. Its citizens have experienced various upheavals, but instability was the most severe during the twentieth century, especially during the Second French Indochina War (1954 – 1975). After the communist revolution that occurred in December 1975, the country was subjected to embargos, further isolating the population until the mid-1980s when the Lao government adopted a market economy, opening borders to commerce and aid.

The research team selected Laos as the site for the pilot project because of its tradition of handwoven textiles. Presently, over 80 per cent of Laos’ population resides in rural areas where handwoven textile production and the use of natural dyes persists. Although Laos is considered to be one of the poorest countries in Southeast Asia, the country has some of the most intricate silk and cotton textiles in the region, decorated with a variety of techniques.

Fieldwork

The research in Laos began with documentation of the country’s material culture in order to understand and re-interpret the living culture. The project team spent its first field trip living in villages in order to learn the techniques needed to produce various craft items. In one village, bamboo artisans taught team members how to weave tiny baskets. The team also visited a weaving village where natural rather than chemical ingredients - animal, plant and mineral - are used as dyes. This village’s specialty is to use mud to colour silk threads. The result is a beautiful charcoal colour.

Because the production of textiles is an important part of Lao culture, many weavers still retain knowledge about harvesting materials from nature, dyeing cotton and silk threads and weaving cloth. Until a few decades ago, the country was self-sufficient meeting the needs of the citizens’ everyday and special-occasion textiles. Textile producers both dyed and hand-spun thread, as well as weaving cloth by hand for their own house wares, including bed sheets, curtains, blankets, and mosquito nets. The weavers also produced fabric for their own and for relatives’ clothing.

Cosmic serpent

Figure 09 A cosmic serpent adorning a temple balustrade

The team chose to investigate the various meanings and symbols of the cosmic serpent (depending on the context, nak or ngueak in Laos; naga in Pali), together with present-day communities. Believed to be an animistic deity that predates Buddhism, the cosmic serpent has been an icon that has been used in many animist textiles, such as skirts worn by shamans during rites. Today it continues to be significant to the cultural identity of the Lao and, according to our research findings, numerous forms of the cosmic serpent exist in Laos.
During the field research, the team interviewed artisans about the symbolism of the various cosmic serpent patterns and found that their understanding was limited. Some of the interviewees included weavers who formulate cosmic serpent motifs in their textiles. However, the reply to questions revealed that they had little knowledge of the patterns’ symbolism. The weavers simply copy the designs from previously-woven textiles. The 75-year-old master weaver of the village stated that textiles are supposed to tell a story, but she only knew some of the narrative.

In Vientiane, the national capital of Laos, the team interviewed scholars and researchers who only understood the meaning of isolated symbols and were unable to connect them to a wider narrative. This lack of information, therefore, confirmed to us that this is an important topic for continued research. ‘design for’ is continuing to partner with researchers to investigate further the cosmic serpent symbolism.

Research questions:

How can the team, as designers, help to bridge the knowledge between academics and the artisan community?

How can ‘design for’ help bring artisans and their products to international markets and help them earn better wages in order to perpetuate their craft traditions?

Process

A review of literature on the symbolism of the cosmic serpent was conducted from both a universal and a Lao perspective. Team members presented their literature reviews during weekly meetings set aside for discussion and the exchange of ideas. As an interface to the field findings and academic research, the team conducted thematic visual explorations. The aim of the exercise was to encourage visual thinking and expression in order to deepen the understanding of the cosmic serpent as a symbol. These visual explorations were also the catalyst for generating ideas and inspiration for new product and craft opportunities.
The primary challenge faced during this project was the lack of literary reference materials and this led to a consultation with Tai textiles expert, Patricia Cheesman, based in Chiang Mai, Thailand. A combined inquiry into Cheesman’s decades of investigation in the field directed us to a paper by Dr. Amphay Doré, entitled, ‘Introduction to Lao Traditional Weaving Patterns: History and Meaning’, which was presented at the 10th International Conference on Thai Studies held in 2008. In his paper Doré unveiled the origins and meanings of some of the most important patterns of the cosmic serpent, and this article led us to confirm our own prior understanding of the cosmic serpent motifs and their symbolism. Later, the team was able to select the three most important motifs and correlate their meanings in consultation with Cheesman. These are:

Nak taun tao – fertility;
Nak phanh hang- duality;
Kong nak – transcendence.

A link was created between the academic research and design decisions and the results highlighted the meanings of these patterns. As this knowledge had been lost among some weavers in Laos, ‘design for’ also aimed to name the collections based on the motifs, linking the pattern’s name and meaning, in order to reinforce the information to both artisans and the general audience.

The research became the source of inspiration for developing these meanings visually and the patterns’ symbolism were further emphasised using shape, materials, colours, and textures. These elements are the building blocks of visual communication. The design process included iterative rounds of sketching, mock-ups and critiques, which were carried out over a period of several months.

The ‘design for’ team took on the challenge to create products featuring researched Lao cosmic serpent motifs. The team took part in a sewing workshop in order to better understand the potential of fabric as a material since no one had any experience of using cloth in product design. ‘design for’ enlisted ‘A Craft Initiative’, a group of artists and artisans who are dedicated to creating and promoting hand-sewn goods in Singapore.

The first collections feature products using the three meanings and patterns described above. As the team has learnt that artisans take on innovative elements incrementally, the designs were created taking into consideration the materials and skills available to the artisans at the present moment. The outcome may be used as a tool for educating both weavers and consumers about the symbolism behind these textiles.

Figure 12. Relationship between pattern, meaning and visual traits

Nak taun tao collection

“Pattern of two serpents lined horizontally, heads apart but bodies intermingled: it means Ngoek intercourse.” (Doré 2008: 2) Colour signifies aundance and fertility in the nak taun tao collection. Some items in this collection consist of a double-layered cloth. On one side, the cosmic serpent is depicted while water and sea elements adorn the other side.

Figure 13. Nak taun tao motif, textile specially woven for this project
Nak phanh hang collection

“Pattern of a two-headed serpent standing vertically in ‘V’ shape: in fact it is two serpents with tails enlaced. This figure would be the illustration of the Fuxi and Nüwa myth.” (Doré 2000: 1) Monochrome and symmetry accentuate the idea of duality in the nak phanh hang collection.

Kong nak collection

“Succession of serpents means travelling of Ngoeks, mainly between heaven and earth.” (Doré 2008: 2) The kong nak collection incorporates two types of weaves on bamboo and silk, demonstrating that transcendence is the passage from one stage to another.

‘A Craft Initiative of Singapore’ will produce the final prototypes, using materials dyed and woven in Laos. This group was selected since it understands international consumer taste and quality requirements. The project aims to enlighten the Lao partners as to these tastes and standards. The project will exhibit its outcomes at the Asian Civilisations Museum, Singapore. The collaborative design outcomes are featured in this exhibit, which is entitled “Handmade in Asia: Weaving the cosmic serpent” in Laos from February until April 2014.

The project will seek future collaborations with business partners and investors, so that these designs can be produced in collaboration with the weaving groups on a non-profit basis and the returns from the sales will benefit the development of the villages.

After the completion of this phase, ‘design for’ intends to continue the research on the cosmic serpent to produce an educational textbook for weaving groups in Laos. The primary aim of this textbook is to share the lost stories and symbolism of the cosmic serpent motifs (previously passed on orally, from mother to daughter) to the weaving communities.
Conclusion
The overall aim of this project was to re-discover the cosmic serpent's connections to the lives of the Lao people through field work, scholarly research, community collaborations, and collaborative design. The fabrication of products that are culturally respectful yet still relevant in today's world reconnect this mystical symbol to its cultural context. Living with the artisans gave team members an insight into another way of life, which is based on using handmade objects that are harmless to the environment, as well as home-grown and home-cooked foods. The research team gained knowledge about social values, mutual support of community members and more harmonious relationships with nature.

In the world we live in today, the value of hand made versus machine made is overlooked by most people, as their choices are based on cost. As a result, important intangible cultures such as this are slowing vanishing. The results of this project reinforced the idea that these hand-made practices are not just important to the particular cultures concerned, but as part of humanity's heritage, they serve as lessons to live a holistic life in harmony with material culture and the environment.

References


Bibliography


This paper discusses the possibility of transferring amateur knitting practice from the making of new items to the remaking of existing garments. Knitting has enjoyed a surge in popularity in the last decade, and many people are now knitting items for themselves to wear. In sustainability terms, this is positive; amateur fashion making could offer a more satisfying and less materially intensive alternative to mass-produced clothing. However, because knitters focus on making new items, their efforts mirror - rather than challenge - the linear production-consumption model of the mainstream fashion industry.

The reworking of existing garments could be a more radical type of amateur making, which extends the making relationship and disrupts the prevalent fashion system. Remaking can be seen as part of what Kate Fletcher calls ‘the craft of use’: the practices associated with wearing and caring for clothes. There are many examples of wearers restyling and upcycling garments using sewing techniques. A variety of blog posts and books provide tutorials for turning old jumpers into quirky fashion and home accessories. These projects transform knitted garments by felting, cutting and sewing, and treat the fabric as a continuous sheet. However, the knitted structure is inherently ‘tinkerable’; the rows of intermeshed loops can be unravelled, laddered and reformed. Knit-based techniques, which treat each loop as a unit, or a building block, can be used to transform knitted garments. If these techniques were in common practice, knitters would be able to engage in remaking, through knitting. Such techniques were common practice in the past, but have fallen out of favour; the tacit knowledge of how to unravel, alter, replace and re-knit has largely been lost.

Working as a design activist, I want to initiate reknitting as a new strand of amateur making activity. For this research, I carried out a pilot project in which I developed methods of altering knitted garments using knit-based techniques. I rediscovered knowledge from the past, and developed new approaches, creating a re-knitting practice appropriate for the garments in our wardrobes today. I shared the techniques with a small group of female amateur knitters at a series of workshops.

My aim was to explore the possibility of transferring amateur knitting practice from the making of new items to the remaking of existing garments. The result was positive; the knitters embraced the idea of reknitting and the project culminated in each participant using the techniques to rework a knitted item from their own wardrobe. Discussions about possible future projects showed that reknitting could become a regular activity, which links a making practice with wardrobe (use) practices. As one knitter remarked, when a garment is worn out or unwanted, it is ‘not the end of the journey … it can always become something else’. However, the project also indicated that amateur reknitting requires support in order to flourish.

craftofuse.org
keepandshare.co.uk/research/gallery
Introduction
This paper discusses the possibility of transferring amateur knitting practice from the making of new items to the remaking of existing garments. Remaking can be seen as part of what Kate Fletcher (2013) calls the ‘craft of use’, and describes as ‘the satisfying and resourceful practices associated with using clothes’. While Fletcher researches existing examples of such practices, I explored the possibility of initiating re-knitting as a new craft of use in my PhD research, working through my existing practice as a designer-maker of knitwear.

The research involved a group of seven female amateur knitters, aged between 43 and 66. At the start of the project, I conducted individual garment-based interviews to elicit the initial attitudes of each participant towards fashion and knitting. At a series of workshop sessions, we tested methods of re-knitting existing garments and explored design skills; the project culminated in each participant using re-knitting techniques to alter an item from their own wardrobe. I have included various quotes from the participants in this paper.

Making and remaking
Knitting has enjoyed a surge in popularity in the last decade, and many people are now knitting items for themselves to wear. In sustainability terms, this is positive; amateur fashion-making could offer a more satisfying and less materially intensive alternative to mass-produced clothing. However, the majority of knitters focus on making new items, mirroring – rather than challenging – the linear production-consumption model of the mainstream fashion industry. Gill and Lopes (2011: 312) argue that too many sustainable design initiatives involve the production of new things; they suggest that ‘the challenge for the material practices of design might be recast in terms of a negotiation with those things already in existence’. Similarly, Bunham (2009: 16) identifies an opportunity for ‘new design processes which are not about the use of new resources, but about the ingenuity to expand the potential of existing ones’. I am excited by these ideas, and see a direct link with amateur knitting. The reworking of existing garments could be a more radical type of amateur making, which extends the making relationship and disrupts the prevalent fashion system.

There are many examples of wearers restyling and upcycling garments using sewing techniques. In my experience, remaking is most frequently associated with garments made from woven and jersey fabrics, such as dresses, tops and jeans. Fine and Leopold (1993) explain that it was common practice in the eighteenth century to restyle dresses time after time, in order to make the most of valuable fabric. It was also common for children’s clothes to be made from outdated adult garments during the same era (Styles 2010). During the Second World War, when resources were scarce, remaking clothing once again became a necessity; Turner (2011) describes various ingenious methods employed by women at this time. Today, fashion labels such as Junky Styling offer ready-to-wear reworked garments and personalised restyling services. Although domestic repair practice has declined in recent decades, restyling and mending are enjoying a current resurgence along with other types of making, with support available via books, magazines, workshops and blogs.

Re-knitting
Sewing techniques can be used to rework knitted garments; various blog posts and books provide tutorials for turning unwanted jumpers into quirky fashion and home accessories. These projects transform knitted garments by felting, cutting and sewing. In contrast, I am using knitting to rework knitted garments. I am focusing on techniques which use a knitter’s existing skills and knowledge, and engage with the structure of the knitted fabric; in general they involve adding or replacing sections of knitted fabric within a garment. The processes are flexible in terms of scale, transformation, motivation and visibility, restricted only by my chosen emphasis on knitting. Sewing processes are included if they engage directly with the knitted structure, such as grafting (the seamless joining of two knitted fabrics).
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There is a piece of good advice for knitters that the Shetland Islanders mention over and over again. ‘Never, ever sew when you can knit.’ (Pearson 1980: 14)

The knitted fabric that I am concerned with is technically described as ‘weft knitted’. There are two varieties of knitting: weft knitting and warp knitting. Warp knitting is solely an industrial process, used for specialist applications such as car upholstery (Spencer 2001). Weft knitting is far more diverse, incorporating hand knitting, domestic machine knitting and industrial production; the vast majority of knitwear in our wardrobes is weft knitted. In weft knitting, the fabric structure is ‘progressively built-up from row after row of intermeshed loops’ (Spencer 2001: 16). These loops can be retrospectively reconfigured, or – more colloquially – ‘tinkered with’.

Such loops can be retroactively manipulated, for example, by felting or cutting. Remaking uses techniques which break up the continuous structure, such as grafting, which requires the knitter to add a new loop to a series of loops that are not directly connected to each other. Grafting is a technique I have used to repair holes in garments. I have also used a simple loop technique to mend tears in garments. These are forms of remaking, in which the knitter makes visible the repair process, rather than attempting to disguise it. In contrast, weft knitting is more challenging – the knitted fabric that I am concerned with is technically described as ‘weft knitted’.
Rows can be unravelled, to gradually deconstruct the fabric, and be re-knitted. The vertical columns of loops can be unmeshed (laddered) and reformed. New loops can be picked up within a fabric to create integrally joined pieces. The techniques that I have developed use the knitted structure’s capability for reconfiguration, treating each loop as a unit, or a building block. In contrast, methods of reworking knitwear by cutting and sewing treat the fabric as a continuous sheet.

In the past, remaking would have been an integral part of the practice of knitting for many people. Pearson (1980: 13) describes how traditional gansey sleeves are knitted down from the shoulder, ‘to enable one to repair any worn parts by simply pulling back past the hole and knitting back down again to the cuff’. Annemor Sundbø, who collects homemade Norwegian garments, has a collection of stockings which ‘illustrate the practice of knitting new heels and toes on old stocking legs ... stocking legs may be 100 years older than the feet’ (Sundbø 2000: 136–7). Re-knitting has been particularly prevalent during periods of material scarcity, such as the Second World War. A series of knitting books published in the 1940s included entire sections devoted to ‘the making of new garments from old’. They show numerous examples of re-knitting, with sorrowful ‘before’ and glamorous ‘after’ photographs.

A few of the participants in my research had memories of re-knitting activities taking place within their families. Several mentioned unravelling whole garments to reclaim the yarn; one participant also shared a story of her aunt re-knitting sections of her husband’s jumpers.

When it got really ratty, the polo neck would get all stretched and horrible. She would re-do the cuffs and sh’d unpick the polo neck, and re-knit a new polo neck for him to keep him snug in the winter.

Although some people still re-knit today – an Internet search identifies various instructions for unravelling jumpers to re-use the yarn – this practice seems to be marginal within the knitting community. Despite the extended contact with amateur knitters I have had in the course of my practice, I have seldom heard of anyone using their knitting skills to rework existing knitted items. The tacit knowledge of how to unravel, alter, replace and re-knit has largely been lost.

Developing re-knitting techniques

Working as a design activist, I want to initiate re-knitting as a new strand of amateur making activity. For this research, I carried out a pilot project in which I developed methods of altering knitted garments using knit-based techniques. I rediscovered knowledge from the past – via knitting books spanning the last hundred years – and used my knowledge of knitting to develop new approaches, creating a re-knitting practice appropriate for the garments in our wardrobes today. For example, 1940s instructions focus solely on hand-knitted items; today, we have many more industrially produced, fine gauge knitted garments in our wardrobes. I included these items in my scope, and learned to work with the tiny loops within fine gauge fabrics.

From these two starting points, I developed a ‘spectrum’ of fourteen re-knitting treatments: modifications that can be made to existing items of knitwear. These modifications include, for example, ‘integral embellish’, where decoration is knitted on to the existing fabric; ‘afterthought pocket’, where the fabric is opened to allow the insertion of a hanging pocket; ‘replace edge section’, which allows the knitter to replace a worn cuff or hem and ‘cut open and trim’, which involves the insertion of new openings. Each treatment has countless variations, depending on the characteristics of the original garment and the design of the alteration.

I communicated these treatments via a diagram, arranged according to the way in which the knitted fabric is technically altered (without opening the fabric, opening it horizontally, or cutting it vertically or diagonally). The spectrum is open; it is quite possible that more re-knitting treatments could be identified and placed as new pathways on the diagram. At the first knitting workshop, I showed the spectrum to the...
group and described how it had been developed. I was pleased to find that the participants understood the diagram and the open choices that it represented.

If you start off with our sweater, you can look down there, and think of all the options. You'd start to think of ideas, wouldn't you?

It could be incremental. If you start doing one thing, then you might think: I'll do this as well, depending on how it progresses as you go along.

My next task was to physically explore the possibilities I had identified or altering knitted garments using knit-based techniques, to identify problems and further options. At the same time, I started to develop guidance that would support knitters in planning and carrying out the treatments. Rather than trying to develop every treatment in the same way, and to the same level, I developed some more than others. This approach allowed me to focus on the treatments I thought would be particularly interesting and appealing, and to develop them in whatever way seemed most appropriate, without closing down the opportunity for future development of the other treatments. I worked interactively with the group of knitters during this process, seeing them as co-developers and responding to their requests.

The knitters asked whether the resources I was developing could be made available to them online. In response, I created a re-knitting area in the research section of my website (http://www. keepandshare.co.uk/research). Over the course of the project this area grew from a single page to a sprawling, hyperlinked resource in which I recorded the instructions, tools and advice I had developed. The resource is designed to continue growing; some areas are well-developed, while others remain as ‘stubs’, to be developed in the future. Towards the end of the project, I added introductory information – describing the history and future potential of re-knitting – in order to make the resource usable by knitters outside the research group.

Anticipating re-knitting

In the information I distributed to potential participants before the research project, I said that we would be developing knit-based techniques for transforming existing knitwear. Hence, all of the knitters who took part had expressed an interest in this activity and were intrigued by the idea, as this quote from one participant (referring to a little-worn item from her wardrobe) illustrates:

I’m extremely interested to try and change [it] ... I would be delighted to try and jazz something up.

However, the participants were generally unsure about what re-knitting would involve, or what it might look like:

I can’t see it, I can’t visualise, I can’t imagine what you would do. I’m not very imaginative in that way.

Another participant said that she did not know of any techniques that would successfully enhance a garment:

My experience of altering things, or dressing them up, is limited but ... they always involved changing the buttons or putting lace on it or something like that. And it just never looked right. It was never good enough that you’d want to wear it. It was a lot of effort, and the result was unsatisfactory.

Engaging with re-knitting

At the workshops, the participants quickly embraced the potential of re-knitting, and responded positively to the treatments. Some particularly appealed to them; for example, several participants liked the idea of ‘cardiganising’ their jumpers using the ‘cut open and trim’ treatment, feeling it would make these garments more wearable. They liked the finish of the rim used for this treatment, considering it to be elegant in appearance and relatively simple to execute.

As we tested the treatments in the workshops, a number of issues arose which could present barriers to re-knitting. Many of the treatments involve opening the knitted fabric, either by unravelling a row or by cutting. I discovered a shared assumption that any unsecured knitted fabric – whether open stitches not held on a needle, or a cut edge – would immediately disintegrate. The participants were amazed to find that this is not the case; the nature of the knitted structure is such that ladders need manipulation to ‘run’, and a fabric cut vertically does not come apart without vigorous handling. The experience of deconstruction, therefore, proved to be essential in developing a deeper understanding of the knitted structure and building a willingness to ‘open’ existing fabrics.

Fletcher (2008: 187) describes the ready-made garments supplied by high street shops as being...
impressed by their achievements. Reflecting on their transformed pieces; they were garments. Following the project, the knitters to suit the particularities of their own individual treatments, in each case adapting the techniques of their own wardrobe. They used a range of different re-knitting techniques to alter an item from their own wardrobe.

The project culminated in each participant using re-knitting techniques to alter an item from their own wardrobe. They used a range of different treatments, in each case adapting the techniques to suit the particularities of their own individual garments. Following the project, the knitters reflected on their transformed pieces; they were impressed by their achievements.

I think everything everyone’s done has improved on what was there. It’s really made it a different original garment.

They also felt positive about the activity of re-knitting:

It’s been really quite exciting, what you can do with existing garments that you’ve got. Just to turn them into something really original, which I think is fantastic ... It’s quite a liberating thing. You feel like you can go in and alter and put back together. It’s a really nice thing to do.

One participant described feeling proud of having achieved a complex task:

I’m impressed with the way it all works, the construction of it. I think that’s really clever. And I’m quite pleased that I’ve been able to do it.

Others talked about feeling good about having been able to transform an unworn item and return it to wear:

It does feel good (noble ... perhaps, sounds too pompous) to reinvigorate a rather sad garment.

I feel, sort of, justified that I’ve been able to turn it into something I want. And I shall feel self-righteous when I wear it!

**Repair and re-knitting activity**

As a process which renews garments, re-knitting can broadly be seen as an act of repair. Clothing repair was once commonplace; it is now carried out less frequently, and generally limited to simple tasks such as sewing on buttons. While a recent study quantified the percentage of respondents able to carry out various repairs (Gracey and Moon 2012), Laitala and Boks (2010: 20) point out that ‘different considerations play a role when deciding to repair the clothing or not’. This was certainly the case with the participants in my research; they all reported mending clothes, but described particular conditions under which they would or would not repair:

It depends which ones they are, actually. Not necessarily everything, I would repair. Just my favourite things.

The latest thing I was mending, I’ve got some very voluminous trousers in a very fine linen, and they were really wearing thin. So, I was desperate to keep them going because there’s a jacket with them, and I wanted to keep that going.

I wouldn’t darn a jumper. I think if it’s got a hole in it, then it’s past it.
I've just ripped my working trousers. But that material's quite thin, I don't know if you can mend it. So I probably wouldn't mend that, even though it's a real pain.

These examples show wearers weighing up whether the garment is sufficiently valuable to be worth the effort of repair, and considering the prospect of a successful outcome, given the nature of the problem and their own level of skill. When the research participants engaged in re-knitting, they showed a strong desire to improve on the original item, indicating that re-knitting is a related but separate activity which goes beyond repair. Nevertheless, I found that the logic underpinning re-knitting was very similar. All of the items selected for re-knitting had two factors in common. Firstly, they had one or more identifiable problems, such as holes or other damage; an issue with fit; or being raveled worn. Secondly, each garment was considered valuable in some way, whether in terms of emotional attachment, a valuable or high-quality fibre, a garment in too good a condition to discard, or a homemade item representing a great deal of embedded effort. My research shows that there are many such items kept in the wardrobe. They are in a state of limbo, and cause a problem for wearers who feel the items are being wasted. The solution, often, is to hide the items back in the wardrobe:

Put them out of sight a bit, so you don't have to think about them.

From the evidence of this pilot project, I suggest that re-knitting could become an option for resolving these unworn clothes. Re-knitting is a labour-intensive activity, only accessible to knitters with a sufficient degree of tacit knowledge; while the complexity of an alteration can be controlled, to some degree, at the design stage, this activity would not be used for every garment in the wardrobe. However, in suitable circumstances re-knitting would be an effective way of returning selected garments to active use.

Establishing re-knitting as a 'craft of use'

When the workshop sessions that had been originally planned for the research were complete, the group and I decided to continue meeting on a monthly basis. These sessions offered a valuable opportunity to see what the participants chose to work on after the project, and I found tentative evidence that the participants had embraced re-knitting as a 'craft of use'. Several brought items of knitwear that they wanted to rework, and discussed them with the group; others mentioned various projects that they had in mind. One participant, for example, described having 'a large pile of knits waiting for new futures'. However, to date only one project has been completed, a 'total re-knit' treatment by the most prolific knitter in the group:

Because this cardigan had a deep welt, it was always going up my back. And I like things to be warm, so it irritated me and I didn't wear it for that reason. I considered altering it. I took the band off, and I was going to try and lengthen it by taking the rib off. But when I looked at it without the front band on, I thought, it's not going to work, because of the shape of it. I thought, well I've got this far! (laughs) So I've just pulled the whole thing out, and I've re-knitted it into a jumper, with a lace pattern.

The same participant explained how she was starting to see re-knitting as an extension to her knitting practice:

I think I've realised that knitting the garment is not the end of the journey. Whereas before, when you knitted something, you either wore it out, or got tired of it, gave it to charity. But it's no longer the end of the journey, it can always become something else. I may not think of that extended life at the time I'm knitting it, but it will always be in my mind when the time comes, either it's gone out of fashion, or I've got tired of it. There's another option there.

Another participant alluded to this anticipation of an extended life when discussing her re-knitting project, a much-loved cardigan for which she had knitted new sleeves. She recognised that the sleeves would last longer than the worn fabric of the body, and suggested that she might end up re-knitting the rest of the cardigan at some point.

In considering re-knitting as a 'craft of use', it is interesting to note that the participants had already been keeping garments with the vague intention of reworking them. For example, one participant described a worn-out jumper belonging to her son that she had kept for twenty years, always thinking she would 'do something with it'. In our conversation about disposing of clothes, another participant revealed that she keeps everything, just in case of reworking:
Growing a re-knitting culture

There is definite scope for wider participation in re-knitting; there are estimated to be several million hand knitters in the UK (UK Hand Knitting Association 2009). From my experience, I believe that a significant minority – those who welcome more complex knitting challenges, and the opportunity to be more creative – would be interested in extending their practices to embrace this activity. One way in which a culture of re-knitting might develop is through word of mouth. I have had a positive reaction to the web resource from many knitters, including this email:

I just wanted to say how interesting I have found your PhD project. How liberating to think about personalising knitwear, both from new and also some beloved sweaters in the wardrobe that are showing signs of wear. Joy to realise that I can give them a new lease of life. I am grateful that you have been so generous in sharing these wonderful ideas; I am an ‘inside the box’ person and it has never occurred to me that I am ‘allowed’ to add to someone else’s design. Copy it yes, but rework it, wow!

While some knitters might be encouraged to have a go at re-knitting from the materials that I have placed online, I feel that further support would be required to build wider participation, develop shared knowledge and build a community of practice. Re-knitting requires the knitter to engage in design; because each garment to be reworked is different, it would be impossible to write a conventional prescriptive knitting pattern, to be followed absolutely. My research showed that many knitters have a strong desire to feel more creative and to work without patterns, and are able to do so by drawing on their tacit knowledge. However, the research participants felt that without the support of the project, they would not have the confidence to experiment with design.

Well, that's been the thing about these workshops, and the space between them, is ... I'm getting permission by being here. To play around with things, and it's not wasteful to spend time doing things and pulling them back. It's a freedom that you have, but you don't know you've got.

In order to support a sustained re-knitting culture – involving design and creative experimentation – the space and permission provided by the project would have to take place on a larger scale. Gauntlett and Thomsen describe the four main characteristics of a culture which supports amateur creativity:

The creative mindset is supported when there are stimulating environments and resources (having), when there is a lot of inspirational activity and the engaging support of peers and mentors (doing), when there is an ethos which supports the passions of makers (being), and where there is a solid body of expertise and knowledge, and support for learning (knowing). (Gauntlett and Thomsen 2013: 7)

Knitting already enjoys a vibrant online culture, in which amateurs share their experiences and projects with like-minded peers. Thus, it would be logical to use the internet to create a larger-scale ‘space’ to support re-knitting. The re-knitting materials could be developed into a collaboratively produced online resource; this could include a gallery of diverse re-knitting projects and opportunities for peer-supported learning. The participants in my research recognised the value of sharing online in this way:

You get a sort of pool of knowledge, don’t you, which seeps into everybody’s consciousness, actually.

While an active online space would provide an opportunity to share re-knitting knowledge regardless of geographical boundaries, the research project has demonstrated the value of face-to-face activity in supporting amateur creativity. While specific skills could be passed on at one-off workshops, it was by meeting regularly that the participants gained the peer support that was crucial to their ability to design; our sessions provided the impetus for them to continue and complete their projects. They felt that without further support they might gradually revert to a more conventional approach. They identified my role as particularly important:
I think you're the catalyst for us to be creative. And to voice what we think. I think without you, we would retreat into … we would do what we know, and continue with that.

Hence, the question would be how I – or other designers – could provide this sense of catalysis on a larger scale. My feeling is that a blend of online support and local (offi l) groups would offer an ideal model, enabling the community to share knowledge and access inspirational activity, whilst benefiting from real-world interaction.

Conclusion

My aim was to explore the possibility of transferring amateur knitting practice from the making of new items to the remaking of existing garments. The result was positive; the knitters embraced the idea of re-knitting and used the techniques to successfully rework items from their own wardrobes. Discussions about possible future projects showed that re-knitting could become a regular activity, which links a making practice with wardrobe (use) practices. However, the project also indicated that amateur re-knitting requires support in order to fi urish.

To conclude, I would like to return to the suggestion by Gill and Lopes (2011) that the challenge for design is to negotiate with the things that already surround us. The re-knitting project provides one example of this negotiation in action. I see three key principles emerging from this research which could be transferred to other areas. Firstly, the need to be sympathetic to the material structures of the already-made, and to apply the in-depth knowledge we have as makers to the task of remaking. Secondly, the need to recognise the social and emotional aspects of remaking; that is, to understand the factors that affect what we perceive to be possible and desirable. Finally, the need to develop a supportive culture around remaking, in order to foster a sense of shared practice and gradually build tacit knowledge in individuals and communities.

References


In this paper I wish to explore one aspect of the visceral role of crafts in a sustainable future through spoken, visual and experiential means. My research into the haptics of craft making holds a positive future for our limited resources.

Through my practice as a maker who works primarily in knit, I explore the reasons behind why we persist in making things. The domesticated making of garments for the family, in the middle of the last century, was a form of love. It provided: affording protection, comfort and decency. It was widely believed to be an outcome of two aspects, maker as carer and as a signifier of the core social moral of frugality. Today the consumption of manufactured items is substantially cheaper than the hand made that it eliminates this need to make.

So, why do we still knit?

‘Swaddled, Bound and Adorned’ is an ongoing project that was initiated by a practice-based Masters research project looking at why a haptic involvement with materials was so important in my working methods. My findings involve the creation of a range of accessories. The first collection was showcased at ‘Origins: the Contemporary Craft Fair’ in London 2011. Feedback from the exhibition, and involvement with the Stitching and Thinking Research Group based at the University of the West of England, Bristol, has fed into the developing of the collection further.

The knitted and stitched lengths I have made explore the experience of touch in a recognition and understanding of the materials. Firstly for myself, in constructed creativity I am working in collaboration with cloth, listening as much as inflicting my will, this haptic sensitivity is crucial to my work.

As a maker, the repetitions of working with materials creates an affirmation of the object and the meaning. The transformed object transforms meaning. The pieces I make focus on the visceral and textual of materials and their role in the social understanding of the material world around us (self and others). Secondly, I explore this topic through the transformation of things in my communication to the outside world. For others to understand as I understand, alongside the complexities of the cloth adorned, the haptic and dynamic importance of the materials that surround us.

I propose that agents interested in Sustainability need to move away from the fetishisation of materials. We build ourselves through the things we construct around us. Unfortunately the cheapening of products has led to the devaluing of the things that are ‘us’ and this in turn has led to over-consumption to lift one’s idea of self-worth. The demonisation of consuming materials will lead only to self-flagellation. In contrast, craft making instills value into objects and through them ourselves, replacing quantity with quality. This quality is not just the cost of materials or the time spent but a recognition of the importance of the visceral and haptic connection we have with things.
I am a maker, academic and practice-led researcher. The paper I want to give is as a maker, because it is about my making that I research and it is with an understanding of making that I teach. My making is that I knit. As any knitter knows, you can buy knitwear cheaper and with less effort and thought than if you made it yourself. So why do we still knit? Why is knitting a popular and developing practice?

**I say the answer is haptic knowledge.**
Haptic knowledge is an understood term in academic circles. As a maker, the way for me to explain my understanding of haptic knowledge is to find a balloon, place a marble inside, blow up the balloon and tie a knot at the end. Then roll the marble around inside the balloon. The understanding of the materials involved, the latex and glass, their relationship to each other and the movement is haptic and comes through touch. This is why I knit. This feeling, this knowledge of things is why I make.

For this paper I want to explain some of the context of my thinking about haptic knowledge, about objects and people, and show you some of the work I have done specifically addressing this topic.

Starting with the context. Three people from areas outside making help to contextualise what I know viscerally from making. Howard Gardener is the author of *Multi-Intelligences*, a book that widens the view of what intelligence is, beyond the logic and linguistics of IQ tests. Through a set of biological and anthropological criteria he has established a multitude of intellects including music, social and kinaesthetic (the knowledge of space and our bodies within space). Proof that art, music, dance and making can engage intellectually. We all have this range of understanding to a greater or lesser degree and they are all important facets in our travels through life. So everyone has a haptic relationship to objects alongside an understanding of music, space, society, etc. There are seven in the book, but more have been added since. Understanding objects is not just internal, it is an element of communication, and communication through objects is important in my work. When I make something I know I'm communicating effectively when someone wants to take it home with them.

This brings me to Daniel Miller, a professor of material culture. His book on shopping investigates that point when a thing is bought. Looking primarily at food shopping as the most common form of shopping, he describes shopping as an act of love, providing sustenance, comfort and aspirations for ourselves and our loved ones. Jo Turney in her book *Knitting Culture* takes this a step further, describing the making of things for others as strengthening the ties in a relationship and physically building our aspirations. So we have a tactile understanding of the world around us and we use things to describe ourselves and our relationships. As social creatures these object bonds are as important as words and deeds, and words and deeds are often commemorated in objects. A good reason to still make.

**So how do I fit these words into my practice?**
To start with, some history of my work. I work with materials to understand them and the possibilities in their transformation primarily in knit. My website at stephaniewooster.com shows examples of past knitted and crocheted samples I made in wire, ppe tape, cassette tape, latex, nylon, elastic, plastic and glow-in-the-dark threads. Inspiration for this comes from everywhere. A simple technique of stapled ceramics. The description delicacy and empirical preservation though the use of cotton wool in a specimen jar at the Darwin Centre, London. The sentimental collection of objects on a mantelshelf. How people combine things to create new meaning. I find joy in combining unexpected things. My sketchbooks and drawings are material and technique based. The use of unusual yarns in a textile context is a recurring theme. This is what I do when I make. I am interested in making the fabric and making the object.

My research on the haptics of things started during my MA and has continued through my practice and research. With my MA work I wanted to consciously explore haptic knowledge, not just have it as a methodology in my practice. I started by collecting
fabrics of interest, ones that harmonised and complemented, wool, cotton, paper, card, foam, latex and plastic. The choices were obviously textile with a muted colour scheme. I didn’t stick to just knitting, I looked at construction and combination as well as creating knitted fabrics with a strong tactile element. Using a range of yarns and techniques was one aspect, combining fabrics another which introduced a focus on construction. These samples I placed onto a body, as I knew this is where I wanted the pieces to be, building on the relationship between object and person, to touch the thing and to be touched by the thing. Playing with the convention of the worn object really helped to introduce the haptic not only in the surface but the whole and the experience of the thing.

After making larger pieces I then started to wear them. To experience how they felt, how they changed me. I started to look at haptic as not located in the hands but through the whole body. This was an important development that built on the relationship between the object and wearer. My haptic reactions to how it felt, physically and emotionally fed back into the design of the object. Sometimes difficult to see, like a woven band next to knit created a mix of structure and comfort. As an example, a long thin scarf that reaches the ground could be bound to make you very aware of your stance, and the long ends floating added to an awareness of movement and the space left behind. The final collection combined fabrics, involved a focus on construction and transformation, played with expected modes of adornment. All building an awareness of haptic knowledge, bringing this intelligence to the fore.

As makers, if we acknowledge the haptic in object and activity we can deepen the relationship and meaning between people and objects. You don’t throw away things that have strong meaning to you. A stronger haptic bond will promote longevity in ownership and this will support sustainability. A final word from Jo Turney, who said in the recent BBC programme ‘Fabric of Britain’ that the current rise in the popularity of knitting in this age of virtual work and email living is because the experience of building something real is fulfilling.

This is why we still knit.
**Sustainability and Social Innovation and Activism**

This session aimed to investigate art, craft and design-to-make as facilitators of change in relation to environmental awareness, community building, and ethical processes of making and selling. It invited participants to present and discuss practical examples of the ways in which creative practitioners are responding to dialogues around sustainability issues, for example, by extending product lifecycles through make and mend, re-cycling, up-cycling, renovation and reframing; or through ‘cradle-to-cradle’ life-cycle design strategies. The session aligned these environmentally-conscious approaches with practices that dignify and empower self and others, encouraging positive social change through socially-innovative projects that enable participants to gain critical awareness of their habitat.
Silk Purse, Sow’s Ear: Transforming second-hand clothing into luxury fashion through craft practice

There is more apparel being created than ever before in history. The unsustainable production of materials and the clothing and textile waste that contributes annually to landfill, an estimated 500,000 tonnes of clothing per year in the UK (Gray, 2012), are significant issues inspiring the practice of Australian fashion designers. Carla van Lunn and Carla Binotto. While the contemporary fashion industry is built upon a production and consumption model that is younger than the industrial revolution, the traditions of costume, craft, and bodily adornment are ancient practices. Binotto and van Lunn believe that the potential for sustainable fashion practice lies outside the current industrial manufacturing model. This case study will discuss their fashion label, Maison Briz Vegas, and examine how recycling and traditional craft practices can be used to address the problem of clothing waste and offer an alternative idea of value in fashion and materials, addressing the indicative conference theme, *Craft as Sustainability Activism in Practice*.

“Maison Briz Vegas”, a play on the notion of French luxury and the designers’ new world and sub-tropical home town, Brisbane, is an experimental and craft-based fashion label that uses second-hand cotton T-shirts and wool sweaters as primary materials to create designer fashion. The first collection, titled “The Wasteland”, was conceived and created in Paris in 2011, where designer Carla van Lunn had been living and working for several years. The collection was inspired by the precariousness of the global economy and concerns about climate change. The mountains of discarded clothing found at flea markets provided a textile resource from which van Lunn created a recycled hand-crafted fashion collection with an activist message and was shown to buyers and press during Paris Fashion Week. The label has since become a collaboration with fellow Australian designer Carla Binotto.

The craft processes employed in Maison Briz Vegas’ up-cycled fashion collections include original hand block-printing, hand embroidery, quilting and patchwork. Taking an artisanal and slow approach, the designers work to create a hand touched imperfect style in a fashion market flooded with digital printing and mass-produced garments. The recycling extends to garment fastenings and embellishments, with discarded jar lids and bottle tops being used as buttons and within embroidery. This process transforms the material and aesthetic value of cheap and generic second-hand clothing and household waste.

Maison Briz Vegas demonstrates the potential for craft and design to be an interface for environmental activism within the world of fashion. Presenting garments that are both high-design and thoughtfully recycled in a significant fashion context, such as Paris Fashion Week, Maison Briz Vegas has been able to engage a high-profile luxury fashion audience which has not traditionally considered sustainable or eco practices as relevant or desirable in themselves. The designers are studying how to apply their production model on a greater scale in order to fill commercial orders and reach a wider audience whilst maintaining the element of bespoke, limited edition, and slow hand-craft within their work.

maisonbrizvegas.tumblr.com
Introduction
At the Porte de Montreuil in Paris, you can follow the trail of debris and walk along a footpath crowded with itinerant sellers, each with a meagre assortment of old or stolen items, and some peddling fake Dior perfume and Rolexes from their jackets; you can cross over the great ring road that encircles the city and enter the lanes of the flea market. Here you can find a large second-hand clothing market consisting of stall after stall of mountains of old clothing where garments are sold for a few euros a piece. There are some rare vintage pieces on display but most of the market is dedicated to very ordinary clothing such as jeans, shirts, jackets and T-shirts. It is a world away from the chic and moneyed centre of Paris and the home of the luxury fashion brands. This market is an unlikely cradle for a designer collection but it was exactly this abundance of banal clothing and urban rubbish that motivated the recycling and creation of the designer fashion label discussed in this paper.

Fashion today is a system in perpetual motion and the current fashion industry is synonymous with change, emerged in the context of social and political upheavals brought about by the Industrial Revolution, a time when progress inspired a drive for change in all areas of life (Lipovetsky 1994). Prior to industrialisation, and also during the nineteenth century, many people relied on the second-hand clothing trade because new clothing was expensive. Old clothes were passed down from the wealthy to their servants; clothes and textiles were ‘easily converted into cash or goods’ (Lemire 2012: 148) and used as an ‘alternative currency’ amongst the working poor (Farrer 2011: 22). The repair of clothes was common practice. With mechanisation, the industrial production of cotton and other textiles and the introduction of the sewing machine, manufacturing processes in the clothing industry advanced and gained speed. As a result, ‘the price, and standing, of textiles in society began to decline’ (p. 23).

Two very different modes of clothing production developed in the nineteenth century: the bespoke hand-made and the industrially produced ready-made (Gwilt 2011; Wilson 2003). Tailors and couturiers hand-crafted exclusive and bespoke garments. The first fashion designer emerged in mid-nineteenth century Paris, notably as a couturier who did not work under the instruction of his clients but rather offered a collection of original styles that the client could choose from and have made to their measurements. This mode of design and production, known as haute couture, led sartorial style and was synonymous with wealth, luxury and quality craftsmanship (Gwilt 2011; Troy 2003; Wilson 2003). At the same time, the industrial manufacturing of clothing with standardized sizing systems, which had developed with the production of military uniforms, meant that ready-made casual garments became increasingly available and affordable for the middle class (Wilson 2003).

In the twentieth century, fashionable ‘mass-produced, ready-to-wear clothing’ became widely available and ‘the standard wear for everyone’ (p. 89). The factory production of clothing enabled widespread growth of a ready-to-wear industry for casual and designer garments. After the Second World War, notions of value shifted and the burgeoning consumer culture of the US and other Western nations embraced the new and relatively affordable mass-produced products (Claudio 2007). The second-hand or home-made was no longer valuable next to the new factory-made items, which were symbols of prosperity after the rationing of the war. As Wilson explains, ‘for hundreds of years the second-hand clothing market

‘Maison Briz Vegas’ is the experimental fashion label of Australian designers Carla van Lunn and Carla Binotto. Clothing and textile waste and the unsustainable production of raw materials and fabric that feeds the contemporary fashion industry are significant issues inspiring their design practice. Their work transforms the fabric of second-hand cotton T-shirts into desirable designer clothing. Maison Briz Vegas was first conceived and created in Paris in 2011 and their collections have been presented to international buyers and press in an exclusive showroom during Paris Fashion Week. Thoughtful recycling of rubbish materials and traditional craft practice such as patchwork, embroidery and hand-block printing are used to address the issue of clothing waste and the excess of modern consumer culture. The two Carlas’ artisanal recycling practice offers an alternative idea of value in design and materials, and they believe that the potential for sustainable fashion practice lies outside the current industrial manufacturing model.

Fashion today is a system in perpetual motion and the industry has gathered so much speed that it is hard for designers and industry players to reflect upon the make significant changes to their operations. Within current fashion and sustainability discourse there is an overarching call to re-think conventional practices within the fashion industry and to consider alternative processes and possibilities in regard to how clothing is produced, consumed and valued (Black 2008; Fletcher and Grose 2012; Gwilt and Rissanen 2012). Binotto and van Lunn find it difficult to reconcile their deep appreciation of beautiful and creative clothing with the excesses and superficiality of the modern consumer fashion system. A conflict exists between the instinct for material craft and garment making and an awareness of the environmental and social impact of modern fashion production, consumption and disposal. Van Lunn and Binotto negotiate these tensions by working within the fashion system but at the same time in opposition to certain industry conventions, such as their choice to recycle and use ‘unrefined’ materials and slow production processes, which are of a bespoke and anti-industrial nature. There is an environmental activist message communicated through their garment designs and prints and also through their promotional photography and formal presentations to the industry.

The rise of ready-to-wear and ‘fast fashion’

While ‘fashion’ is a modern Western concept, the traditions of costume, bodily adornment, textiles, craft and garment making have a long history spanning all races and cultures. ‘Fashion’, as a recognisable system synonymous with change, emerged in the context of social and political upheavals brought about by the Industrial Revolution, a time when progress inspired a drive for change in all areas of life (Lipovetsky 1994). Prior to industrialisation, and also during the nineteenth century, many people relied on the second-hand clothing trade because new clothing was expensive. Old clothes were passed down from the wealthy to their servants; clothes and textiles were ‘easily converted into cash or goods’ (Lemire 2012: 148) and used as an ‘alternative currency’ amongst the working poor (Farrer 2011: 22). The repair of clothes was common practice. With mechanisation, the industrial production of cotton and other textiles and the introduction of the sewing machine, manufacturing processes in the clothing industry advanced and gained speed. As a result, ‘the price, and standing, of textiles in society began to decline’ (p. 23).

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thrived, but with the advent of mass production it faded’ (Wilson 2003: 250).

Affordable fashion that was available to buy off the rack also destabilised the haute couture of the elite fashion houses that had dominated style prior to the Second World War. To remain relevant, and also to tap into the profitability of the ready-to-wear market, couture designers began offering affordable styles for the consumer market alongside their exclusive bespoke designs for the elite (Troy 2003; Wilson 2003). Made-to-order fashion was increasingly replaced by the factory-produced fashion that satisfied consumer hunger for the new. The industry has continued to follow this trajectory.

Today there is more apparel being created than ever before. With ‘fast fashion’ and globalisation, clothing production has continued to increase while prices at the consumer end have continued to drop (Allwood et al. 2006). As a result, consumer purchases and disposal of clothing have dramatically increased (Claudio 2007). The ‘fast fashion’ system in particular encourages people to buy more and to buy more often. ‘Fast-fashion’ is the sector of the fashion industry that rapidly produces and sells cheap copies of designer styles and basic garments. Items are designed to be worn for a season and then discarded for the next look. The time it takes for a fast-fashion product to be ‘designed’ (or copied from a designer collection), manufactured and available for purchase in-store can be as little as two weeks (Greenblat and Munro 2013).

Zara has been noted as the pioneer retailer of the fast-fashion model, which took off in the late 1990s and has been accelerating rapidly since the early 2000s, along with other brands such as H&M, Top Shop and Primark (Tokatli 2008). This increased speed in production, consumption and disposal has essentially redefined what is valued in fashion and clothing production today. It would seem that ‘value’ in mass-market fashion equates to price, quantity and newness. Arguably the success of fast-fashion has led to a devaluing of design, materials, resources, quality, time taken to make clothes and the people who make them (Fletcher 2007).

**Clothing waste as textile resource**

In the West, clothes are disposed of when they are no longer considered useful, desirable or valuable. In today’s ‘fast fashion’ climate, the amplified pattern of production, consumption and disposal has created an excess of clothing, which in turn has lead to a problem of clothing waste. As Lewis explains, ‘one of the most fundamental environmental issues associated with the clothing industry is its focus (and dependence) on ever-changing fashion. Most clothes are not worn-out; they simply get replaced by the latest designs and colours’ (Lewis and Gertsakis 2001: 141). Today an enormous amount of clothing and textile waste contributes to landfill. In the US alone this exceeds 12 million tonnes annually; however, nearly 100 per cent of this is recyclable (Hawley 2011: 144).

The charity store is the most common path for unwanted clothing. Of the clothing collected by these organisations, around 25 per cent is sold back to consumers through their own stores while the rest is either exported in bales to developing countries, sold on to the manufacturing industry for recycling and rags, or sent to landfill. One study revealed that of the combined textile and clothing waste in the UK only 13 per cent is recovered and reused, while 73 per cent ends up in landfill (Allwood et al. 2006).

Acknowledging the potential in the raw material of garments, as well as the energy and labour already expended through their production, a growing number of contemporary fashion designers are basing their practice around reuse, recycling and refashioning (Fletcher and Grose 2012). Examples of these designers/labels include Reclaim to Wear, From Somewhere, Christopher Raeburn, Greg Lauren, Junky Styling and Goodone. Although not a new practice, this approach is discussed as one that intercepts discarded clothing (post-consumer textile waste), reclaims, re-cuts and refashions, returning the item to the clothing stream, effectively creating a new loop, postponing its grave ending, thus reducing both textile waste and the demand on raw materials required in the manufacture of new textiles. (Farrer 2011: 27)

Maison Briz Vegas operates within this context, refashioning, or upcycling, to create valuable fashion products from clothing waste, specifically T-shirts.
Within the realm of second-hand clothing, basic items such as T-shirts are barely valued, especially when a new mass-produced T-shirt can be bought for close to the same price as a used one. T-shirts are not a luxury fashion item; generally they are banal, ubiquitous and far from exclusive. However, if we are to reinstate value to the aspects of clothing production that fast-fashion has devalued, perhaps the status of second-hand and mass-produced T-shirts should be reconsidered.

Most T-shirts are made from 100 per cent cotton. The Environmental Justice Foundation estimates that it takes ‘around 2,720 litres of water to produce one cotton T-shirt, equivalent to what an average person might drink over three years’ (http://ejfoundation.org/cotton/cotton-and-water). Social and environmental concerns surround cotton production because of the impact on natural resources such as land and water, use of chemicals, and in some cases, poor labour practices (Grose 2013). Cotton is a natural and desirable fibre to work with and to wear. Its material properties make it ideal for dying and printing and the generic shape of a T-shirt provides a useful amount of base fabric. The recycling and design work of Maison Briz Vegas demonstrates the material potential of the post-consumer waste of second-hand T-shirts.

Discarded clothing being delivered to a second-hand store in Paris Photo: © Carla van Lunn, 2011.


Maison Briz Vegas uses the seduction and novelty of fashion to question notions of value in the luxury designer market and draw attention to problems of textile and clothing waste, household waste and unsustainable industry practice. Van Lunn and Binotto work in reaction to the contemporary fashion system, but position their work within it as a way of raising awareness from the inside and challenging the conventions of the industry.

A constant motivation for Binotto and van Lunn is using humble and valueless materials to create something beautiful and desirable. The intention is to work with items of clothing that are ostensibly the least valuable – discarded, second-hand, worn-out – and transform them into garments that register as highly valuable in the context of contemporary fashion, while also presenting a critique of the fashion system and the industry’s effect on the environment.

**Birth of Maison Briz Vegas**

In 2011, Carla van Lunn had been living in Paris and working in the high-end designer fashion industry for several years. Post-2009 and the global financial crisis, van Lunn experienced the downturn in the designer fashion world. Working in design studios and presenting creative designer collections to international buyers during Paris Fashion Week, it became an ever more painful struggle to continue business as usual. Designers, retailers and famous fashion houses were often begging financial favours or even closing their doors. The designer fashion market felt very burdensome and, at the time, irrelevant to van Lunn. Maintaining appearances of a more prosperous era and ignoring the competition of fast-fashion did not make sense but, like many in the designer fashion industry, she remained drawn to fashion’s potential for poetry.

Van Lunn had taken a trip to India around this time and witnessed the craft of hand-block printing. For her, there was something transformative about this ancient and ‘primitive’ method of textile printing. The printing process was slow and skilled and there was evidence of the human hand in the finished fabric. In an age dominated by mass production, there seemed to van Lunn a kind of liberation and power in such artisanal ‘low-fi’ printing, a freedom from the system of mass production and industrial processes. The block-printed textiles were textually rich and full of character compared to slick digitally printed fabric that was flooding the fashion market at the time.

Back in Paris, van Lunn wished to design a fashion collection but she wanted it to be relevant to the economic climate and to make an honest statement in the high-end fashion market. Having limited personal funds and wanting to design the collection on her own terms, she decided to make garments from poor materials: old T-shirts and household rubbish. For her it was also a statement about the overabundance of consumer products and the environmental damage caused by garment production and disposal. She imagined a more couture treatment of cheap, used, discarded garments, or ‘landfill fashion’.

Van Lunn’s first recycled collection was titled ‘The Wasteland’ and her label name, ‘Maison Briz Vegas’, is a reference to the designer’s home city, Brisbane, in Australia. ‘Briz Vegas’ is a sub-tropical, new-world suburbia, with limited sartorial culture. ‘Maison’ was meant as an irreverent reference to the idea of French tradition and luxury. ‘The Wasteland’ was motivated by an environmental activist spirit, and influenced by the gloom of the global economic climate and the increasing poverty in the streets of Paris.

Bringing rubbish to the fashion world felt like an appropriate statement. Van Lunn used craft techniques, including hand-block printing, to transform old cotton T-shirts into interesting designer garments. Sourcing bagfuls of old white cotton T-shirts from the flea markets at the Porte de Montreuil, she washed, dyed, unpicked and printed the cotton. Van Lunn painstakingly cut and patched together the T-shirt fabric into new styles. The patchwork joins were made along deliberate design lines and the new garments were not obviously recycled in appearance.

The collection was designed to look raw and free and van Lunn's printing was bold and naïve. ‘The Wasteland’ had a DIY punk spirit, designed as a provocation in a luxury fashion context. Old jar lids were used as buttons and the logos from the original T-shirts were features in some of the final designs to communicate the provenance of the fabric. Garments were hand-finished and some edges left raw. The collection was designed to feel simple and fresh in spirit.

Van Lunn printed the garments using blocks that she carved herself from old linoleum. Her original print designs were vivid and whimsical in style but contained environmental symbolism within them. ‘The Wasteland’ was a much smaller collection than van Lunn had anticipated because the recycling process had taken far longer than making ordinary garments using virgin fabric.

Van Lunn has a long working relationship with a high-profile fashion agent in Paris and had been promised a space in the agent’s showroom during Fashion Week to present her small collection. Upon seeing the products, however, this agent was rather horrified by the use of T-shirt fabric and relegated the collection to a small space of floor next to a staircase. Van Lunn created a small installation to portray the recycling concept, presenting her new designs on a rail above a pile of dirty T-shirts from the flea markets. Despite the agent’s best efforts to avert the gaze of buyers and press, the recycled pieces and the display drew significant attention and commercial interest. Alongside luxurious collections made from silks and wools, the recycled collection was seen as interesting and desirable in its own right in this high-end context. Buyers and press were impressed by the concept, designs and print work, and wanted to see more pieces the following season.


Van Lunn had originally imagined she would wholesale the collection but, after making the first prototypes and finding the recycling process prohibitively slow compared to traditional fashion production, she understood that a new sales and production model would perhaps be necessary. The first collection was presented as a limited edition and bespoke, with a high price point.
Post-wasteland

Following this initial positive reception, Maison Briz Vegas became a collaborative project with fellow Brisbane designer, Carla Binotto. Binotto came to Paris the following season to help grow the collection and further develop the recycling concept.

The second collection, a winter collection titled ‘The Glam and The Gloom’ was created from second-hand T-shirts and jumpers. From the gloom of mountains of discarded clothes piled high at the flea markets, Binotto and van Lunn worked to create new and precious clothes with a touch of glam, or magic. Old woollen jumpers were abundant at the flea markets during those winter months and, like cotton T-shirts, provided a valuable textile resource. As in the first collection, the used garments were washed, dyed and unpicked. Jumpers were patched together or quilted between T-shirt jersey to create new fabric. Some features of the original jumpers, such as pockets, buttons, or ribbing were incorporated into the new garment designs.


The designers developed original prints and printed the fabrics using linoleum blocks and stencils they had cut themselves. Old bottle tops and champagne caps were embellished with beads and used as buttons. Hand-stitching and embroidery were used throughout to finely finish or decorate the garments. Metallic embroidery thread was used to add a touch of luxe to the recycled textiles (see Figure 10). These sorts of artisanal craft techniques demonstrated the great potential for upcycling of old poor materials. Quilting multiple layers of old materials together created warmth and structure in the new garments.


‘The Glam and The Gloom’ collection was presented once again in the same showroom in Paris and this time the designers created a tableau of a flea market to display their new designs. Their installation was put together using garments, bric-a-brac and rubbish collected from the real markets. Even the weathered pieces of cardboard and string used to fashion the price signs were authentic. Bringing dirty old items and junk from the fringes of Paris into a clean, slick designer showroom in the heart of the city was an effective act of activism within the fashion system. It amused buyers and press while giving them an insight into the inspiration for the collection and the source of the original garments used to create it. This prompted interest into how the clothes were actually made, an aspect commonly overshadowed by the look, feel and fit of the end product. The designs and the concept were once again highly appreciated but Binotto and van Lunn decided once again not to wholesale their work. They returned to Australia to continue their research and develop a business model.

‘Trashtopia’ is their third collection, designed and created in Brisbane. Plastic pollution of the oceans and rising global temperatures were the starting points for this resort collection. All the garments were made using second-hand T-shirt fabric, and plastic rubbish was used to create decoration and fastenings on the garments. The designs have a nostalgic mid-20th century style to them and ‘Trashtopia’ links the golden era of American-style manufacturing and consumerism with today’s climate and resource crises. Leisure, convenience products and disposable plastic items of our ‘throwaway society’ and their impact on the environment are themes of this collection. ‘Trashtopia’ is a dystopia, a summer holiday on an over-heated planet where the world’s oceans are polluted with enormous amounts of plastic, killing marine and bird life.

Van Lunn and Binotto attempt to address environmental issues through humour and symbolism. Trashtopia prints have a retro Hawaiian-shirt style with a darker narrative, such as turtles swimming among plastic rings from milk bottles. Garments in this collection feature embroidery and fringing using thread made from plastic shopping bags. Fish-shaped plastic soy sauce containers and lids from plastic bottles were used as buttons.


Designer recycling

Working with reclaimed second-hand clothing and experimenting with artisanal craft techniques make the design and production processes of Maison Briz Vegas garments very complex, labour intensive and time-consuming.

Sourcing the second-hand T-shirts and other specific clothing items involves regularly visiting flea markets and second-hand stores and rummaging through piles and racks. This activity is the opposite to conventional industry practice where designers normally visit large international textile tradeshows to source from the next trends in colour and texture, or from the latest in textile technology.

Once sourced, the second-hand T-shirts and other clothing items are washed and sorted according to fabric handle and size. Assessing the fabric handle according to weight, stretch and touch, for example, is necessary in order to determine which T-shirts would be best suited to particular garment designs.

After sorting, the T-shirts are dyed and this may involve testing and mixing dyes to ensure the desired colour can be achieved.

The next stage involves unpicking hems and seams and removing threads. Extra fabric length is gained from the T-shirt hems. Evidence of the former folds and stitch-lines remain in the fabric and these are often incorporated as details in the new 'up-cycled' garments as evidence of the transformation process, possibly only to be understood by the eye of another maker or designer.

Cutting the T-shirts into pieces for new designs is a fiddly and time-consuming step compared to the straightforward cut-and-lay process when using a new piece or roll of fabric. The placement and cutting of the pattern pieces is a creative process, negotiating the graphics and shapes of the original T-shirts. Logos and text may also feature in the new
garments as a reference to the previous life of the fabric. Corporate logos, printed text, events and locations can be interesting and humorous when taken out of context and re-constructed.

The T-shirt fabric is utilised according to the size of the pattern pieces from which the new garment will be constructed. Small pattern pieces may be arranged and cut from the fabric of individual T-shirts while larger pattern pieces may require the fabric of multiple T-shirts to be patched together. The fabric is patched by overlapping raw edges and sewing them together using a zigzag stitch, a decorative, elastic stitch that is more common in domestic sewing than industrial sportswear or high-end garments. These zig-zag joins have become part of the Maison Briz Vegas branding, a symbol of the slower and eccentric making process.

Once cut, the pattern pieces are ready for printing. Van Lunn and Binotto create all their print designs themselves. Designs are researched and developed extensively on paper before being transferred to printing blocks or cut into stencils. The hand-printing is a slow process but allows for bespoke placement on each garment.

Other examples of surface decoration employed by Maison Briz Vegas include embroidery and appliqué. Garments are constructed with seams often left raw. Fastenings are simple ties or buttons – things that can be made from the same fabric or waste items. Finishing touches and embellishments are often created from rubbish, for example, thread made from plastic bags is used to embroider, bottle tops become buttons and sequins are cut from plastic bottles.


Photo: © Maison Briz Vegas 2012.
Conclusion

While reuse and recycling can work to reduce waste levels and divert clothing from landfill, it is acknowledged that these strategies alone ‘do not address the root cause of the waste problem in fashion or change the fundamentally inefficient industrial model’ (Fletcher and Grose 2012: 64). However, these strategies and their engagement with issues of sustainability may have the potential to influence the fashion sector ‘when fused with different ways of thinking and action’. The work of Orsola de Castro is an example of how operating in an alternative and activist manner within the system has the potential to influence consumers and other players within the industry. Her labels, Reclaim to Wear and From Somewhere, have collaborated with UK chains Top Shop and Tesco respectively, to introduce upcycled fashion collections made from the manufacturing waste of their own clothing production.

Maison Briz Vegas is, at this stage, an experimental fashion project and not a commercial business. However, by presenting garments that are both high-design and thoughtfully recycled in a significant fashion context, such as Paris Fashion Week, Maison Briz Vegas has been able to engage a high-profile luxury fashion audience. This high-end commercial recognition demonstrates that recycling and alternative, non-industrial models of fashion creation may have a valued place in the designer market.

References


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This paper will explore the relationship between contemporary art and craft in relation to discourses of social engagement. Writing in 2006, art historian and curator Claire Bishop identified a ‘social turn’ in art practice, located in the emergence of participatory art in the 1990s. It is clear, however, that this development has not been confined to the field of contemporary art. Over the last two decades all creative disciplines have experienced forms of re-engagement with the social, often accompanied by questioning of disciplinary boundaries. Design activism, craftivism, the slow movement and eco-fashion are all playing a part in a social turn of craft, which has recently been acknowledged in the Craft and Social Change conference held in London by Norwegian Crafts.

Yet, it is important to acknowledge that the social turn in contemporary art has been conflicted. Prominent theorists like Bishop, Grant Kester and Shannon Jackson often hold incompatible views of the politics and prospects of the approach to art that has become known as ‘Social Practice’. Bishop in particular has attempted to distance this form from the instrumentalised arts policy that became familiar under New Labour, in which public art was measured in terms of socio-economic benefits. Kester has stressed the need for artists to facilitate political activism in the groups with which they engage, rather than subsuming them under the script of a given work. Shannon Jackson sees in participatory art an opportunity to make explicit the ‘support systems’ that underpin the collective aspect of social experience.

Most recently, Tom Finkelpearl, Executive Director of the Queens Museum of Art, has read the social turn through the American pragmatist aesthetics of John Dewey. In the book ‘What we Made: Conversations in Social Cooperation’ (2013) Finkelpearl emphasizes what he calls the art of ‘social co-operation’, as an important catalyst for social change.

It is noticeable that the theoretical debates around the social turn in contemporary art have rarely crossed over into debates about craft. This paper will attempt to address this situation at a point when craft is under pressure in the UK, at risk of losing its status as a creative industry according to Department of Culture, Media and Sport proposals. Finkelpearl’s work will be used as a starting point for examining points of commonality and tension between Social Practice and Craftivism, taking into account the frameworks proposed by Bishop, Kester and Jackson. The aim is to establish the initial parameters of a study of the politics of making that understands craft as radical social practice.
Both craft and contemporary art have experienced what might be called a ‘social turn’ over the last two decades. This phrase has been used by the art theorist Claire Bishop (2006) to describe the emergence in contemporary art since the 1990s of works that emphasise participation: where an audience is invited, in some sense, to contribute to the creation of a collaborative artwork. These works are now largely discussed as ‘social practice’ (Jackson 2011; Lind 2012), which is how I will refer to them here. On the face of it, the social turn has brought about a reconciliation between contemporary art and craft. The social turn in art has coincided with the emergence of expanded notions of craft, exemplified in the writings of Richard Sennett (2009). There has also been a resurgence of popular DIY craft, emphasising values of experience, process and collaboration, all of which have also been key terms within social practice. Many conceptual craft practices develop from a synergetic interaction between these developments.

However, this semblance of rapprochement conceals a complex and contradictory relationship. On the one hand, craft is visible within contemporary art and popular craft traditions are in rude health. On the other hand, there remains an element of ‘craft shame’ as Liz Collins (Bryan-Wilson et al. 2010: 621) has described it: evidenced, for example, in the discrete removal of this word from the American Craft Museum (which has become the American Museum of Arts and Design), or recent attempts to reclassify craft in the UK as no longer part of the creative industries.

In this paper, I will try to unravel some issues around the politics of making in the social turn. I hope to show that art of the social turn has moved, in a paradoxical way, towards a way of thinking about community as a kind of immaterial vernacular art. I will suggest that this shift highlights some interesting issues, especially with regard to what I want to call the politics of silence in craft. Here I hope to sketch some thoughts about the relationship between different senses of silence in or as a way of interrogating the idea of the social in art, and craft.

Writing in the 1970s, Lucy Lippard was skeptical of attempts to reconcile art and craft. From the point of view of feminism, it seemed that women’s work would always fall at the bottom end of the scale of respectability, as ‘low’ rather than ‘high’ craft. And yet, this for Lippard was part of the enduring power of craft to critique the exclusivity of art:

The crafts need only one more step up the aesthetic and financial respectability ladder and they will be headed for the craft museums rather than for people’s homes. … Perhaps until the character of the museum changes, anything ending up in one will remain a display in upper class taste in expensive and dubiously ‘useful’ objects. (2010: 484)

Clearly the cultural terrain has altered significantly since Lippard wrote these words. Collaborative art projects exploring handicrafts now do find themselves in, or sponsored by, museums. Nonetheless, it is necessary to ask, using Lippard’s terms, whether a change in the museum, or in upper-class taste, means a real transformation in the politics of craft.

In reality, only certain kinds of craft are valorised by art. In a roundtable on the politics of craft, Cat Mazza notes that one of her submissions for the Radical Lace and Subversive Knitting (2007) show at the Museum of Arts and Design, New York, was not included by the curators. It was a fourteen-foot-wide Nike Swoosh logo made up of squares produced by hobbyists who had visited the Microrevolt website, which was created to protest against Nike’s exploitative production practices. Mazza concedes that some of the contributions did look ‘amateurish’ but that the intention of the work was to be participatory, not professional. The curators of Radical Lace told Mazza that alongside other works it looked just too ‘funky’, in their words, to work aesthetically with other pieces in the show. Mazza concedes this exclusion may have been due to political pressure relating to the negative exposure of the Nike brand, but emphasises that the aesthetic judgement communicated by the curators is in itself interesting (Bryan-Wilson et al. 2010). It points to the boundary where popular making practices fin...
themselves excluded from institutional valorisation. David Gauntlett, Professor of Media and Communications at the University of Westminster, has developed an argument that attempts to address this tension between high and low craft amid the transition to participatory forms of popular culture heralded by Web 2.0. His 2011 book *Making Is Connecting: The Social Meaning of Creativity* synthesises a wide range of historical and theoretical sources and contemporary making practices into an accessible account of craft as everyday creativity. Gauntlett’s central premise is that making of all kinds is socially significant because the connections made between ‘materials’ and ‘ideas’ also involves ‘a social dimension that connects us with other people’ (Gauntlett 2011: 2). Similarly, making and sharing what we have made increases ‘our engagement and connection with our social and physical environments’ (Gauntlett 2011: 2).

Gauntlett follows John Ruskin and William Morris in arguing that alienation remains the crucial problem of contemporary existence. He stresses the importance of the resurgence of handicraft and the emergence of Web 2.0 platforms like YouTube to combat our disconnection from a sense of community. His interest is in popular forms of making, rather than master-craftsmanship, invoking Ruskin’s praise of the rough craftsmanship evident in Gothic cathedrals in order to validate the resurgence of popular creativity. Ruskin, for Gauntlett, is a champion of ‘the collaborative mish-mash, the combined construction of individual quirks and talents, a celebration of perfection, imagination and “do what you can”’ (Gauntlett 2011: 30). Whether this is an entirely accurate account of Ruskin’s tastes is debatable. However, it is worked into an affirmative account of the importance of DIY practices as a means of community building.

There are tensions in Gauntlett’s project. He define creativity as an ‘experience, a feeling, or a process’ (2011: 74) that allows us to be more connected to others and our environments. One of his key examples is *Star Wars Uncut*, a Web 2.0 project in which the entirety of *Star Wars: A New Hope* (Dir: George Lucas, 1977), is recreated by fans who shared out and each reshoot fifteen-second clips of the film. The resultant work is an upbeat mash-up of ingenious low-tech and hand-made recreations of the 1977 film’s iconic scenes. It is resolutely fun, representing craft as a form of celebratory communicative interaction. But this optimistic representation of popular craft seems very one-sided. Can it really be the case that making and sharing YouTube videos and crafts will re-engage us with political processes?

Gauntlett’s affirmative account of vernacular craft dispenses with the complex reflection on power that is part of the pioneering feminist work on craft. In work like Roszika Parker’s *The Subversive Stitch: Embroidery and the Making of the Feminine* (1984) and Joanne Turney’s *The Culture of Knitting* (2009) the activist potential in craft is connected to craft’s potential complicity in discourses of power. Parker in particular acknowledged that handicraft is a sign of femininity that can structure and limit subjectivity. And yet, as a practice, craft could be deployed to materialise identity in a way that might contest ideological formations.

Of course, the example that has become canonical is Elizabeth Parker’s sampler, created in 1830 in an intensely powerful and private struggle with the silencing power of patriarchy. Parker’s sampler, now held in the Victoria and Albert Museum, is an intricately harrowing object that begins with the compelling, counter-intuitive statement: ‘As I cannot write I put this down freely and simply as I might speak to a person whose intimacy and tenderness I can fully entrust myself’. The tiny cross-stitch lettering, in red on the plain linen ground, literally makes a confession. Parker was tempted to suicide after ill-treatment from employers who treat her ‘with cruelty too horrible to mention’, a confession that breaks off mid-entente: ‘which way can I turn oh whither must I flee o find the ord wretch wretch that I am … what will become of me ah me what will become of me’. There are many ways to interpret this strange artifact. Some have suggested that the confession was sewn because of the expense of writing materials at this time, though this prosaic explanation hardly accounts for the strange tension between writing, and the slow temporality of labour held in this document. Here, I dwell on Parker’s sampler because it expresses two meanings of silence: the silencing of oppression, contested by the tacit skill, and the tacit community, of embroidery.

Whereas the feminist criticism of Lippard and Roszika Parker is nuanced in its account of power, Gauntlett, by contrast, emphasises a more straightforward critique of elitism, which is equated with art’s claim to precedence over craft, as in this passage:

> Today, the category of ‘artist’ is even more sharply removed from everyday creative practices, and often seems to be based on having the ‘right’ kind of art education, the necessary fashionable artworld connections, and pretentious ways of talking about things. (Gauntlett 2011: 43)
Gauntlett’s book works towards a middle-ground, towards an accessible knowledge against the elitist interests that theory sometimes serves. Making Is Connecting is sensitive to the linguistic codes that abound in academic work, and does an exemplary job of resisting them. But, in place of Lippard and Parker’s subtle contestation of the structuring of experience by engraigned and internalised forms of power, Gauntlett emphasises a generalised affirmation of popular creativity. The problem with such an affirmation is that it easily slides into an endorsement of the status quo, with vernacular craft in the role of public virtue.

Although there certainly is, and always has been, plenty that is self-serving and specious in the artworld, there are many specialised and celebrated activities that suffer from this problem. In fact, it is very important that the tense relation between art and craft should be explored in order to understand the changing terrain of the social turn. Grant Kester is an art theorist who is part of an American lineage of art activism that Lippard represents, and author of two important books on what he calls ‘dialogic art’: Conversation Pieces: Community and Communication in Modern Art (2004) and The One and the Many: Contemporary Collaborative Art in a Global Context (2011). For Kester, the role of the artist is to facilitate dialogue and to be able to listen and respond to co-creators. Kester, like Gauntlett, is sensitive to the fact that the interaction between artists and non-artists might involve an imbalance of power that is coded in the language used to make sense of artistic practices. In fact, Kester (2011) is scathing about much art practice in what he terms the ‘avant-garde tradition’ which he thinks deliberately refuses communication in order to maintain its elite status. On the other hand, he still believes that something can be gained by using art as a space that is removed from the usual determinants of social experience and their discourses of power.

Kester, in his most recent book The One and the Many, offers a perceptive commentary on social practice. He is critical of the tradition of artistic modernism where he traces an ideological identificiation with ‘the emergence of the solitary genius out of the lumpen creativity of the medieval guild or lodge’ (2011: 3). Of course, this is the same tradition that perpetuated the denigration and separation from craft. As Kester puts it:

The future of the singular, auriatic artist, reinforced by notions of artistic genius first formulated by Kant, remains the bulwark of the long history of modernism, and the epistemological template for much contemporary criticism and curatorial practice. (2011: 3)

This means that, for Kester, the social turn is about the exploration of the tensions that exist in the relationship between individual and collective. Modernist individualism is renegotiated in these works, although this task is far from straightforward. Kester notes that the key terminology used to describe and evaluate social experience contains contradictory meanings, marked by an ‘ethical undecideability’ (2011: 2). Terms like collaboration, individuality and collectivity contain strongly positive and negative connotations that open onto politically-charged questions. As Kester puts it:

Is the identity of the many based on coercive consensus, or radical plurality? Is the one defined by narcissistic projection or opening out to alterity? These are some of the most pressing political and ethical questions of our day. (2011: 2)

For Gauntlett, vernacular craft is about individual expression. This is stated more or less explicitly at the end of Chapter 2 when Gauntlett addresses William Morris’s socialism. He updates William Morris’s utopian communism when he states: ‘we do not have to choose between the individual and the collective: rather a diverse community of individual voices offers a satisfying combined solution’ (2011: 44). In a sense, Gauntlett wants vernacular craft to receive the valorisation of being recognised as individualised, whilst an art theorist like Kester wants to move away from the individualism that is often associated with the concept ‘art’.

There are interesting arguments to be had about the relationship between individuality and collectivity in craft. Richard Sennett’s famous example of the Linux programmers is an evocation of free, spontaneous collectivity: one where the emphasis is not upon personal psychology but on the objective need to solve a problem. This is what Sennett refers to as the ‘impersonal character’ of craftsmanship, where the fact ‘that you might have a neurotic relation to your father won’t excuse the fact that your mortise-and-tenon joint is loose’ (2008: 27). The Linux programmers’ practice is a form of making where individuality is subordinated to a collective task. Sennett directly contrasts the chathrooms of Linux programmers with his experience of visiting Russia towards the end of the Soviet regime. In this
visit he was shown the poor state of Soviet building work, which he reads as evidence of a demoralised workforce, born down upon by a moralising command and control economy. By contrast, the collectivity of the chatroom is anonymous but outspoken, where Sennett approvingly cites the very un-British, at least in his mind, words: ‘this problem is fucked-up’ (cited in Sennett, 2008: 27).

Social practice often negotiates the space between individual and collective in an interesting way. A useful example is the work entitled Project Row Houses, created since the mid-1990s by the African-American artist Rick Lowe, and still ongoing. As Lowe recounts the genesis of the project, he was inspired to create an art project that could genuinely act as a community intervention that might address some of the problems experienced in the 3rd Ward, a mainly African-American area in his home town of Houston. Prior to initiating this project Lowe was an artist creating more conventional work, including installations and paintings. He took over a row of shotgun shacks, that by the 1990s had become very run down, to act as the site for this project. The houses were slated for demolition. While the area had once been a thriving African-American neighbourhood, the community had gradually been eroded by the flight of middle-class residents to suburbia. In part, Rick Lowe’s choice for this work was inspired by a senior African-American artist in the area, John Biggers, who had created many works picturing these houses. Once shacks were fixed up, some of these houses were given over to single mothers. Others have become the context of art projects and artist residencies. The work is a combination of community and artwork, both individually and collectively authored. Rick Lowe is credited for this work, but the development of the community is not strictly his doing. The work is not ‘his’ because it is powerfully woven from the vitality of community. It also recreates an image of community articulated in the paintings of John Biggers – works that are clearly crafted objects that speak to an ideal of African-American community, and indeed a form of community that once existed.

Tom Finkelpearl, the director of the Queens Museum, addresses Project Row Houses in his book What We Made: Conversations on Social Practice. He reads this work as what he calls the ‘art of social-cooperation’ (Finkelpearl, 2013. kindle edition). This idea is useful because it underlines some of the interesting relationships that can be found between craft and social practice. Finkelpearl builds his account around American pragmatist philosopher John Dewey, who was always concerned to understand art and aesthetic experience as embedded in a social context. Dewey was opposed to the disembedding of art from social life in the context of the museum. Finkelpearl develops Dewey’s position to read works like Project Row Houses as made from forms of community cooperation.

It is interesting to think about Finkelpearl’s argument from the point of view of craft. Social practice art derives from a lineage of post-minimal and post-conceptual art. This kind of work is related to the art practices in the 1960s that rejected the production of crafted objects. In this tradition, related to conceptual art, painting and sculpture, the paradigmatic art objects are understood to demean art by their status as elite commodities. The rejection of this object was what Lucy Lippard called the ‘dematerialization of the art object’ (Lippard 1997 [1973]). In this sense it seems to be very far from discourses of craft, belonging to an extreme rejection of making as a practice of fashioning material. And yet, Finkelpearl sees social practice as a tacit collective making process that underpins all communal life. In order to clarify this point, he cites philosopher Axel Honneth’s assessment of Dewey’s work. Honneth writes: ‘In his endeavor to justify principles of an expanded democracy … Dewey takes his orientation not from the model of community consultation but from the model of social cooperation’ (Honneth cited in Finkelpearl 2013. Conclusion. Kindle edition).

Honneth contrasts Dewey with the philosopher Jürgen Habermas, who sees democracy as based in communicative interaction: the public sphere. For Finkelpearl, this means ‘Dewey’s democracy is based not on intersubjective speech but on cooperative action for joint problem solving’ (Finkelpearl 2013. Conclusion. Kindle edition). Here I would like to observe that this points towards an idea of collectivity which is analogous to Sennett’s famous description of Linux programmers. Finkelpearl sees this making as a tacit rather than a communicative process: his opposition between ‘intersubjective speech’ and ‘cooperative action’ certainly suggests this reading.

Although the social turn is most commonly represented as a move towards greater communication or ‘dialogue’ – the implicit position of both Gauntlett and Kester – I think that it is more instructive to think in terms of the different ways that silence works in craft and social practice at this time. As in much social practice art, Project Row Houses is difficult to talk about: photographs...
and artists’ statements do not get to the core of the work. Social practice tends to construct art as an entirely immaterial yet real thing – viewing invisible and intangible entities such as ‘social relations’, ‘participation’ or ‘dialogue’ as though they were simultaneously stuff to be experienced and worked upon. In order to really have knowledge of the work you have to participate in it. And yet, this is practically impossible if the work is to be disseminated. Discussions of this kind of work always refer to something beyond what is said: a tacit and immaterial making process which is understood as the substance of the work.

Gauntlett refers to the ‘vernacular’ as ‘the authentic, natural voice of a community, unselfconsciously communicated through everyday things that people have made’ (2011: 47). It is interesting that this ‘voice’ is located in the process of making: the site of tacit forms of skill. In this short discussion, there are a number of different meanings of silence. Vernacular craft is silent because it is the making itself that stands in for a collectivity, a community. In a different sense, dominance has a silencing effect those who are subordinated are refused a voice. Both Kester and Gauntlett acknowledge that art can be something that silences. And yet, the tacit knowledge that is crucial to making can be used to resist the silencing effect of power. The tacit skills involved in making invoke a community that is before any utterance, prior to language. In Elizabeth Parker’s embroidery, the words powerfully evoke a struggle between silences: words that could not be spoken or acknowledged as ‘written’, but could be stitched. The tacit process of making resists the imposed silence of repression.

Different silences also exist in social practice. Kester’s anxiety about the artist’s power acknowledges the possibility that collaborative art is involved in a project of silencing its participants. And yet, as Finkelppearl (2013) suggests, social practice posits co-operative processes of making similar to the vernacular in craft: the notion that a community can be tacitly expressed in a process of making. Although it has only been possible to show this in outline, I feel that the struggle between different valuations of silence is the most interesting location for the politics of the social turn. It is here that social practice art seems to try to make its way back to craft, through its claims upon an immaterial vernacular process of making. And yet contemporary art cannot quite reach beyond an addiction to speech. It continues to speak of the making that remains unspoken.

References


This paper explores how we might reinvigorate community-based approaches to the repair of clothing and garments and examines the potential roles for online and offline activities to facilitate knowledge exchange, build communities and develop new repair processes and strategies.

Until the mid 20th century in Western society cloth was considered to be a valuable commodity and clothes were regularly maintained and repaired to prolong garment use. Today the value attributed to clothing has dramatically changed and the practice of repairing or altering clothing has largely disappeared. While there is renewed interest in the creative potential of mending or altering garments amongst the online and offline craft communities, within mainstream society damaged clothing is typically discarded to landfill rather than repaired. Drawing on the findings of an empirical study conducted by an interdisciplinary team of researchers at Sheffield Hallam University, this paper discusses what is needed to encourage and support people to engage in clothing repair.

The repair and alteration of clothing had been practised for generations, both in an industry context and in the home. But within two or three generations the culture of repairing and altering clothes has largely disappeared as the fashion industry has increased the availability of inexpensive, mass-produced ready-to-wear clothing. The fast fashion garments that are readily available in every UK high street are often rarely worn and quickly discarded, which has important implications for the environment and society.

It is estimated that each year a consumer will contribute as much as 30kg of clothing and textile waste to UK landfills (Allwood, Laursen, Malvido de Rodriguez & Bocken 2006). While textile waste could be reduced if users engaged with repair activities, the attraction of new and relatively cheap clothing tends to incapacitate this engagement.

Fisher, Cooper, Woodward, Hiller & Gorowek (2008) argue that another possible reason for this disengagement is a lack of technical ability and skill. Aside from sewing on buttons or stitching up hems there is little evidence of repair work being undertaken as a normal, regular activity within a household. The research study ‘Make, Do and Mend’, discussed in this paper, tests this proposition by looking for the variances in knowledge and abilities amongst different users, and in particular between novice and amateur menders. Moreover, through a mixed methods approach including a practice-led inquiry the study has explored current patterns of use and behaviour to reveal some of the barriers to engagement. It is hoped these findings will highlight potential strategies for attitudinal change and identify motivators for future engagement. This may encourage producers and consumers to re-evaluate the way that they perceive fashion products, replacing the notion of fashion as disposable and instead seeing fashion as a valued object to be cared for and maintained.
Alison Gwilt

What Prevents People Repairing Clothes? An investigation into community-based approaches to sustainable product service systems for clothing repair

Abstract
This paper explores how we might reinvigorate community-based approaches to the repair of clothing and garments and examines the potential roles for online and offline activities to facilitate knowledge exchange, build communities and revisit repair processes and strategies.

Until the mid-twentieth century in Western society cloth was considered to be a valuable commodity, and clothes were regularly maintained and repaired to prolong garment use. Today the cultural and economic value attributed to clothing has on the whole dramatically changed and the practice of repairing or altering clothing has largely disappeared. While there is renewed interest in the creative potential of mending or altering garments in some quarters, in particular amongst the online and offline craft communities, within mainstream society damaged clothing is typically discarded to landfill rather than repaired. Based on empirical studies conducted by an interdisciplinary team of researchers at Sheffield Hallam University, this paper discusses the preliminary project findings and suggests what needs to be done to encourage and support people to engage in clothing repair.

It is useful to consider that the repair and alteration of clothing had been practised for generations, both in an industry context and in the home. However, within the last two to three generations the culture of repairing and altering clothes has largely disappeared, while at the same time the fashion industry has increased the availability of inexpensive, mass-produced ready-to-wear clothing. The fast fashion garments that are readily available in every UK high street are often rarely worn and quickly discarded. This has important implications for the environment and society, since it is estimated that each year a consumer will contribute as much as 30 kg of clothing and textile waste to UK landfills (Allwood et al. 2006). While the amount of textile waste could be reduced if users engaged with repair activities, the attraction of new and relatively cheap clothing is a major concern. However, as will be discussed, engagement with clothing repair has other social, cultural and personal benefits.

Fisher et al. (2008) argue that another possible reason for a general disengagement with clothing repair is a lack of technical ability and skill. Aside from sewing on buttons or stitching up hems there is little evidence of repair work being undertaken as a normal, regular activity within a household. The research study 'Make, Do and Mend', discussed in this paper, tests this proposition by looking for the variances in knowledge and abilities amongst different users, and in particular between novice and amateur menders. Moreover, through a mixed methods approach, including a practice-led inquiry, the study has explored current patterns of use and behaviour to reveal some of the barriers to engagement. It is hoped these findings will highlight potential strategies for attitudinal change and identify motivators for future engagement. Moreover, this is with the intention of encouraging producers and consumers to re-evaluate the way that they perceive fashion products – replacing the notion of fashion as disposable, and instead seeing fashion as a valued object to be cared for and maintained.

The link between textile waste and practices of use
According to WRAP (2012), approximately 350,000 tonnes of used clothing is sent to UK landfills annually. However, if each garment was used for approximately three years then in addition to the benefits to the environment there would be a reduction of almost £5 billion a year in the costs of resources needed to supply, launder and dispose of clothing (WRAP 2012). While the statistics reveal the high level of material waste that is produced as a consequence of garment manufacture and use, it is equally alarming that so much waste is still going to landfill when the alternative is for employing garment extension strategies to reduce this problem. Although textile waste is typically perceived as a consequence of the rise of inexpensive products in a saturated market, the archetypal practices applied during consumer use further contribute to this problem.
Controversially, it is often cited that in the lifecycle of a fashion garment it is during consumer use that most of the environmental impacts occur (Fletcher 2008; Black 2012). These impacts arise as a consequence of a series of activities in the use phase that typically include wearing, washing, drying and storing, and may extend to repairing, adaption and alteration and then disposal (Bras-Klapwijk and Knot 2001). Each person will develop a clothing care and maintenance routine that is based on personal patterns of use, which may be different to the practice employed by others. With this in mind, then, it becomes apparent that the way that garments are cared for can be vastly different between one user and the next; for example, garments may be laundered too often or infrequently, they may be ironed carefully or badly, but in many cases, independent of any established care routine, they are often discarded too quickly before repair or alteration possibilities are considered.

Before the Second World War, in the US and UK it was considered normal practice to repair and alter clothing, usually for economic reasons. Undertaken either in the home or in an industry context, the labour costs associated with repair work meant that at the time mending clothing was affordable in comparison to the price of new materials (Gwilt and Rissanen 2011). However, by the 1960s in Europe and the US, the ready-to-wear market began to dominate the fashion industry and clothes quickly became accessible and affordable. The impact of this expanding market helped facilitate a decline in mending, which in turn impacted heavily on a traditional culture of repairing and altering clothes. Significantly, the relatively high cost of clothing repair did not compare favourably with the price of new clothes. According to Fisher et al. (2008), in contemporary Western society the majority of users do not now engage in the mending of worn or damaged clothing as a regular or normal activity.

Although there may be many factors that influence this behaviour, some of the major deterents are associated with a shortage in household skills, the attraction of new inexpensive clothes, and the price and availability of repair services (Fisher et al. 2008). But in recent years there has been a resurgence of craft practices within online and offline communities that has led to a renewed interest in creatively altering clothing at a time when the notion of mending seemed to all but disappear from the cultural landscape. However, while some sectors of society have begun to acknowledge the environmental and social benefits of repairing clothes, this view tends to sit outside of mainstream thinking where the dominant belief is that damaged clothing should be discarded rather than repaired. The question is, then, how do we motivate and encourage people to (re)engage with mending practices?

Reconnecting people with mending

Garments in historical costume collections typically demonstrate a wide variety of ingenious and resourceful approaches to garment repair, and a number of these could be revisited to enable contemporary users to reconnect with repair practices. For example, it seems that repair work was considered only when it was needed, but traditionally many garments were designed and developed especially to accommodate later repair and alterations. During the seventeenth century the design of the stay (bodice) undergarment included sleeves that could be detached and reattached, which enabled the user to repair, maintain and wash the pieces with improved ease (Hart and North 1998). In a contemporary context this ‘design-led’ approach is seen in the modular fashion garment, which is a flexible clothing system that provides the user with a range of clothing combinations emerging from a small select core range of designs. Aside from this being an efficient use of resources and cost effective for both the producer and the user, the modular concept enables the removal, repair and replacement of damaged pieces without disrupting the rest of the system.

Throughout dress history it frequently appears that when mending did take place it served to masque damage – making it invisible – particularly in garments that were perceived as valuable or precious. The extent of techniques used to accomplish these repairs varied enormously, depending on the user’s accessibility to materials and skill, and the social and cultural norms of the time. During the Second World War in the US and UK, the government-led ‘Make and Mend’ campaigns promoted techniques such as darning, patching, and repurposing as a way to creatively and resourcefully reuse fabrics and garments. Numerous campaign leaflets were produced to educate the public in using a range of practical clothing care and repair strategies, which often required inventive thinking when using limited material resources. Most of the Board of Trade pamphlets produced by the UK Ministry of Information department promoted the use of invisible mending techniques that required a good level of skill, which was further supported with
council-run evening classes (Ministry of Information 1943). During this period being resourceful was perceived as a civic duty, therefore mending clothing was considered a responsible action that benefited the nation.

However, invisibly repairing the damage in a garment has not always been perceived as a necessity. Particular sub-culture groups, such as the anarchic Punk movement in the 1970s, challenged conventional styles of dress through the adoption of motifs such as rips, tears and stains in aggressively styled garments. In the UK, designer Vivienne Westwood exploited these concepts in clothing that was intended to shock, which provoked a reactionary response from the high streets and the catwalk (Laver 2002). In the late 1980s and early 1990s Rei Kawakubo from the Japanese fashion label Comme des Garçons incorporated randomly placed holes in monochromatic knitwear pieces, while Belgian designer Martin Margiela created deconstructed pieces that signalled a distasteful style using exposed seams and slash details. From the contemporary repair perspective the use of intended rips, tears and holes act as deflective devices that enable future damage to remain untouched and unnoticed.

**What do people know and think about clothing repair? A case study of the ‘Make, Do and Mend’ project**

An interdisciplinary team of researchers at Sheffield Hallam University established ‘Make, Do and Mend’ in 2013. The project was developed to explore what people think and know about clothing repair, and to identify what is needed to support and encourage people to engage in mending practices. This was with the intention of A: identifying methods that would reinvigorate community-based approaches to clothing repair, and B: documenting the potential roles for online and offline activities to facilitate knowledge exchange, build communities and revisit repair processes and strategies. The pilot study was driven by three main research questions, which focused on understanding:

- what people think and know about clothing repair
- what people currently do with damaged clothes
- what is needed to support and encourage people to engage in repairing.

At the outset of the study it was important to explore two key aspects: first, to reveal what users know, and secondly, to see what they can do. While there are a number of craft books, websites and magazines that provide information about clothing repair, little research outside of the report from Fisher et al. (2008) has been done to compare the attitudes of wearers with actual ability or behaviour. Moreover, it was necessary to reveal and compare these two positions so that the support mechanisms to encourage future participation could be identified. This required an understanding of the role that online and offline communities can play in supporting engagement. Consequently it was also necessary to explore the role of web-based networked communities, forums and groups in stimulating a wide variety of DIY approaches to craft and design practices. However, while the study focused on encouraging mending within the domestic environment, an underlying aim was to see the potential of mending from an industry perspective, and to look for business models and opportunities that could be adopted by or within the fashion industry and textile crafts arenas.

**Our approach**

Taking a mixed methods approach, the study began with a survey that was distributed amongst online sewing communities, forums and networks. The aim was to understand how online forums support users and how knowledge is shared and interest sustained.

A further survey was distributed amongst the local community in an attempt to capture a general picture of attitudes towards the repair of clothing. We asked people what they currently do with damaged clothes, what their motivations were, the barriers they faced and what support would be needed if they were to engage in repair work in the future. We also wanted to establish whether opinions and behaviours differed between groups of users – for example, whether there were gender, cultural or generational differences.

Running concurrently with the survey collections, we observed the physical approaches of users in two practical workshops. The workshops were designed to gauge the ability of two different types of volunteer menders – the novice mender and the amateur mender. The volunteers were required to self-elect and enrol in the appropriate workshop session. For the purposes of the research the novice was considered to be a person with little or no sewing/clothing repair ability, while the amateur was classified as a proficient ever, dressmaker or repairer. Each participant was required to repair either a hole in a pair of denim jeans or a cotton
t-shirt, two basic items found in most wardrobes, and the intention was to repair the item to a wearable standard. Each participant was presented with a range of basic sewing equipment (needles, thread, fabric), household and stationary items (sticky tape, staples, glue), and resources such as a sewing machine, computer, and books. At the same time, the participants took part in interviews and visually documented their process as a way of capturing their thoughts, decisions (and indecisions), dilemmas, and trials as they progressed through the task.

While we wanted to observe the thinking, approaches, creative practices and decision-making by the participants, we also wanted to understand the relevance and context of the tools and resources used to complete the task. Moreover, we were looking to see whether there were any differences in the approaches used by the novice and the amateur: Would the approaches between individual and banded participants differ? What impact did creativity or skill have on the final outcome? How did the participants feel about the task? As the participants embarked on the task it became apparent that it was necessary to question the appearance of a repaired garment, and ask how we measure good repair skills, and by whose standards. As the study progressed these points became critical as it became clear that from the moment of the workshop self-enrolment exercise the participants typically had a different view of their own ability or knowledge than that observed by the researchers.

**Initial findings from the 'Make, Do and Mend' project**

Historically, wearing repaired clothing was a signifier of financial hardship, and this idea continues to have influence in contemporary society where one of the challenges to overcome is encouraging people to wear garments that have been repaired, particularly if the repair is visible. For many people it is still socially unacceptable to wear visibly repaired clothing. We wondered, then, whether the participants would hide the damage of an item or allow it to remain visible and become a symbol of distinction and individuality. Would participants be confident enough to celebrate stains, holes and tears by enhancing and enriching these ‘new motifs’ using decorative techniques, or would they opt for the convention of the invisible repair?

Observations in the practical workshop sessions were quite different from the data collected in our survey. In the survey results 82 per cent of respondents preferred their garment repairs to remain invisible. However, while this view was verbally echoed amongst many attending the workshops, in their own finished repaired garment the mending was often visible. In many cases the participants had hidden the damage behind a cloth patch, but the patch itself was clearly visible, almost decorative. These contradictions may be in part due to the issue of the participant’s lack (or perceived lack) of skill, which within our survey and interview data was identified as one of the significant barriers to engaging with repair work. An early observation which can be drawn from both the workshop and the survey results is that if people aspire to invisible mending techniques then there is a danger that they may be disappointed as this type of repair can only be achieved by the most skilled.

In seeking clues as to what is needed to support people in repairing, it came as some surprise that from our data we established that despite the availability of specific resources (such as books, workshops, short courses or formal online groups), many people initially sought advice from a family member and/or the internet. It appears that a combination of online and offline resources is considered valuable. Moreover, in the interviews with the workshop participants it was highlighted that attendance at the practical session gave the participants the time and access to resources to carry out the repair work in what was considered an enjoyable experience, despite no practical guidance or support from the researchers. This was in stark contrast to the survey data where the notion of repairing clothes at home was sometimes considered a time-consuming task that was a ‘chore’.

The initial ‘Make, Do and Mend’ pilot study has allowed us to begin to identify issues and barriers that affect a user’s relationship with clothing repair and also to begin to identify some of the mechanisms that can support engagement. It is clear that a larger study is needed to gain data that is representational of a wider variety of people, and this is being pursued as a future objective. Although the online survey involved 200 respondents, the numbers of respondents under the age of 25, along with those representing the male population, was smaller than hoped. At the close of the project we produced a public exhibition of the repaired garments and progress worksheets. From interviews and surveys completed by visitors to the exhibition we found that the number of male and younger respondents increased dramatically. Moreover, we have begun to explore how the findings from the research to date might be used to the benefit of the design...
community, motivate new design models and inform new business initiatives.

Moving forward

For the majority of fashion producers the measure of their success is grounded in the economic value attributed to the production and consumption of fashion goods. The fashion system is made up of a (global) network of producers, manufacturers, designers, and retailers, but rather than see this solely as an industry related to production perhaps it is timely to consider this as a community connected to use. If we begin to see fashion from the perspective of a community of use we are better able to explore and challenge the way that garments are created, used, cared for and discarded. It is predicted that product/service combinations will play an important role in establishing resource-efficient consumption modes (Bras-Klapwijk and Knot 2001). For the fashion industry this prediction could lead to models of practice that embrace service approaches including leasing, repairing, remodelling or remanufacturing activities that sit alongside or in place of traditional production paradigms. For example, the concept of modular fashion, discussed earlier, enables fashion producers to efficiently manufacture a small range of modular pieces in comparison to the high costs required to manufacture small numbers of individual products (Quinn 2002). However, while the modular system model can reduce production costs, it can also provide the consumer with a value-added garment (through its adaptability) at a competitive price. The potential to develop garments that actively facilitate the repairing, altering or replacing of components offers obvious benefits to the user and the environment. These possibilities, amongst others, provide new potential dimensions to the business practices of a fashion company.

The majority of the homogenised fashion that dominates the high street is a consequence of modern-day large-scale manufacturing, but the future of the industry may lie in the growth of smaller fashion enterprises that are run at the local level (Allwood et al. 2006; Black 2012; Fletcher 2008). At the local level it is possible to cultivate an interconnected fashion community that includes skilled artisans, service providers, suppliers and consumer/users who can think at a global level and yet act at a local level (Manzini 2003; Fletcher 2008). However, the growth of a localised fashion community is reliant on an engaged and motivated community of users; therefore there is a need for the contemporary fashion industry to consider a new proposition where there is a strong connection between the producer and user. A fashion product-service business that is embedded within a local community is in a position to connect with and respond to its customers whilst reducing the unnecessary over-production of garments. Designers working in this type of business need to reject the conventional approach to production, which requires designing from an external (professional) perspective, to that of designing from an internal (user) perspective. This collaborative process necessitates the designer having a better understanding of user behaviour, since it is this knowledge that can inform new product innovations and influence and encourage improved practices during use.

As we move forward to the next phase of our project the intention is to gather data that represents a wider range of attitudes and behaviours towards clothing repair. While this information can assist fashion producers and designers to develop innovative products or business models that support an improved care routine, it is also apparent that the transference of knowledge and skill between and across individuals and communities of wearers is of social benefit. However, to encourage the sharing of mending knowledge amongst communities there first has to be an acceptance of wearing visibly and invisibly repaired garments as a cultural norm. This acceptance needs to extend beyond the youth market and fashion avant-garde and into mainstream fashion markets (Fletcher 2008).

Conclusion

It is vital that the designer begins to appreciate the functions and tasks attributed to the use phase of a garment, as the negative environmental impacts associated with fashion clothing are significant during this phase of the garment’s life-cycle. However in many micro and small to medium-sized companies the process of design rarely invites the opinion of the user but instead relies on feedback from a sales team or retailer. By bringing insight into the creative process that has been gleaned from examining the use phase, then the opportunity to produce innovative solutions in fashion can arise. At a practice level the designer can begin by reflecting on their personal experience as a wearer, but the most useful insight is best gained directly from users who have experienced and interacted with previously developed products. The ‘Make, Do and Mend’ project has already provided data that could be beneficial to the fashion community and in particular
to those who choose to develop new improved products or explore new fashion product/service business opportunities. Moreover, the project reveals the need for society to re-engage with mending practices, and in particular for mainstream users to accept and wear repaired garments whether they utilise invisible or visible mending techniques.

These points bring to light the issue of responsibility; while the suggestion is that the designer can do more to support the repair of fashion clothing, they are also reliant on the wearer both engaging in repair work and then electing to wear the repaired article. Strategies that follow this kind of tactic reiterate the need, I believe, for us to start thinking of fashion existing within a community rather than an industry, where we — suppliers, designers, producers, retailers, wearers, menders and recyclers — all have a part to play.

References


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Dr Fiona Hackney

Taking CARE: building community assets through creative-making

CARE stands for ‘community asset-based research and enterprise.’ An Arts & Humanities Research Council funded project, it aims to test and develop a methodology for co-produced community learning through creative practice that builds dialogue, promotes self-reflection and eXitvity. The research focuses on hobby crafts: activities such as knitting, crochet, embroidery, woodworking, metalwork, quilting, lace-making, that are undertaken voluntarily for pleasure and involve high levels of ingenuity, competence and creativity. They represent an important area of community assets and strengths; skills, knowledge, expertise and capabilities that are often devalued or dismissed but which, if recognised, might be developed and applied more widely through volunteering, training, community activism, small business or social enterprise. An initial pilot project has been completed with community participants in Birmingham and Cornwall, and the results recorded in a series of short films. This paper explores the methods and outcomes of that pilot study, explaining how the CARM model will be scaled up to connect the initial participants with groups in Dublin and Sweden.

A third of the world’s population is now connected through social media and the internet yet, as Sherry Turkle observes, the more connected we become the less we seem to engage and interact. Connecting and sharing through crafting and making, this paper argues, can forge deeper, more meaningful relationships that combat isolation and promote individual and community agency. Handicrafts, the purest form of hobby activities according to hobbies historian Steven Gelber (1999), offer opportunities for an integrated participatory methodology that both grows from the grassroots and has the potential to be scaled up; applied to other ‘communities of interest’ such as sports clubs, business groups, ecological societies, performers, dance enthusiasts or gardeners (Wenger 2002). Having confidence in one’s own abilities is a powerful position from which to take on new skills, and a belief in the value of intergenerational and cross-cultural skill-sharing through applied learning (learning through doing) between community participants and the project team underpins CARM’s co-creational ethos.
Fiona Hackney

Taking CARE: Building Community Assets through Collaborative Creative-Making

A third of the world population is now connected through social media and the internet yet, as Sherry Turkle observes (2011), the more connected we become, the less we seem to engage and interact. This paper argues that connecting and sharing through crafting and making can forge deeper, more meaningful relationships that combat isolation and promote individual and community agency. It focuses on amateur crafting practices to explore how handicrafts – the purest form of hobby activities according to hobbies historian Steven Gelber (1999) – might offer opportunities for an integrated participatory methodology for connecting and learning through making and sharing that both grows from the grassroots and has the potential to be scaled up and applied to other communities of interest and practice such as sports clubs, business groups, dance enthusiasts or gardeners (Wenger, 1998). The Arts and Humanities Research Council (AHRC) funded Co-Creating CARE project, a partnership between Craftspace, Birmingham, Voluntary Arts England, Bealtaine Festival (age and creativity), Dublin, and Falmouth University, which works with crafters in Cornwall, Birmingham and Dublin to explore collaborative engagements through making, is the central case study for research: http://cocreatingcare.wordpress.com/the-project/

Millions engage in creative hobbies each year, activities that are undertaken voluntarily for pleasure and involve high levels of ingenuity, competence and creativity. Often dismissed or devalued, the knowledge, skills and expertise embedded in hobby craft activities could be developed and applied through, for instance, volunteering, training, community activism, small businesses or social enterprise. As a medium and a process, craft has unique potential to engage individuals and communities, and bring them together in dialogue through making, bridging differences of culture, age and identity (Sennett, 2012). The diverse ways in which community knowledge, potential and agency can be maximised through genuinely collaborative co-designed projects, which engage all participants in some or all of the design process, and the role of creative practice in this, is an additional concern (Light et al. 2013).

CARE stands for ‘community asset-based research and enterprise’. It aims to test and develop a methodology for co-produced community learning through creative practice that builds dialogue and promotes self-reflection and flexibility. The research focuses on such activities as knitting, crochet, embroidery, paper-cutting, quilting, woodwork and lace-making. Having confidence in one’s own abilities is a powerful position from which to take on new skills, and a belief in the value of intergenerational and cross-cultural skill-sharing through applied learning (learning through doing) between community participants and the project team underpins the project’s co-creational ethos. An initial pilot project (P1) has been completed with community participants in Birmingham and Cornwall, and the results recorded in a series of short films a film summarising the project is available at: http://vimeo.com/69686569). This paper focuses on the methods and outcomes of this study and considers how learning will be applied in the second phase (P2).

Project partners are central to the evolution, dissemination and impact of CARE, and their close involvement ensures that research is embedded in, and connects with, existing community activities, interests and concerns. Deidre Figereido, Director of Craftspace (http://www.craftspace.co.uk/) has extensive experience working with craft and social engagement and is actively involved in the project as community co-researcher, facilitating research, co-design workshops and project activities in Birmingham and Dublin. Craftspace has strong links with Bealtaine Festival. The two organisations developed the Wandering Methods project with a craft group in Dublin (http://bealtaine.com/wandering-methods). Connecting this group with a Fab Lab in Cornwall, CARE aims to help build skills and capacity through collaboration (www.makernow.co.uk). Voluntary Arts’ recently completed Hand on Crafts research project (http://www.voluntaryarts.org/take-part/hand-on-crafts/), which explored skill-
sharing through craft and digital practice, provides important qualitative data about creative making and intergenerational sharing, and informs the project. The Crafts Council is a CARE collaborator and will help disseminate project outcomes to the wider crafts community.

Taking CARE: Theory and method

Before considering the outcomes of the pilot in more detail, it is useful to outline the project’s theoretical and historical underpinnings: the ideas and arguments that informed our thinking and helped us shape what we did. What we understand as craft has changed beyond all recognition in recent years. Terms such as crafting, craftivism (craft activism), manbroidery, counterfeit crochet, net craft, ‘stitch ‘n ‘bitch’, guerrilla knitting, yarn bombing, Punk DIY, subcultural and indie craft signal a new energy in the craftworld (Adamson, 2010): a will to re-engage with craft agency, its political heritage and the counter-cultural radicalism of the 1960s and 1970s (Buszek 2011; Greer 2008). This re-emergence of craft is generally associated with a younger generation of activist, technology-savvy makers (Minahan and Wolfram Cox 2007; Von Busch 2010). Craft as socially engaged practice, however, also provides a lens through which to view home and hobby crafts and reconsider the agencies it affords in the context of everyday life. The apparent cultural invisibility, domestic, gendered and amateur constituents of home and hobby crafts provide a starting point to explore ‘other’ forms of social engagement, agency and community activism; a mode of ‘quiet activism’ perhaps, that embodies and enables ‘the ability or capacity to act’ (Bratich and Brush 2011; Hackney 2013a).

Perceptions of crafts practice as political, however, are neither new nor uncontested. Anthea Black and Nicole Burisch use the term ‘craftwashing’ to describe instances when a craft aesthetic is used to market fashionable goods whose desirability often obscures the ‘sticky ethical, environmental, and economic questions around their production’ (Burisch 2013). A recent event hosted by Norwegian Crafts at Toynbee Hall – the historical heart of British socialism – was more optimistic about the role of craft as an agent for social change. Simple solutions to questions about the political efficacy of craft remain illusive, yet having these debates is vital; they contribute to the often highly charged discussions about the meaning and value of craft, particularly in the light of DCMS proposals to remove it as a category with the creative industries (The Guardian 2013). These are challenging but also exciting times. Commentators write about plurality, process and an expanded notion of crafts practice that includes processes of conversation, questioning and thought formation (Ahl 2010; Gates 2013). Craft historian Paul Greenhalgh (2002) draws attention to the ‘persistence’ of craft in a wide range of activities in science as well as the arts, although he remains dismissive of amateur practice, while Glenn Adamson (2010, 2013) identifies crafts’ political and post-disciplinary aspects as the twin tendencies defining the future of the discipline. Both argue that in a period of unprecedented change historicising contemporary crafts and their political and social underpinnings is essential in order to reach an understanding of craft beyond the boundaries of prescribed genres.

Current interest in the socio-cultural aspects of crafts, how they function in wider society as a means to connect or enable groups and individuals, informs the sociologist Richard Sennett’s recent publication Together, the Rituals, Pleasures and Politics of Cooperation (2012). Sennett proposes that making things together promotes modes of social cooperation and can generate new ideas about how society might work. He argues that by isolating people modern society not only breeds anxiety but also de-skills individuals and communities. Defining cooperation as an exchange in which participants benefit from the encounter, achieving what they can’t do alone, the challenge is to forge new forms of meaningful collaboration, a process fraught with difficulty but which, if achieved, could help groups and individuals build dialogue with one another and gain insight into themselves.

Any project exploring creative collaboration must consider how communities work and the power relations embedded within them. Alison Gilchrist’s (2000, 2009) notion of the ‘well-connected community’ as an integrating mechanism that ‘tolerates difference, celebrates diversity, promotes equality and acknowledges mutuality’, and my recent work on the activist elements of historical and contemporary hobby crafts (Hackney 2013a) provide a framework for thinking about the forms of agency associated with creative making and the nature of hobby craft groups. Gilchrist (2000, 2009), who has been involved in community development for over thirty years and acts as a consultant on the CARE project, draws on complexity theory to map out a model of ‘community’ as an integrated and evolving system of networks comprising diverse and dynamic connections. Communities, nevertheless, she reminds us can function in positive and negative ways. So while informal networks function as a
collective resource – a repository of common sense, experiential knowledge and shared wisdom, often mediated by women – they can also be oppressive and exclusive, preventing the community acquiring new insights or learning from experiences that challenge assumptions. Gilchrist proposes an ‘edge of chaos’ model; an intermediate zone between rigid and random modes of action and thought in which forms of ‘untidy creativity’ might operate.

This conceptualisation helped us think about a typology of different crafting groups, from long-established groups with a relatively rigid set of shared attitudes and beliefs about the value of making, to the more transient nature and loose affiliations of those who come together sporadically, but whose main commitment is to their individual practice. It also made us think about the process of collaboration and how practices of ‘untidy creativity’ and new forms of collaboration might result from introducing elements of randomness in the form of uncoordinated acts of creative-making. The participants, whether trained or not, might be perceived as a new type of amateur practitioner who, informed by a wealth of online and offline resources as well as their life experiences and expertise, open up an alternative space between professional and amateur practice, forging new channels of value and ‘quiet activism’ through exchange (Hackney 2013a). Paying attention to the ‘small stories’ (Gates 2013) of creative exchange, moreover, provides insight into how agreement is, or is not, achieved; the struggle that occurs as participants’ ideas and values are challenged or reinforced (Hackney 2013b).

Working with crafts hobbyists is an ideal means to engage with older people’s creative practice and its potential when increasing numbers face long periods of retirement on limited incomes, or have to deal with significant life changes in their middle years. Apprenticeships focus on younger people, while all ages participate in hobbies and possess hobby-based knowledge, networks and competencies, and handicrafts have an established history of social inclusion, crossing boundaries of class (Gelber 1999). The therapeutic aspects of making, moreover, have long been debated and recent evidence confirms the benefits to health and wellbeing of structures and process that offer creative challenge and control (Reynolds 2010).

For these reasons, CARE’s pilot study focused on intergenerational exchange between a small group of older (fifty plus) women crafts practitioners and younger (under fifty) textile students, and a member of staff. The decision to include students and a member of staff as largely pragmatic (a matter of access within the time limitations of the project) and to some extent introduced underlying tensions due to differing perceptions of amateur and professional practice, and the power relations associated with these positions. The different ways in which participants positioned themselves in this regard, however, was illuminating. Several of the older women, though working principally in an amateur context, had professional arts training and aimed to take their practice onto a professional footing. The students, meanwhile, elected to work with unfamiliar techniques, viewing the project as an opportunity to learn new skills and experiment beyond the boundaries of their normative studio practice.

Drawing on action and participatory research methods, CARE developed a research framework with participants, which was intended to encourage reflexivity and explore processes of shared learning through making, exchange and skill-sharing, at a distance and face-to-face (Crouch and Pearce 2012). As such, the research feeds into debates about alternative modes of education, apprenticeships and online learning communities. The methodology foregrounds ‘doing’ and is organised around a series of actions and processes of making, narrating, sharing, responding, connecting and reflecting, which were captured on film and orally.

‘Call and response’: Pippa’s story

Six intergenerational ‘buddy partnerships’ consisting of one older Creative Practitioner (CP) and a younger Creative Respondent (CR) were established with community participants in Birmingham and Falmouth. A ‘show and tell’ method, which we came to describe as a ‘call and response’, for sharing was established whereby the CPs told their ‘making story’ through a short film and the exchange of a ‘making box’ (containing a few representative items) and the CRs created something in response: a crafted item, a sketch book, a short film, etc. The buddy partners then came together to record a ‘buddy exchange’ to discuss their responses to each other’s work. Everyone came together for a Knowledge Sharing event at the end of the pilot phase to reflect on their experiences, view the films and discuss the materials produced. The six participants used a range of craft mediums from embroidery and sewing to lace-making and paper-folding. Each had a distinctive story to tell, but common experiences and motivations emerged. The Cornwall CPs, Linda, Jane, Barbara and Pippa, were filmed by Bryony Stokes and, in Birmingham, films about Elsie and

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Myrtle were made by Joseph Potts. This section will focus on the Cornish participants’ ‘making stories’, and Pippa’s film in particular. These, I argue, voice craft narratives that are often overlooked in films that develop what could be termed a community craft aesthetic in a particularly compelling way (http://cocreatingcare.wordpress.com/projects/).

The CPs tell their crafting stories in first-person narratives, using selected craft items and tools (a sewing machine, a spinning wheel, an embroidery hoop, for instance) as props that demonstrate the sights and sounds of the making process. Linda, whose film is a riot of colour, talks about the addictive – even compulsive – and therapeutic aspects of crochet, spinning and felting: ‘if you’re creative and you’re busy then it also helps you to be happy’, she observes. For Linda, as for many if not all the women, it is the ‘creative process’ that drives her. She explains how crochet set her on a path that led to art college as a mature student and work as an abstract painter. Whereas Linda valued the speed and ease of crochet, others describe the time and patience their craft involves. Jane, who originally trained as a fine artist, took up needlework more recently and is a member of an embroidery group in Helston, Cornwall; she combines her stitching and fine art skills to produce mixed-media pieces – responses to landscape – that are proving so successful that she is currently embarking on a ‘second career’ as an artist/maker. In her film, Jane re-iterates the conviviality and comradeship of the Helston group where there is ‘no stitching and bitching. There’s stitching and chatting and laughing and joshing. But actually the focus for everybody is embroidery and it’s an exchange of ideas, and skill and experience. It’s so good for the soul’ – a sentiment her colleagues endorsed. Barbara, another member of the Helston group who works in stitch and lace, relishes the process of hand-making: ‘the longer it takes the better I like it. I like the detail, which can be a blessing and a curse.’ In her films, she displays the first piece of lace that she made and demonstrates working with bobbins, commenting on both the beauty of the imperfections and the potential of the process, reflecting that ‘the only limitation is your imagination.’

Pippa, the last of the Cornwall CPs, discusses the difficulties involved in being creative and making sewing pay. I will analyse her film in more detail in order to consider the relationship between form, content and narrative. The film opens with a cropped shot of Pippa’s hands at work on a red garment (putting a zip into someone’s much-loved cardigan) as, against the background hum of her sewing machine, she explains how her business gradually snowballed from home dressmaking activities to more ambitious projects. The camera moves between close-ups of Pippa working to shots of her in her workshop and ends with a still of her standing outside her shop front with the title of her business ‘Make-Do & Mend’ prominently displayed. This series of shots provides a backdrop for Pippa’s narrative of her ‘making journey’. She describes how she learnt to sew at home from her mother who was a dressmaker and needlework teacher, and how she learnt the economic value of her skills, making additional income when training to be a teacher and when her children – she has five – were young. The story of how the business grew with the support of her local community is told against a sequence of stills: cloth, cotton reels, order books, clothes, pins, even a cat, which convey the intimacy of work in a family/domestic setting. The shop is located in part of the family home (although it was originally a shop) and the business employs three full-time and two part-time staff including her husband (after he was made redundant) – he does the canvas work – and one of her daughters. They do repairs and alterations, tailoring and dressmaking, make curtains and soft furnishings, upholstery and canvas work: ‘you have to be adaptable’, Pippa reflects. She is eloquent and adament about the real need for this kind of service at a time when a lot of people don’t even have thread in the house:

I feel these skills need to be continued. People need to do them for pleasure but also to see them as an opportunity to earn money, to make a job from it. And they are quite undervalued skills, I think, because they are craft skills and people see them as just hobbies now rather than a way of earning a living. The main satisfaction, I think, at the end of it is that you’ve got something that is absolutely unique and is yours. You’ve got that ownership of it haven’t you and the pride, and that I think is the thing that is very difficult to instil in people, the pride [pause] of creation perhaps [laughs].

The camera returns to shots of Pippa working on the red cardigan, returning the viewer to the task in hand as she voices her major concern: the ‘big divide between doing something as a hobby and thinking of it as a profession’. The difficulty, that is, of combining creative projects with the more mundane jobs that bring the money in – a dilemma that sits at the heart of this project. In the closing shot, Pippa talks about the satisfactions of running a crafting business (see quote above), affirming the significance of ownership...
(of one's work and one's business) and the creative fulfilment one be had from working in this way.

A montage of close-up and contextual shots, action, narrative and carefully observed stills of the tools of Pippa's trade, the visual aesthetic (colour, texture, decoration, pattern and attention to detail) of the film communicates the importance of 'small things'. The movement between hand, face and object establishes a slow, deliberate rhythm that echoes the sound of the sewing machine and conveys a mood of calm, concentration and absorption. The sense of specificity, value, excitement and intimacy underscores and reinforces Pippa's narrative about valuing skills and competencies that are often dismissed as unimportant, domestic or hobbyist, and how these might be transformed into something more 'serious'. 'It is a question of having the confidence in your abilities and valuing what you do and then other people will value it', she declares: a mantra that bookends the film being delivered at its start and end. Pippa's film depicts a quietly confident, highly articulate woman whose attitude and achievements represent a form of quiet activism – an inspiring example of resourcefulness and resilience that exemplifies how undervalued, amateur skills can be transformed into a creative, fulfilling job.

The Cornish CRs, Mia, Hannah, Kathleen, and Zoe, used a variety of methods and means to respond to, and reflect on what they were given, including sketch and scrap-booking, collage, embroidery stitching, digital sketch books and digital embroidery, and examples of work can be seen on the project website. Time was limited and they could not produce finished pieces, but this enhanced the freshness and immediacy of work such as a lovely short film that Kathleen made in response to Jane's work and her feeling for colour in landscape. The resulting 'buddy film' are available on the CARE website and while there is not space to discuss specific outcomes here (more detail is given in the section below) there was general agreement that the 'call and response' method created an unpredictable and imaginative space akin to Gilchrist's intermediate zone of 'united creativity', which would benefit further investigation.

'Material consequences': Making, sharing and reflecting

Three major learning points emerged from the Knowledge Exchange event at the end of the pilot phase. Firstly, everyone agreed that the films, particularly the first set in which the CPs talked about their work and motivations, had great presence as things. Participants found them inspirational and enjoyed watching each other's films, while several reflected that their films used them to view their own work in a different light. However, concerns emerged that, although beautiful, the films were overly mediated and that the second set of 'buddy film' were descriptive rather than reflective. A process of sharing, connecting and reflecting as needed which allowed participants greater control over the process in a less stage-managed, time-limited manner, with opportunities for further 'call and response' iterations. Secondly, the degree to which participants invested in CARE depended on the extent that the project corresponded to their needs, interests and aspirations; what they had to share, for instance, or what they wished to learn. Some found immediate points of correspondence with and/or interest in their buddy's work while others were less satisfied, feeling that their work had been misunderstood or misinterpreted. More flexibility was required in the CARE process to allow participants to shape their 'call' and take ownership of the project, signalling what they had to offer, what they wished to learn, or to achieve, and how they wished to do this.

Thirdly, tensions emerged around different concepts of craft, skill, learning, amateur and professional practice, hand and digital making, and the complex notions of identity bound up with these. Generational differences emerged here and were particularly evident among those with a strong sense of community identity who, for example, felt that the project pushed them into new, unfamiliar territory but did not fulfil their primary aim of passing on information about traditional skills and techniques. To some extent, these points of tension were the most productive things to emerge from the pilot because they signalled where learning/change was taking place and, crucially, how this might not always be a pleasant experience. Acknowledging that moving out of one's 'comfort zone' can be difficult, explicit protocols are needed to ensure that participants are prepared to encounter unfamiliar approaches to creative making while asserting their own views; to be ready, in other words, to seek a means of compromise. The pilot suggested that compromise is bound up with the ability to recognise change when it occurs and reflect on it. One participant, for instance, felt that she experienced a revelation about her work – she went so far as to describe it as 'an epiphany' – but didn't reflect on this within the context of the engagement process. Additional 'call and response' iterations would have enabled her to share this experience with her buddy, opening possibilities for deeper reflection through collaboration.
The pilot project helped the team to identify some of the shortcomings, but also the strengths and real value involved in a ‘call and response’ method for promoting collaborative learning and self-reflective through making. Issues around the power relationships involved in exchange, differing values and identities (group and individual), aspirations, needs and skills that arose, however, suggested the need for a project framework that was more interactive. The idea of a digital platform to develop the ‘call and response’ method as a form of ‘material consequences’ by introducing chance elements of interaction and capturing the ‘small stories’ of collaboration emerged from discussions at the Knowledge Sharing event. The title signals the playful aspects of collaboration as well as the importance of material making as a process. The digital platform will include members of the project team to ensure a more inclusive approach to research and will be developed through community co-design workshops with participants. Digital workbaskets will serve as a place to store (and share) products and reflections from the ‘call and response’ exchanges (stories, video, patterns, instructions, poems, images) and basket interactions will be captured in a series of micro-blog posts.

Conclusion

The idea that seeing oneself through another’s eyes could unlock unrecognised potential, and that collaboration, co-operation and exchange through creative making might offer a unique way of achieving this, which emerged from discussions with project partners and participants, was an important starting point for the CARE project. We have not yet fully tested this precept, but the pilot project provided insights and pointers, and illuminated many things, not least the value of film or communicating craft and its potential for developing a visual rhetoric for telling the largely overlooked stories of those working outside mainstream craft networks in compelling ways. The CPs’ making stories, moreover, demonstrate the fuzzy distinctions between amateur and professional practice, suggesting a creative space in which these ‘new amateurs’ might re-imagine their practice untrammelled by professional dictates in distinctive ways. To return to Sennett (2012), achieving cooperation (not collusion) is a difficult and demanding process. He describes a ‘fraught, ambiguous zone of experience where skill and competence encounter resistance and intractable difference’ (p.336), something that both echoes Gilchrist’s notion of an intermediate zone of ‘untidy making’ and captures some of the tensions experienced in our buddy exchanges, when different generational and/or community-located notions of creative making clashed and/or found grounds for compromise. Sennett argues that the trick is to respond to others on their own terms. This involves such skills as: the ability to listen well, behave tactfully, find points of agreement, manage disagreement, avoid frustration and achieve interactions that are ‘knitted together’ though exchanges of difference (dialogic cooperation) or the location of common ground (dialectic cooperation) or, most often, a combination of the two, observations that will be foremost in the CARE team’s mind as we move forward to phase two.

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References


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Sustainability Innovation and Activism

This paper draws on the legacy of Norwegian philosopher Arne Naess' Deep Ecology movement initiated in the 1970's, still controversial to some, and seeks to make connections and convergences with the concept of Deep Craft, a term more recently used to describe and celebrate not only making but the quality and deeper ethics of making. This views craft as more of an ecological design strategy and indeed a way to live.

In searching for new descriptions and terms of reference I will endeavour to critique these two concepts through the perspective of Ecofeminism; attempting to re-empower the feminine. I will also be referencing my own textile-based practice as I seek to draw attention to our impact on the world by re-materialising single-use objects commonly discarded.

Deep Ecology

Deep Ecology is both a school of thought and a movement; it advocates the inherent worth of living beings regardless of their usefulness to human needs. It is a set of ethics based on non-anthropocentric belief systems. Cultural practices are placed in the context of a greater living cosmos and decisions are assessed in light of the effect on the broader living organism of which the self is a part. This is in contrast to environmentalism for purely human interests.

Ecofeminism

Ecofeminism encourages an ethical perspective that challenges patriarchal structures that have often equated women with nature. It offers an analysis of gender and the role of these relations in the oppression of nature, suggesting an inclusive environmental ethic enforced by 'Other' perspectives that resist the domination of patriarchal social relationships with nature.

‘While both ecofeminism and deep ecology share a commitment to overcoming the conventional division between humanity and nature, a major difference between the two is that deep ecology brings little social analysis to its environmental ethic.’

Ariel Salleh

At a time when, to quote Paul Greenhalgh, we are ‘swimming in stuff’ my own practice concerns the re-materialisation of detritus; single use objects are unpicked and re-invented; revealing just how much material is inherent in these objects, playfully bypassing their functionality and emphasising their fragility. In proposing this paper I am also searching for ways to ‘deepen’ my own understanding and motivation.

alisonharper.net
Deeper and deeper? Deep ecology, deep craft and ecofeminism

I feel the writing of this paper very much brings my life full circle if you like; when I first left school I went to university to study sociology. I didn’t last long and was soon back at home, applying to go to art college, from which I had been dissuaded. I was accepted and have lived a pretty creative life ever since, through one means or another. To research and write this paper has been both a challenge and a privilege. I have had to reflect on and examine my own creativity, the reasons why I make and how I can communicate this to others.

The last few years have seen a change in attitudes towards, and interest in, making; its benefits and the wider societal implications. In this paper I will attempt to link this interest with a deeper investigation into the ethics of making and why it matters.

This paper will examine some concepts and ideas that are easily said and easy to think we understand. This will explore ideas around definitions; definition of ecology and deep ecology, craft and deep craft. I will also examine links to the feminine through looking at ecological feminism or ecofeminism.

I will begin by discussing some of my own work and current practice as a textile artist researching, by means of a practice-based PhD, issues of sustainability and the meaning of making, and why we must make the move from materialism to materiality.

My own work is about resources; I rethink, reimage and rework commonly used materials and objects that are used once and discarded. These materials slip, almost unfelt and unnoticed, through our hands – distanced by a veil or a shield of familiarity from their origins – before entering ‘the waste stream’, a poetic term meaning landfill.

This intention of only being used once is therefore interrupted, and indeed disrupted, by a looking again – a rescuing and a gradual re-instatement takes place. I give these materials a new lease of life, placing them into the elevated realm of ‘the handmade’, belying their mass-produced industrial origins. This is a privileged yet disputed place, at the same time revered and yet not valued or fully understood by our culture. I am questioning our right to use these materials for our own purposes in such a disdainful and perfunctory way. How great is that ‘need’, or is it more a convenience? And how does this ‘need’ balance or justify the equation of usefulness to humankind with the ‘using up’ of resources and energy?
The images above are of found crisp packets; I find them everywhere, and in wanting to make something ‘useful’ from these materials I have discovered that they can be made into a kind of yarn – each bag yielding between 5 and 6 metres. I cut and stitch; a slow domestic process using scissors, thread, a sewing machine. I can then use this yarn to experimentally knit, crochet, improvise and engage an audience in an art installation, sometimes, but not always, gallery-based. I invite participation from my audience so that the work becomes a collaborative process.

I am encouraging a reassessment of these materials, often unrecognised by this audience, whose main concerns are often how much time this must have taken me and, on discovering their origin, did I wash the bags first? Subjects for further research, perhaps.

I want to use and highlight these materials, not through any particular affinity felt with crisp bags but because I see this product as being exploitative in terms of resources (they are made of a kind of plasticised aluminium sandwich which cannot be ‘recycled’), and also of people (an unhealthy, superfluous food which, through clever marketing, has become a staple of lunchboxes throughout the land).

Britons eat 6 billion packets a year; more than 11 million packets per day are produced at the Walkers factory in Leicestershire. Walkers have a 47 per cent share of the British crisp market.¹

One-third of children in the UK eat crisps every day.²

Paper coffee and tea cups are another single-use product that has come under my scrutiny. These ‘paper’ coffee cups actually have a lining of plastic, of polyethylene, making them impossible to recycle. This was discovered by peeling away the outer layer of paper to reveal this inner hidden layer.
With the paper fibre I make a pulp and use it to make other objects, in this instance a book; this piece is called ‘Book of Knowledge’ and has thirty-six ‘pages’ as well as a front and back cover. It uses every part of the cup, just like the one resting on top of the perspex box. There is a surprising amount of paper pulp in these cups as it is so compressed in order to make the cup more waterproof. It has to be made mainly of virgin pulp due to health regulations. Paper cups were originally developed at the beginning of the twentieth century to prevent the spread of disease, at a time when people shared drinking cups and glasses at public supplies of drinking water.

The last image is of cut cups, just cut with scissors, and wound around the base of the cup – a material full of potential ready to be made into something else. So again the intention with this work is to demonstrate how much ‘unnoticed’ material there is in these objects.

It is estimated that in the United Kingdom 2.5 billion paper cups are thrown away every year.³

**Deep ecology: Arne Naess, 1912–2002**

Arne Naess coined the term deep ecology in 1974, in the process distinguishing it from ecology as a branch of science or biology.

Arne Naess was a climber, a man of the mountains. He would live in an isolated mountain hut at certain times of his life, using it as a retreat where he would study and write. He was a philosopher, activist and teacher. He had become a professor of philosophy at Oslo University by the age of 27 and is still a man much revered in his native Norway. Naess resigned his professorial post to solely pursue ecological concerns after a belated reading of Rachel Carson’s *Silent Spring*, a book describing the toxic effects of DDT, first published in 1962. This book was instrumental in launching the modern environmental movement.

Through his writing and worldwide lectures Naess taught that an anthropocentric view of the world, which is the concept that human life is the centre of all values, is not the true one. He believed that all beings and biodiversity have intrinsic worth and that humans only have the right to satisfy their basic biological needs. He advised limiting desires through voluntary simplicity and also restricting population and economic growth.

He differentiated between ‘shallow environmentalism’ and treating only the superficial symptoms of the ecocrisis, rather than seeking deeper fundamental ideological changes in society, the economy and technology. He felt it was more important to focus on the quality of life rather than pursue indefatigable materialism, consumerism and growth.

Naess was also influenced by (and read in Latin) the writings of Spinoza, the seventeenth-century Dutch Jewish philosopher who stated that God is present throughout nature. The writer and ecologist Rex Weyler describes Spinoza’s influence on Naess’s spiritual thinking thus: ‘For Spinoza, Naess learned, all thinking about truth and human society begins with recognising the basic “substance”, the diversity and magnificence of the natural world. Based on the notion from Spinoza that all being exists wholly in nature, he expanded the Freudian idea of “self” and “ego” to include our place in nature.’⁴

This spiritual element is pervasive in Naess’s writings, as he was also influenced by Gandhi, Zen Buddhism and Taoism. He was aware of the concept of the
interconnectedness of all things and used the term 'self-realisation' to describe this as a human experience. The sociologist Philip Sutton interprets 'self-realisation' in the following way:

This means that people should aim to achieve as wide an experience of self as possible, to include other people, animals, bioregions and even nature as a planetary whole. This does not mean submerging or losing the individual self in wider nature, but rather seeks the self's ennobling or maturation by re-connecting the self with nature. (Sutton 2004: 100)

Sutton quotes Naess thus: ‘Self-realisation in its absolute maximum is, as I see it, the mature experience of oneness in diversity ... increased maturity involves increase of the wideness of the self.’ (Sutton 2004: 100)

Naess also said that ‘care fl ws naturally if “the self” is widened and deepened so that protection of free nature is felt and conceived of as protection of our very selves’ (Seed et al. 2007: 29).

Naess was keen that people should develop their own sense of self-realisation; after all, it is not something that can be done for you. I feel this is very much an attempt to define an eas ern concept with western methodology, which is troublesome. Indeed, after the Second World War Naess led a UNESCO project to improve communication between the East and West by exploring how various cultures use similar words. A definition of self-realisation is elusive for the reasons given above and can include differing viewpoints (e.g. Sikhism, psychoanalytical theories).

Naess's work has infl enced many other writers, philosophers and poets, and his thoughts have been elucidated by working with others; in particular, the American environmental philosophers George Sessions and Bill Devall. According to Sutton, ‘deep ecologists (and many ecofeminists) believe that civilised, modern societies cut people off f om their “natural” roots. Their antidote is to encourage people to realise their ecological selves’, and find ways to connect ‘with both “external nature” and their own “internal” human nature’ (Sutton 2004: 10).

Do we need to be encouraging a diffe ent way of responding to environmental problems, which, to quote Sutton again, ‘goes beyond the modern dualism, implied by the separation of society and nature’ (Sutton 2004: 101)?

Some-one who seems to be taking on this question is the American Scott Constable.

Deep craft: Scott Constable

Constable is an American craft 'polymath', capable of designing and making a variety of things from furniture to tree homes, skateboards to biodiesel processors. He felt the idea of 'craft' was becoming overused and undervalued in being closely linked to any number of DIY blogs and zines. In wanting to take back and re-invent the word and the concept and feeling it had lost its meaning, he appropriated the term 'deep craft' from software developers who used it occasionally to describe a particularly elegant feat of programming. He has used the term for several years in the context of his own work; using it as a copyright for his work and visual identity, as well as for products sold by him.

Constable embraces thoughtful approaches to materials, both their provenance and also where they may end up; any 'waste' material produced will have a use as his workshop runs on a zero waste policy. He is aware of deep ecology and tries to align the thinking that initiates and informs the work with these principles. He talks about the 'love' in his work and hints that this is a part of the connection or empathy he feels with it and with his projects, some of which develop over many years. This views craft as more of an ecological design strategy and indeed a way to live; he describes his way of life as a 'living laboratory' with projects developing organically out of conversations, out of a lifestyle. His family moved out of the city to a more rural environment where they frequently 'host' large communal banquets.

Scott and his partner Ene Osteraas have, for over a decade, also created more public art works, under the name of Wowhaus; this includes permanent and temporary public art, furniture, architecture and environmental design. One of these projects is the construction of tree houses, or ‘tree nests’, which are functional, semi-inhabitable structures made of material found within walking distance in the forest. These structures are suspended in a way that does not damage the tree and every connection and joint is also a hinge, allowing fl xibility for growth and movement of the tree. These and other projects seek to connect communities to their ecological and societal realities, aiming to strengthen the mutually beneficial p tential of each. By emphasizing the social dimension of these processes – as works are often made by groups of people – the tree nests comment on relationships between nature and
culture. Their making is seen as a kind of invented folklore, exploring the central question of how things, places and relationships acquire meaning.

Constable thinks quality of life is important. One question he asks is: what makes a ‘good day’? How do you design a ‘good day’? A good ‘working day’ for him would be to enjoy every task in the making of something and have the ability to learn from it, creating a reciprocal process embracing the thinking that comes from mundane tasks and repetition. He is in the process of compiling a manifesto about deep craft, an evolving manifesto based on his search for principles and criteria associated with the handmade. Some examples from this are as follows:

- maintenance equals improvement
- trust in an ethos of exuberant frugality
- prepare for unintended consequences
- craft practices and products simultaneously preserve knowledge and resources
- think about the shape of the tree when working with its wood
- limitations can be liberating
- maintain a traveller’s mind set.5

‘The whole deep craft concept was a way for me to rebrand the word “craft”’, he says. ‘I was starting to see things like Etsy come out and craft was becoming ubiquitous and at the same time it was becoming devalued.’ (There are two videos online about Scott Constable made by faircompanies.com films where he discusses his work and talks about these issues at greater length.)6

So here you have a contemporary craftsman embracing and taking forward a kind of postmodern, postconsumer Arts and Crafts movement for the twenty-first century, inspired by conservation and yet also describing collaborations with software developers.

I would also like to consider the ecofeminist dimension.

**Ecofeminism: Françoise D’Eaubonne, 1920–2005**

Ecological feminism or ecofeminism is a term coined by French feminist author and civil rights activist Françoise D’Eaubonne in her book *Le Feminism ou la Mort*, published in 1974. This work stresses the need for women to bring about ecological revolution.

(Coincidentally, this was the same year that Naess began using the term deep ecology.) Whilst there is no central definition of ecological feminism or ecofeminism, it is generally regarded as a feminist approach to environmental ethics. Ecofeminists see the oppression of women and the domination of nature as interconnected and ecofeminism as a philosophical and political movement. Ecofeminist theorists use a framework that confronts issues of gender, race, class and nature. It is a movement that is against oppression in all its forms.

In the introduction to their book *Ecofeminist Literary Criticism*, Greta Gaard and Patrick D. Murphy assert that:

Ecofeminism is a practical movement for social change arising out of the struggles of women to sustain themselves, their families, and their communities. These struggles are waged against the ‘maldevelopment’ and environmental degradation caused by patriarchal societies, multinational corporations, and global capitalism. (Gaard and Murphy 1998: 2)

Describing the ways in which change can be attained, and the limitations of knowledge, they also quote Hazel Henderson:

Transformation may very well be the single term to which all adherents of ecofeminism would assent. Hazel Henderson, for example, believes that ‘today’s ecofeminism is restoring [the] earlier pre-history [of goddess worship and matriarchal societies], and its arts and rituals, which celebrate Nature as an order that is in principle not fully knowable precisely because humans are a part of it. Eco-feminism once more views Nature as sacred.’ (Gaard and Murphy 1998: 3)

Ecofeminists argue that deep ecological philosophy has tended to adopt a male-dominated perspective, with ‘ecotopias’ failing to take account of feminist questions about equality.

Irene Diamond insists that the methods we choose in dealing with problems must be ‘life-affirming consensual and non-violent’, describing ecofeminism as a ‘tapestry in green’ and stressing the importance of creativity, asserting:

Because the creation of new images of living with the Earth is viewed as an essential
element of the process of transformation, creative artists are an integral part of this new constellation. In short, ecofeminism radically alters our very notion of what constitutes political change. (Diamond and Orenstein 1990: xii)

Greg Garrard describes the oppositional facets of these movements as follows: ‘Deep ecology identifies the anthropocentric dualism between humanity and nature as the ultimate source of anti-ecological beliefs and practices, but ecofeminism also blames the androcentric dualism between man and woman' (Garrard 2012: 26).

There is potential for discord you may think, and indeed you would be correct. Ariel Salleh writes: ‘While both eco-feminism and deep ecology share a commitment to overcoming the conventional division between humanity and nature, a major difference between the two is that deep ecology brings little social analysis to its environmental ethic.'

Marti Kheel attempts to make comparisons and find common cause when she says:

The emphasis of both philosophies is not on an abstract or ‘rational’ calculation of value but rather on the development of a new consciousness for all life. Both ecofeminism and deep ecology may therefore be viewed as ‘deep’ philosophies in the sense that they call for an inward transformation in order to attain an outward change. (Diamond and Orenstein 1990: 128)

So perhaps Scott Constable and his deep craft ethic can serve as a link between ecofeminism and deep ecology. By using his creativity in not just making beautiful and sustainable work but also by searching for the social meaning in ecologically-based creative projects, by connecting people to places and people to community, he is making abstract concepts tangible through craft and creativity. Is this a kind of materialisation and integration of deep ecology through deep craft? Could this be a (I hesitate to use the word ‘new’) more relevant paradigm for the twenty-first century and its challenges which makes for an enriching deep craft experience where it is not only important what you make but how you make it, how it affects your daily life and the lives of others? These are the principles I wish to expound and explore further through my own work, turning that circle into a spiral.

I’d like to finish with a quote by Marianne de Trey, the Dartington ceramicist, who seems to embody a sense of all three concepts when she says of the process of making:

The satisfaction comes through the use of every part of oneself, hand and eye, brain and intuition, and through being in contact with natural materials and the power of earth, air, fire, water … It is, in fact, a voyage of discovery into the very heart of things. How lucky we are.

Notes

References
“Community is the starting point for new modes of relatedness, in which the paradigm of social conscience replaces that of the individual genius... art, which speaks to the power of connectedness and establishes bonds, art that calls us into relationship.”


The stories that arise when art and craft processes are used as a means of engaging with people from a wide range of backgrounds can be surprising and inspiring. Working in the area of socially-engaged art practice, my experiences have led me to reflect upon the value of making as a dynamic force in communicating with others; using hands-on art or craft-based skills can give people an opportunity to explore their creativity, express themselves in new ways and define their identity. Gathering people together to work in a group, sharing a task and becoming involved in practical work seems to break down inhibitions - the physical outcome (a sculpture, a series of prints) becomes the focus. Making together seems to promote a particular kind of openness amongst participants: as the group works together, their hands are occupied and the conversation flows unselfconsciously as they concentrate on the task.

In working with others, I have often started by considering sensory experience, especially in relation to place. Responding to the haptic sense, rather than the visual in the first instance, allows individuals to tap into powerful memories. The aim, though, is not to ‘dig’, but to allow personal narratives to gradually rise to the surface.

The tangible process of handling materials and the sense of purposefulness that this can create has positive benefits in itself - the comfort and positive association of working with familiar materials, or the absorption of a challenging new task. My primary interest, however, lies in the value of making and the ‘moments’ that can arise when a space is created through hands-on activity for discussion and the unfolding of personal stories - even those who would not normally see themselves as image-makers are able to find expressive form.

The sharing of stories through making can be a cathartic and self-affirming experience, contributing to individual well-being and the sharing of understanding amongst peers. Myths may be dispelled and people can tell their story, gaining a voice in the community. Humans have a need to make and to discover significant aesthetic forms as an expression of themselves and their experiences.

Rachel will use examples from some of the projects that she has worked on with a wide variety of people including refugee and asylum seekers and older people, and will reflect upon the use of different material practices in these contexts. Ranging from stone carving to felt-making, many of the processes engage participants in a tactile and bodily activity. Themes of journey-making, mapping and place run through the projects and are interwoven with the images and stories that unfold in the moments of connection that can occur between artist and collaborator.
... where there is a dynamic participation, forms are not just visual – they lead ... to a relational experience with listening. They lead to the formation of identities grounded in the communicative realization of our intersubjectivity ... (Gablik 1991: 114)

Writing as an artist and a maker who works with people, the acts of making and of listening are for me intrinsically linked. The processes through which ideas arise and manifest themselves in the manipulation of materials are understood: ‘we can tell of what we know through practice and experience, precisely because telling is itself a modality of experience that abhors articulation and specification’ (Ingold 2013: 109). Art, with all its ambiguity and open-endedness as a means of investigation, can be used effectively as a mediating tool in creating a positive dynamic for communicating with others and in uncovering personal narrative.

That is, art’s function as an adaptive mechanism is as an antidote to the habitual. Its social value lies in its presentation of a practice area where one can embrace the disorienting experience. (Morris 1970)

My question here is how stories come from making and how making creates a space for listening.

Storytelling and craftsmanship have been intertwined since their beginning. There are layers of narrative to be considered in relation to making: first of all, there is the story of the craft itself, the essential skills and knowledge and how, as a maker, these skills have been learned. In the past, skills were passed down through generations, bringing together layers of tacit knowledge with practical direction and personal history. There is also the notion of materially embodied narrative – the visual depiction of a story or record of historical events woven into a tapestry, for example. The particular resistance of different materials plays a part in this; a woven image is formed from what is essentially a grid, making the use of curved lines difficult (though not impossible). Feltmaking involves the laying out of motifs in felt which then become distorted and transformed as the wool fibres mesh together. This knowledge and ability to work with, rather than against, the structure and forces of a material does not detract but adds to the visual impact of the outcome. The inventiveness demanded in working with materials finds a parallel in the telling and retelling of stories for new audiences and contexts, but also in the flexibility of approach required during the process of negotiating and collaborating with others.

Then there is the temporal story of making, the narrative of the maker as they produce an object. In her book *Zeros and Ones* Sadie Plant describes this process in relation to textiles production:

> A piece of work so absorbing as a cloth is saturated with the thoughts of the people who produced it, each of whom can flash straight back to whatever they were thinking as they worked. Like Proust’s madeleines, it carries memories of an intensity which completely escape the written word. (Plant 1998: 66)

This notion of a story being embedded into the very fabric of a cloth during its making has ancient precedents. The myth of Penelope, weaving by day and undoing by night as she awaits Odysseus’s return in Homer’s *Odyssey*, is well known; it is the narrative of a life and the texture of an individual’s experience enmeshed in the fibres of the cloth.

Finally, there are the stories that come from the very process of making. How does making create space for stories? To work in solitude can be inward looking and meditative, but there is something about working with others that gives rise to conversation and spontaneous storytelling:

> Textiles production tends to be a communal, sociable work allowing plenty of occasion for gossip and chat. Weaving was already multimedia: singing, chanting, telling stories, dancing and playing games as they work, spinsters, weavers, and needleworkers were literally networkers as well. (Plant 1998: 65)
A relationship in which art and making are the mediating factor between people is particular, fascinating and full of potential, and it is this dynamic that is under consideration here. Perhaps it is the repetition inherent in techniques such as knitting or weaving that distracts from the immediacy of the present and allows for a kind of openness in which the mind can wander and conversation flows. My experience of working with people tells me that once the context is established the making can take any form; it could be the comfort and positive association of working with familiar materials or the absorption of a challenging new task, but the atmosphere of willing communication or, to use Gablik’s term ‘relational experience with listening’, is usually the same. For Immanuel Kant, ‘The hand is the window to the mind’ (Sennett 2009: 149), and even those who would not normally see themselves as image-makers or craftsmen are able to find expressive form and a means of self-expression.

Whereas articulate knowledge takes the form of statements about the known, personal knowledge both grows from and unfolds in the field of enticence comprised by the correspondence of practitioners’ awareness and the materials with which they work. Relative to articulate knowledge, then, personal knowledge … rather swirls around and between the islands that articulate knowledge. (Ingold 2013: 111)

We are conscious of the value of listening in many areas of our lives. In his book Together: The Rituals, Pleasures and Politics of Cooperation, Richard Sennett likens the acquiring of social skills and cooperation to a craft which must be learned like any other and relies on an adaptable and responsive attitude to others. Like a craft there is repetition and ritual inherent in this process of understanding, and for the relationship to work it requires practice. He makes a case that associates craftsmanship with less obvious tasks and circumstances:

To do good work means to be curious about, to investigate, and to learn from ambiguity … nursing craft negotiates a liminal zone between problem solving and problem finding (Sennett 2009: 48)

The skills needed in caring for others are founded in listening; in a clinical setting, the value of a seemingly casual conversation cannot be underestimated. Much important knowledge can be gleaned through conversation with a patient that may illuminate their condition far more effectively than a diagnostic checklist.

The sharing of stories through making can be a cathartic and self-affirming experience, contributing to individual wellbeing and the sharing of understanding amongst peers; people can tell their story, gaining a voice in the community and dispelling myths. Viewing this work as therapy, however, is not helpful and there can be moments of real conflict. The need to frame our experiences and to discover significant aesthetic forms as a representation of them is clear, but working together is complex and it is important not to be simplistic about the tensions and strains inherent in the process – ‘repair work is a complicated matter; there are conflicting ways for fixing broken things, and these strategies lead in conflicting social directions’ (Sennett 2013: 199).

Examples are given below of projects in which making and imagery have been used as a way of allowing people to tell their story. The focus here is on process – the experience of making with people and the stories that arose rather than artistic outcome. Finding effective ways of communicating is the aim, but often the focus of an end result and the production of a tangible artwork can be important in galvanising a group of people to join and work together. The aspirations for a community project can be great (and sometimes unrealistic), with expectations that the artist will heal rifts and establish a dialogue between disparate groups. It is difficult to prove the real success of a project on this level, and the true experience of participation is rarely captured in evaluations, but it is clear that as people work together and listen, things can change.

Themes of journey-making, mapping and place run through these projects, and a focus on sensory experience, especially in relation to place, has often formed the starting point in the work. Responding to the haptic sense, rather than the visual in the first instance, allows individuals to tap into powerful memories – the tactile experience becomes both a catalyst for stories and part of the means of defining and capturing them in a new object. The aim is not to ‘dig’, but to allow personal narratives to gradually rise to the surface.

Maps for life

To use one’s steps as a measurement to establish a route between two points is a sentimental mapping of sorts, an act that reminds us of the way in which
we represent the world in relation to sensorial experience. (Medina in Godfrey et al., 2010: 119)

Storyteller Richard Neville, artist Emily Lawlor and I worked together as ‘Mappa’ for a number of years, and during this time our interactions with the people we were working with took in a wide range of conceptual and practical approaches. Our aim was to explore the dynamic between story and image and how one could lead to the other, telling and gathering stories from participants within a context of making. An early project at Lewisham Bridge School in London (1998) helped us to focus ourselves thematically and make some practical discoveries, some of which are reflected here.

Our brief was to work with primary age children from Traveller families and their peers, a significant number of whom came from refugee and asylum-seeker backgrounds, in the hope that collaborative work between the groups would help to build bridges and generate understanding between the Traveller and settled communities. Disseminating an understanding of Traveller life was central to this process, and we began by inviting an elder in the community to talk to the children about her life. She brought in items such as china and lace from her caravan to show the children, and they were able to ask her about these. We then began to explore the children’s own experiences. Richard offered them folk tales that were full of journey-making and transformation and the children enjoyed these, but were initially unable to relate them to their own experiences.

When we asked them to trace the journeys they had made on a map, they were curious but unable to do so. The answer to this was to take them on a walk, and we made several journeys around the streets adjacent to the school, ‘botanising on the asphalt’, in the words of Walter Benjamin (Solnit 2001: 199). We asked them to focus particularly on sensory moments and to find places they had a connection with. What emerged this time was a quite different set of responses; as an expression of these walks the children drew their own maps and, when they were discussed, these were brimming with stories beginning on the streets of Lewisham, but quickly expanding to encompass other, more significant journeys.

We continued to explore this idea by working with textiles – interpreting the scent and texture of fabrics using line and printmaking. This was quite a simple task, but it provoked some remarkable reactions, stirring intense memories. What had happened here? In focusing on bodily and sensory ways of exploring personal experience, a deeper seam of narrative had been uncovered. Using transformative processes such as printmaking, which have their own qualities of tactility and repetition and are deeply absorbing, was key. The absorption in process is an essential factor in this work: ‘we are now absorbed in something, no longer self-aware, even of our bodily self. We have become the thing on which we are working’ (Sennett 2009: 174). Working together as a group with the focus being on finding the space between story and image making, rather than just ‘doing art’, seemed to create a particularly open dynamic. The parameters of the project and our instincts told us never to ‘dig’, but during the process of making the most profound personal stories rose to the surface. ‘I am able to touch effectively only if the phenomenon finds an echo within me, if it accords with a certain nature of my consciousness’ (Merleau Ponty 2002 [1945]: 369).

As the project progressed it became clear that physical and practical activity was needed in order for the children to understand the stories they were told and to allow them to tell their own. It was very striking that they experienced a story as a series of moments that animated them physically; they much preferred to ‘tell’ a story through movement and material rather than through text, and we began to focus on processes that had a physical dimension: stomping through sand in response to a story about walking, then casting the footprints in plaster, projecting images onto the body and photographing them, using the cyanotype process to make collages which were transformed as the sunlight developed the imagery to capture a moment in time.

Social consequences are built into the structure and the functioning of the human body, as in the workings of the human hand … the capacities our bodies have to shape physical things are the same capacities we draw on in social relations. (Sennett 2009: 290)

The themes that arose – of empirical measurement represented through the use of maps versus the real, lived experience of place – came to define this project and many of those that followed from it. There have been many moments, especially in conversations with refugee and asylum-seekers and older people, in which the sense of the ‘here and now’ sits in uneasy relationship with the location of that person’s thoughts – they are physically in one place, but emotionally elsewhere.
Notions of bodiliness and making in relation to story were developed further during a project at Guston School in Dover. We were asked to work with children from refugee and asylum-seeker families, many of whom came from a Roma background, and their Dover peers. We decided to work with feltmaking, choosing it for its tactile immediacy and its engaging physical process. The visual motifs found in traditional felt have a strong relationship with storytelling, and felt is a material associated with nomadic cultures that have an oral rather than written tradition of storytelling. The telling of stories and prayers often accompanies the long and often monotonously repetitive feltmaking process, incorporating a story into the very fabric of the cloth: ‘stories issue from moving bodies and vital materials, in the making’ (Ingold 2013: 110).

Making a large piece of felt requires cooperation, and the hope was that the process of working together would forge bonds between the newly-arrived children and their Dover peers, dispelling myths and creating friendship. We began by telling stories and looking at traditional textile symbols, and these fed into the initial image-making – a kind of story map based on the idea of a carpet. A large collaborative piece of felt was made as an interpretation of this. The physicality of the feltmaking process was key; to make a large piece meant pressing and treading the fibres, rolling the felt, working with water and everyone getting involved. The transformative process of feltmaking was compelling: participants could observe the gradual matting together of fibres to create a solid whole. Images became distorted as the material was formed, and this had significance too – a heart or a cat shape laid out in fibre morphed into something strange and unexpected as the wool fibres knitted together; the images were recognisable, but different.

Metamorphosis provokes material consciousness in three ways: through the internal evolution of a type-form, in the judgement about mixture and synthesis, by the thinking involved in a domain shift. (Sennett 2009: 129)

There is something surprising yet pleasing about this (a bit like the reversal of an image in printmaking) – it’s not quite what you were expecting, but it has its own solidity and identity. These unanticipated transformations, that take place as a material finds its form, seem to have a crucial role to play in the dynamic between making, listening and telling. Quoting Levi-Strauss, Sennett goes on to say that ‘symbolic value is inseparable from awareness of the material condition of an object: its creators thought the two together’ (Sennett 2009: 129). The emerging form allows a shifting of the boundaries of the story and opens up new possibilities. In the oral tradition of storytelling this process happens continuously and stories are different each time they are retold. There was a strong sense that the children were prepared to allow their felt image to change and to exist in its new form alongside everyone else’s.
We have one minute to talk

We worked in Dover again with adults who were living in hostels, before being dispersed to other areas of the country (as was the practice in 2001), alongside the inhabitants of Dover, basing ourselves in the local library and at the Museum. The aim of the project was to tell the story of this very idiosyncratic place and its inhabitants at a particular moment in time. In the national and local press there was much negative comment about those who had recently arrived and were claiming asylum. We hoped to explore these views in a non-judgemental way and to give a voice to the new arrivals for whom there really was no right to reply.

In the unsubtle language of politics, refracted through the rarely more subtle language of the media, a simplifying term can become as crude as a club or a chain. Its incessant repetition, both to say, and to imply what is not (yet) acceptable to say, erodes awareness of the complexity of individual lives as water smoothes the surface of the rocks it passes over. (Matarasso 2013: 19)

The beginning of many of the conversations we had started with making. We created 35mm slides for a projection piece, and these were later used as the basis for printed artwork in a publication that brought together text and imagery. Participants were given cameras to record their everyday lives and we asked them to find places around the town that had resonance for them. These photographs were then developed as 35mm transparencies and layered with coloured gels. Some people used the tiny frame of the slide as a canvas, drawing or making texts with Letraset. The small working area was part of the slide as a canvas, drawing or making texts with Letraset. The small working area was part of the presentation – using pens on the slick gel or film, the image was quite hard to control and to see whilst it was being made. When the slide was projected, however, there was a true moment of transformation as the tiny image became a huge, textural mass in space in which every fibre of the pen mark was evident. An internalised and inexpressible idea was made manifest, and as people worked on their slides they began to talk and we gathered stories:

In the real world, something is happening and no one knows what is going to happen. In the image-world, it has happened, and it will forever happen in that way. (Sontag 1979: 168)

‘We Have One Minute to Talk’ brought to the fore a sense of dislocated space, of people dwelling in one place, but existing emotionally and sensorially elsewhere, along with all the challenges to personal identity that this implies. This liminal state of being, in which different places and selves coexist for someone in the present, has recurred many times throughout our projects. That tactile/haptic experience in the present may connect a person powerfully with moments in the past is well known and the process of making can become a catalyst in this process. Jean Scholkind writes of this in relation to Virginia Woolf’s essay A Sketch of the Past:

If life is a ‘bowl which one fills and fills and fills’, each new experience added to the existing ones displaces them ever so slightly and alters their previous meaning by forcing them into new combinations. The present moment is enriched by the past but the past is also enriched by the present. This view of the self ... emphasises simultaneously the change and continuity of the individual identity. (Scholkind 1989: 18)

Identity

To know or to teach? In his book Making, Tim Ingold asserts that the skills of making can be passed on in many ways, often in more subtle forms than those of traditional teaching: ‘Know for yourself!’ (Ingold 2013: 1). For many people there is an inherent understanding of process and material that can be tapped into given the right opportunity.

To tell, in short, is not to explicate the world, to provide the information that would amount to a complete specification, obviating the need for would-be practitioners to inquire for themselves. It is rather to trace a path that others can follow. (Ingold 2013: 110)

This notion of tapping into inherent knowledge and learning though observation was at the heart of the Identity Project (of which I was participant and evaluator) at the Friendship Centre in Portsmouth. The aim of the project was to work with the Refugee and Asylum Seekers Activity Group ‘to collect and share stories and experiences of living in Portsmouth...”
and to create a lasting testimony of this in the form of a sculpture and video.

Zimbabwean sculptor Anthony Sarireni was asked to work with project participants over the course of several months. His approach to making was spontaneous and intuitive, not telling people what to do, but allowing them to accumulate skills whilst working alongside him. As Sennett says:

bodily gestures take the place of words in establishing authority, trust and cooperation. Skills like muscular control are required to make bodily gestures communicate, but gesture matters socially for another reason as well: physical gesture makes social relationships feel informal. (Sennett 2013: 205)

Anthony had learned his skills from childhood: ‘My father did this before me. When I grew up these tools were my toys.’ Participants began by choosing a piece of serpentine stone and were shown which tools to use. They then worked with the stone, allowing a form to emerge from the material. Extracting the sculpture in this way worked well – you didn’t have to draw or to plan, but at the same time there was a sense of learning something new. A participant in the Identity Project described his experience: ‘At the beginning when the stone is not started, you don’t know what it’ll be. You find something inside – look for a shape. During the work you have to look into yourself and be patient.’

Many participants related what they were doing to skills they or their families had been involved in while in their home country. This provided a sense of connection and continuity – it seemed to be a comfort to people, not a source of sadness, and the practical activity appeared to provide a way for people to think about their identity past and present without dwelling on difficult circumstances. As with previous projects the focus on making and the dynamic of working in a group led to the emergence of many stories. Even those who did not wish to actually participate in the stone carving were drawn to the activity as it created a focal point for conversation during the afternoon.

Ingold suggests that making an object is not about ‘form and matter, but between forces and materials’ (2013: 45). Quoting Deleuze and Guattari (2004), he uses their analogy of a woodsman bringing down an axe on a piece of timber to illustrate the point: the axe follows the grain of the wood to expose all the complexities in pattern and structure that have evolved during the tree’s growth. An individual’s story is formed in response to the forces of history, politics, migration and time, but like the inner pattern of the tree remains hidden and sometimes inexplicable. The communication established through the act of collaborative making allows people to tell their story and to reveal the form within. To work with materials reveals ‘the consciousness or thought of the matter fl w’ (Deleuze and Guattari 2004: 454).

Carved head from ‘Identity’ project, 2006

Sennett observes:

the craft of making physical things provides insight into the techniques of experience that can shape our dealings with others. Both the difficulties and the possibilities of making things well apply to making human relationships. Material challenges like working with resistance or managing ambiguity are instructive in understanding the resistances people harbour to one another or the uncertain boundaries between people. (Sennett 2009: 289)

Shared knowledge of making and craftsmanship can create a bond between practitioners, but the focus
on repetition, bodilyness and tactile experience inherent in the act of making may give any individual new ways of accessing personal narrative. There is a quality to discussion that arises from engaged making that is hard to define. Why, as Ingold describes it, does it make a difference if discussion is grounded in practical activity? What does it feel like to work with others, to construct a context in which thoughts and stories can be exchanged? As a workshop leader there are inevitably strange moments of disjuncture – you are aware that you are imposing upon people, asking them to tell you their story. There are expectations on all sides and questions of power and agency arise.

The making, though, is the leveller. Once the work begins and process and material become the focus, self-consciousness around these potential imbalances is mostly overcome; sensory values are privileged and this focus on the texture of things allows people to connect to memories and past experiences. ‘Tactile experience … adheres to the surface of our body; we cannot unfold it before us, and it never quite becomes an object’ (Merleau-Ponty 1962: 368). The shifts are imperceptible as they happen, but gradually as people’s hands and bodies are engaged the stories unfold. Sometimes people say very little, but others want to tell their story, reframing it for a new audience. It is often, though, the small and seemingly inconsequential details that linger in the mind. In his book Bread and Salt (2013), François Matarasso says that we do not need to have experienced what another has experienced in order to understand and speak of what they have told us:

To suggest otherwise is a dangerous form of essentialism that enshrines authority in a person’s biology or their heritage, rather than in their conduct. … if one human can have more authority because of who they are, it follows that another can have less. (Matarasso 2013: 14)

The absorption of a task shared with others, with an emphasis on listening, can have a profound effect on those involved; in looking to the space between making and telling, hidden narratives emerge. Although the dynamic created whilst working as a group is of the essence here, the experience of telling through making is ultimately individual. The projects described here gathered together people from many places, each bringing with them an infinite variety of experiences and distinct attitudes. To work with people as a group does not imply homogeneity but the opposite – to create a dynamic through making and listening allows individuals to tell their story.

This, then, is the moral taught us by Mermoz and his kind. We understand better, because of him, that what constitutes the dignity of a craft is that it creates a fellowship, that it binds men together and fashions for them a common language. For there is but one veritable problem – the problem of human relations. (Saint Exupery 1984: 26)

References


The presentation relates to my practice as an artist and how this addresses the term ‘sustainability’ in relation to environmental activism, folklore, mythology and storytelling. The work explores different ways of perceiving the world, challenging the dominant paradigm of the past three hundred years, the Cartesian-Baconian scientific model. In its place a more holistic vision of the world is engendered, one that highlights its animating presence, the genius loci or spirit of place. The paper will argue that such a mindset is paramount if we are to tackle the current ecological crisis.

The prevalence of the dualistic mindset since the Enlightenment period is seen by many as the root cause of environmental degradation. An alternative approach, seen by research physicist, Fritjof Capra as a ‘shift to a new paradigm of deep ecology’, which views the world as ‘a network of phenomena that are fundamentally interconnected and interdependent’ (Capra, 1995, pp.20-23), is occurring amongst researchers at the leading edge of science, numerous social movements and various alternative networks. Drawing on this perspective, the presentation focuses in particular on the use of folklore, mythology and storytelling within my work to re-connect people to the land and push the sustainability agenda. It draws on inter-disciplinary research in a number of areas such as anthropology, archaeology, cultural geography, ecofeminism, ecopsychology and history. Terrapsychology, a methodology developed by ecopsychologist, Craig Chalquist to study the presence, or soul, of place has particular relevance to my work and will be discussed in greater detail. Chalquist believes that ‘places behave as though they possess an imaginal interactivity or “presence” that reflects what was done to them and upon them, and they communicate this to their inhabitants and investigators through dreams, trauma, folklore, and replays of unhealed past events’ (Chalquist, 2007, p.53).

The presentation will discuss how my practice has combined the above theoretical approach with practice-based research that is informed by the locale. Taking the traditional Irish storytellers or seanchái idea of becoming, as mythologist and wilderness teacher, Martin Shaw puts it ‘thoroughly drenched in a place’ by taking on the role of ‘cultural custodians of a five-mile radius’ (Hopkins, 2012), my practice utilises locally sourced, eco-friendly, salvaged, and re-used materials wherever possible. This procedure works alongside time spent researching the ecology, folklore, history and geography of my local area, as well as walking the land, meditating and dreaming - in essence tuning into the spirit of place.

References:


Ethan Pennell

The Doors of Perception: An enquiry into the spirit of place

This paper is a personal account of an artistic practice that draws together the fields of folklore, mythology, storytelling and sustainability. It explores different ways of perceiving the world, challenging the mechanistic model that has dominated Western society since the Enlightenment. In its place a more holistic vision of the world is proposed, one that highlights its animating presence, the genius loci or spirit of place. The paper will argue that such a mindset must be considered if we are to tackle the current ecological crisis.

The question ‘what constitutes a creative sustainable practice?’ lies at the heart of my work. Drawing on the principle that the health of the biosphere, on which all life depends, is the bottom line in terms of sustainability (Chick and Micklethwaite 2011: 81; Kagan 2011: 10), three main areas have been investigated: the making process (materials used, energy impact, etc.), the lifestyle of the artist (self-sustainability), and the concepts informing the work. The focus for this paper is on the latter subject, presenting an overview of the ideas informing the practice so far, as well as plans for future development.

The opening words of the paper’s title, ‘The Doors of Perception’, are taken from a poem composed by the visionary artist and poet William Blake between 1790 and 1793: ‘If the doors of perception were cleansed then everything would appear to man as it is, Infinite. For man has closed himself up, till he sees all things through narrow chinks of his cavern’ (Blake 1975: xxii).

For many, these words have a particular resonance with our own troubled times, highlighting humanity’s urgent need to change its perception of the world if it is to overcome the global ecological crisis (climate change, mass extinction of species, decrease in habitats and resources, population increase, etc.). For example, in his book The Nature of Business: Redesign for Resilience, management consultant Giles Hutchins states that our current situation is as much ‘a crisis of spirit as it is a crisis of resources’. As a result, he calls for the necessity ‘to perceive the Earth as an animant, living system in which humans play a constructive, not destructive part’ (Hutchins 2013: xii). In a similar vein, the scientist Stephan Harding states that ‘the crisis is at root one of perception; we no longer see the cosmos as alive, nor do we any longer recognise that we are inseparable from the whole of nature, and from our Earth as a living being’ (Harding 2009: 34).

This holistic vision of the world is described by the research physicist Fritjof Capra as a ‘shift to a new paradigm of deep ecology’, which views the world as ‘a network of phenomena that are fundamentally interconnected and interdependent’ (Capra 1995: 20–23). According to Capra, this shift is already occurring amongst researchers at the leading edge of science (see quantum mechanics, general systems thinking, chaos theory, etc.), numerous social movements and various alternative networks (Capra 1995: 20–3). This emerging approach to reality, as put forward by Capra et al., is consistent with the ‘perennial philosophy’ of such spiritual traditions as Chinese Taoism, Western esotericism and the belief systems of many indigenous cultures (Capra 1995: 21).

The ‘deep ecology’ perspective, however, contrasts dramatically with the dominant paradigm of the past three hundred years, the Cartesian–Baconian scientific model, which regards ‘the Earth, and her more-than-human inhabitants, as no more than a dead machine to be exploited as we wish for our own benefit, with util or hindrance’ (Harding 2009: 25). Indeed, the philosopher Descartes urged his students to ‘ignore the screams of vivisected animals’, saying that they were ‘little more than the creakings and gratings of a complicated machine’ (Harding 2009: 33). According to the scientist Rupert Sheldrake, the belief that ‘nature is mechanical or machine like’ still dominates scientific thought to this day, forming part of the ‘default world view, which is held by almost all educated people all over the world’, despite not standing up to proper scientific enquiry (Sheldrake 2012).
At the other end of the spectrum, cultural ecologist and philosopher David Abram writes about the Socratic roots of the Cartesian mindset. By this he means the advent of formal writing systems (especially the Phonetic alphabet), which Abram believes shifted our instinctively animistic-orientated perception away from the natural world. In its place are printed letters, now commanding the attention that rivers, rocks and trees once did for our more indigenous ancestors (Abram 1997: 130–1).

Some environmental commentators, such as the deep ecologist Paul Shepard and the evolutionary biologist Dustin Penn, claim that humanity’s abuse of the environment goes back even further – to the prehistoric period. Penn states that our ancient ancestors were no more sustainable than we are now; they were just fewer in number, and possessed less technology. He believes that the damage started during the Pleistocene era (between about 2,588,000 to 11,700 years ago), whilst Shepard marks the Neolithic, around five to ten thousand years ago, as a time of ‘change to a more hostile stance toward nature’, when for many people farming supplanted the hunter-gatherer lifestyle (Penn 2003; Shepard 1995: 24).

Returning to the ‘deep ecology’ perspective, my practice initially focused on using folklore, mythology and storytelling to help people develop a deeper emotional relationship to, and appreciation of, the environment via their cultural heritage. The storyteller Anthony Nanson speaks of the/his art(s) as a conveyor of timeless truths that ‘can help us to orientate ourselves in time and space: to understand the geography we inhabit and the history that brought us where we are’ (Nanson 2011: 96). Furthermore, he says that ‘if a story or a painting causes us to perceive members of another species – wolves, say, or beech trees – as inspired beings, then we may feel less inclined to let them be destroyed’ (Nanson 2011: 96).

In his essay ‘Storytelling and Wonder’, Abram writes along similar lines, stating that:

> When we begin to tell stories, our imagination begins to flow through our eyes and our ears to inhabit the breathing earth once again. Suddenly, the trees along the street are looking at us, and the clouds crouch low over the city as though they are trying to hatch something wondrous. We find ourselves back inside the same world that the squirrels and the spiders inhabit, along with the deer stealthily munching the last plants in our garden, and the wild geese honking overhead as they fly south for the winter. Linear time falls away, and we find ourselves held, once again, in the vast cycles of the cosmos – the round dance of the seasons, the sun climbing out of the ground each morning and slipping down into the earth every evening, the opening and closing of the lunar eye whose full gaze attracts the tidal waters within and all around us. (Abram 2007)

Abram concludes that ‘we cannot restore the land without restorying the land’ (Abram 2007).

Moreover, a well-chosen story can promote the values of sustainability without ever mentioning the word. For example, the story of Old Crockern, the guardian spirit of Dartmoor, provided the inspiration to run a series of children’s workshops, linking ecologically sustainable art practices with folklore and storytelling. In the story, Old Crockern appears to a moorman in his dream, telling him to pass on a warning to a Lancashire businessman who planned to build on a large tract of moorland. The spirit threatens to destroy this man if he touches as much as a single blade of grass on Dartmoor. The warning was justified, the businessman going bankrupt soon after (Devon Folk Life Register 1978: 28; Whitlock 1977: 64).

Integral to my practice’s emphasis on folklore, mythology and storytelling as tools of connectivity is the ‘locale’. Taking the traditional Irish storyteller’s or seanchai’s idea of becoming, as mythologist and wilderness teacher Martin Shaw puts it, ‘thoroughly drenched in a place’ by taking on the role of ‘cultural custodians of a five-mile radius’ (Hopkins 2012), the practice focuses on the folklore, history and ecology of my neighbourhood, utilising locally sourced, eco-friendly, salvaged, and re-used materials wherever possible in the making process.

This emphasis on the ‘locale’ began whilst living in south-east London. My creative practice centred largely on the folklore and mythology of Blackheath and Greenwich, both located within the seanchai’s favoured ‘five-mile radius’. By becoming immersed in the local lore and legends I experienced a deep sense of belonging, moving from a state of disconnection to one of rootedness, as if I had got beneath the skin of the city. This experience is reminiscent of what the writer Arthur Machen saw beneath the city’s veil. In his book *The London Adventure, or the Art of Wandering*, Machen describes ‘the eternal beauty hidden beneath the crust of common and commonplace things; hidden and yet burning and
glowing continually if you care to look with purged eyes’ (Coverley 2006: 48). On moving to the edge of Dartmoor, that feeling of connection and rootedness to the land deepened as the interest in local folklore increased. This is reflected in my practice through oral storytelling and a series of paintings that draw heavily upon the folktales of Dartmoor.

‘Terrapsychology’, the study of the presence or ‘soul’ of place, has influenced the most recent folklore-inspired work. The term comes from terra (Earth, ground), psyche (soul, mind) and –logy (the study of) and was developed by the ecopsychologist Craig Chalquist. According to Chalquist, local folklore can reflect recurring themes shared by people and places alike. For example, Chalquist cites the Mexican legend of La Llorona, the ghostly Weeping Woman, who has been known to cry out in places undergoing overdevelopment:

Folklore is at least in part the dream of place and can be listened into as such. Ignored, it becomes dangerously, possessively re-enacted, as when psychotic mothers married to mythic Jasons or living in overdeveloped areas drown their children and cry out like La Llorona without ever knowing they have repeated a tragic regional tale. (Chalquist 2007: 58)

Chalquist believes that ‘places behave as though they possess an imaginal interactivity or “presence” that reflects what was done to them and upon them, and they communicate this to their inhabitants and investigators through dreams, trauma, folklore, and replays of unhealed past events’ (Chalquist 2007: 53). Thus, the terrapsychological approach not only takes note of such aspects as the locale’s history and ecology, but also any similarities between the motifs of one’s personal biography and others living in the area, as well as any moods or dreams linked to different spots in the environment (Chalquist 2007: 53).

Chalquist poses the following question: ‘does the story of what traumatized the land keep repeating until finally head and healed?’ (Chalquist 2007: 63). There is no definitive answer to this, but the question is now being carefully considered, along with other aspects of the terrapsychology model, in relation to any creative response that I make to the folklore and myth that haunt specific tales.

Like the writer John Hanson Mitchell in his book *Ceremonial Time: Fifteen Thousand Years on One Square Mile*, my most recent work also focuses on an area within a one-square-mile radius from home (Mitchell 1997). The latest offering, an installation sharing the same title as this paper, returns to the latter’s initial exploration of the dichotomy between the mechanistic worldview and the deep ecology perspective. Virtually all of the materials used in its construction were handmade, reused or salvaged and sourced within the one square mile perimeter. Even the sound recording of bats in flight as made locally. Three species of bat, the pipistrelle, the greater horseshoe and the lesser horseshoe bat, were recorded just beyond my garden, catching insects over the Harbourne River.

Behind the first door of the installation hangs a veil of mesh, entwined with pieces of clockwork, representing Cartesian mechanism. Beyond this are a series of mirrors, two door-windows (depicting painted silhouettes of trees) and the bat recording. Together, these elements symbolise the anima mundi (the soul of the world) (Harding 2009: 11), the deep ecologist’s network of ‘interconnected and interdependent’ phenomena and the spirit of place. The mirror is a universal symbol for truth, the soul and the ‘mirror of the universe’. In Chinese culture, a square mirror symbolises the earth (Cooper 1979: 106). The trees stand for the cosmos in its entirety and ‘the feminine principle, the nourishing, sheltering, protecting, supporting aspect of the Great [Earth] Mother’ (Cooper 1979: 176). The bat sounds, usually pitched at a frequency beyond the natural hearing range of adult humans (BCT 2013), meanwhile reveal a hidden world of animate presence, the inaudible made audible.

The political theorist Jane Bennett refers to the possibility, suggested by Deleuze and Guattari (Deleuze and Guattari 1987: 311–13), of sounds that can ‘provide sensory access to the cosmological dimension of things’, attachment to life, and the location of enchantment. Bennett sums up her approach in the following quote: ‘through sound, through the various refrains we invent, repeat, and catch from nonhumans, we receive news of the cosmic energies to which we humans are always in close, molecular proximity’ (Bennett 2001: 166–8). The audio recordings of bats can, I believe, be viewed in this light, as a way of connecting humanity to the non-human world of which it is an integral part.

This paper has attempted to show how, through my creative practice, folklore, mythology and storytelling can help people develop a deeper emotional connection to ‘the Earth and her more-than-human inhabitants’ (Harding 2009: 25) via their...
cultural heritage. Although folklore, mythology and storytelling are still key influences on my practice, future plans involve exploring new modes of perceiving the world on a deeper level, drawing on a multitude of disciplines such as anthropology, chaos theory, Goethian science, integral ecology, new materialism, phenomenology, quantum physics and systems thinking.

Thus, my practice is in essence an attempt to find another language to express humanity’s place in the world, one that may help to radically shift our consciousness by destroying the anthropocentric-based sense of separation between us and the rest of the natural world. The environmental activist Christopher Manes believes that the role of the artist is to ‘to break down this pyramid ... of domination that looms over our culture, and then start telling other stories’ which recapture ‘the rich, poetic, wild ways in which we can relate to nature and ourselves’. Manes acknowledges this is ‘easier said than done ... it might be impossible – we might crash and burn. But we have a responsibility to try’ (Gablik 1995: 100–1). The desire to ‘start telling other stories’ is central to my practice.

References


Jan Truman

*Dancing with shadows - Searching for Light.*

The aim of this paper is to give a MAKER’S perspective on the importance of HANDMADE CRAFTS and their relevance today, in a world that seems ever attracted to the Hi-Tec option. I will focus on KNITTING because that has been my specialist subject for over 30 years. I make Aerial sculptures and Jewellery and belong to the Devon Guild of Craftsmen.

Knitting is all about MAKING and CONNECTING loops - TRANSFORMING a single thread into simple or more complex structures. Hi-Tec machinery has advanced its mass production so people around the world today connect with it physically on a daily basis (clothing, upholstery, etc). Knitting is common place, yet on a more domestic scale knitting remains accessible as a hand process to millions of people, regardless of age, gender or religious belief.

The act of knitting also has the power to connect people. Examples include: for informal social activities (knit & natter groups); as a means of political protest to share a unified voice (the Australian Knitting Nannas); to pass on skills and knowledge; making and sharing gifts for warmth, protection or friendship; to bring comfort and emotional support to sick or distressed children (knitted teddy bears) ... and so the list continues.

So does the physical act of knitting tap into a more fundamental human desire/need to connect? Can ‘invisible’ connections (blogging/tweeting/internet) leave a feeling of emotional DIS-connect?

To investigate this I turn to my own practice and ask a series of questions. Why has knitting been my medium of choice for over 30 years? What is it about this particular structure that I find so compelling? How and why do I work?

I begin by looking at the relationship between an object and a shadow. A shadow is created when an object blocks out the light, but light can TRANSFORM an object. Shadows are transitory - there but not there. Objects are physical, touchable.

As a trained textile maker I am curious about materials - each has its own physical characteristics and limitations. Structures of all kinds fascinate me but when I discovered I could knot enamelled copper wire, I was instantly hooked...mesmerized by its colour and sculptural potential. Not only that, but the resulting semi-rigid structures seemed a perfect background to add things into. To my delight I had also discovered ‘BEAD’ knitting; a slow repetitive hand process.

This technique has remained highly significant. It is central to how I create my aerial sculptures and jewellery. ‘Structure’ lies at the heart. My beads are not added as an embellishment to the surface, they actually form part of it. The beads also create the jewel-like quality that allows light to interact with it.

My investigations will reveal how design aesthetics and hand skills fuse with technique and materials to hold the key to my personal connection with knitting. Remove any of these elements and for me it just feels like... Dancing with shadows - searching for light.
The aim of this paper is to give a maker’s perspective on the importance of handmade crafts and their relevance today in a world that seems ever more attracted to the hi-tec option. I will focus on knitting because that has been my specialist subject for over thirty years. I make aerial sculptures and jewellery and belong to the Devon Guild of Craftsmen and the Designer Jewellers Group.

Introduction

As a maker I frequently question how my work is physically created, but rarely ask myself why the act of making is so important. So when I began my research for this paper I thought it would be fairly straightforward to investigate different elements and motivations to reveal the secrets behind my passion for making. I spent weeks analysing processes and materials only to find the quest more challenging and complex than I had ever imagined. It was like piecing together a giant jigsaw puzzle, but the harder I tried the more a satisfactory conclusion felt tantalisingly just out of reach.

Frustrated and mentally tired by the slow progress, I emailed a draft copy of my text for comment: ‘reads well but ends abruptly’ came the reply. Clearly some strands were coming together but something was still missing. Key elements had emerged, a fascination with structures, a sense of connectedness, attraction to light, curiosity, materiality, transformation, control of the process. So what else could it be? Thinking perhaps the text would be clearer with visual references, I found suitable photographic images. However, just days before the conference with my twenty-minute script and accompanying PowerPoint presentation ready, I felt totally disconnected and blocked. It was as if the very journey to unlock my secrets had in fact created lock-out. Not a good feeling, in fact counterproductive to the quest ahead, but I needed to move forward so decided to focus deeper on key questions. Why am I doing this? What is my motivation? How can I best communicate my passion for making?

As I meditated on the problem my frozen brain slowly began to relax and the cloud started to lift. I am a maker, connected by my senses, touch, sight, etc., yet I had no physical objects, just words and pictures; no wonder I felt something was missing. The following morning as I selected pieces of knitting to bring along to illustrate my talk more clarity opened up. It was like the scene from the old black and white movie Frankenstein. I had indeed gathered together all the necessary components, words, pictures and physical examples, yet where was the spark, the lightning bolt? The answer to this nagging question, plus further personal insights, continued to emerge over the following days and throughout the conference and finally just before I presented this paper. I therefore hope the reworking of my conclusion will be as insightful to others as it was to me. I am, however, aware that non-makers and academics understand their world from a different perspective to me, so some readers may find it helpful to view my website where other examples including moving image may help communicate important concepts and themes.

Knitting and connecting

Knitting is about making and connecting loops to produce an amazing array of textiles which people around the world connect with physically, often subconsciously, every day. Commercial applications for knitting are impressive, yet also commonplace. From luxurious fashion fabrics to the humble pan scrubber, designer creations and mass production runs for the cut and sew industry. You only have to look at the promotional accolades in glossy magazines to see how sophisticated textile has become. Companies such as Nike are keen to reveal that the secret of their Free Flyknit trainers is down to its innovative development of the knitted upper sock and unique flexible sole. But that’s not all – their website also tells us how incredibly efficient it is to produce as the knitting process has ‘little to no waste.’

On a domestic scale, this age-old process also retains its attraction. Globally, millions of people just love hand knitting; it reaches out beyond gender, ethnicity
or religious belief. A quick internet search reveals this pleasurable activity promotes more than just the physical creation of things. Knitting connects people, tapping into human qualities to encourage friendship, education, emotional support, even environmental campaigns. For example: Francis House Children’s Hospice in south Manchester have their volunteer ‘Charity Chicken Knitters’ to help raise funds.

Battersea Dogs & Cats Home created an educational campaign called ‘Staffie – they’re softer than you think’ to help rebrand the Staffordshire Bull Terrier, inviting people to knit their own soft toy dog by downloading the knitting pattern from their website.

Teddies for Charities is not actually a charity at all, but an online knitting pattern which inspires and helps anyone, anywhere, to knit a few teddies for a good cause near to their own heart.

The Women’s Institute decided to celebrate the success of their nationwide Craft Club by entering the Guinness Book of World Records for the most people knitting continuously for fifteen minutes.

Knitting Nannas Against Gas (KNAG) in Australia use knitting as a tool for non-violent political activism – their characteristic yellow and black objects appear regularly on social media sites to raise awareness of campaigns such as ‘Lock the Gate’.1

So, if the physical act of knitting links to a fundamental human desire or need to connect, could interactions with virtual technologies such as blogging, tweeting, or any internet application leave a feeling of emotional disconnect? To investigate, I turn now to question my own practice and reveal how, through the hands and eyes of a maker, I connect with knitting.

Wire, not wool

As a textile maker you would expect me to be inquisitive about materials and process, which indeed I am, but I am also totally fascinated by all structures, from the macro to micro, including physical and organisational structures. Although I can appreciate many hi-tec innovations, in my working practice I prefer to use a favourite old knitting machine. My vintage Knitmaster probably dates from the early 1970s. Through the act of making and close contact with the materials, I have developed a distinctive style, which gives me scope to express ideas and connect with other people. I cannot remember when I first learnt to hand knit, probably when I was quite young; I was always surrounded by knitters – Mom, Nan, aunts, friends. It never seemed difficult, just fun, and I loved making clothes. But after training as a knitwear designer in the late 1970s I realised my true passion lay with the structures, not just the garments you could make with them.

I began questioning the materials to see what they could do. My approach was simple: I experimented with many different threads; basically, if it was even remotely knittable I tested it out. Then one day, following a chance conversation with a friend, I tried knitting with a bit of electrical fuse wire. My response was an immediate affinity, I was seduced by its colour and quirky potential, so much so it has remained my medium of choice ever since.

In the mid 1980s my early wire creations were elaborately constructed, like colourful jigsaws. However, their resulting flatness left me craving a more three-dimensional effect. To do this I needed to understand more fully the properties of the metal, so I continued experimenting.

One line of exploration related to size: just how big could I make the sculptures? A simple question, perhaps, but difficult to unlock because the size-to-weight ratio kept getting in the way. Let me explain. Take a small piece of knitted wire and just bend it into a shape with your hands. It is easy because at this scale the material will support itself, but increase the volume of the wire knitting and it soon becomes heavy and floppy. Its materiality has changed, so to retain the curves of a larger flying form involves the addition of a support structure. The quest to find solutions that satisfied both this physical challenge and the aesthetic sit close to the heart of my creative passion. Today, many of my sculptures feature spiral-like designs made up of swirling lines. I use a process I call my ‘ribbon technique’, which basically maximises the properties of the materials. The visual effect I am aiming for is fluid and spontaneous, like a frozen moment in time, captured but not trapped because light will always add the playful illusion of transformation and expansion. This is a description of the making process I typically use.

I begin by visualising the overall form to identify its elemental parts. Each unit is designed separately to consider its colour, shape and texture. Then I translate these into numerical patterns or knitting guides, to allow me to knit the various pieces. The next stage is to transform each long ribbon into a ‘sculptable’ form by hand-lashing stainless steel wires along the edges. Finally, when all the sections...
have been processed, I am now ready to sculpt. This is where intuition takes over and my hand and eye partnership synergise. Slowly the piece emerges as I work to balance the swirls, colours and flourishes. Each sculptural creation is like an adventure – fun, challenging, always different.

The time required to create a conceptually new design is never easy to calculate. I build on my knowledge of the materials and special effects I have achieved, but pretty much all of the making process are slow: preparing the wires, knitting, processing the sections, bringing them together and finally the finishing. So what happens when I have spent hours knitting a piece, only to find it has not achieved what I wanted? I used to make quite a lot of these, but with experience the number is far less. Each contributes something to my learning or could become potential units for something else. Nothing is wasted and nothing is ever too precious either! Chopping up and reworking original unfinished piece has always been an acceptable part of my creative process.

Sustaining the passion for making is as much about exploring the potential of the material and ideas as it is about physically making the finished object. Pushing the boundaries of the materials to see what effect it will have on the structure is very exciting. It is like a journey without destination or time frame, but there is confidence that something interesting will be discovered. Understanding what does work is as valuable as the unexpected disaster.

To capture in words my creative motivation I have selected a sentence from a book called Making. It was published in 2012 by my favourite London design studio, Heatherwick Studios, creators of the memorable London Olympic torch. Thomas Heatherwick, its founder, writes:

> almost every project, whether built or not, is an intense mixture of certainty and doubt, breakthroughs and dead ends, tension and hilarity, frustrations and progress. (Heatherwick 2012: 8)

Wise words from these creative visionaries, but it is not quite the whole picture because I would also like to add two more ingredients – curiosity and transformation. Changing one thing into another is thrilling. It could be clay into pots, sand into glass or notes into music, but for me it is the transformation a single thread into a cohesive structure. It is not about a quick-fix of simply turning things out, it is about really understanding the materials, then pushing them to do more. Makers like me are never satisfied by simply reading or looking at the pictures – I need to physically handle the materials. It is the repetitive actions that slowly build my knowledge to achieve ever better results, like training for an athlete

**Unravelling the code**

When I write out one of my knitting guides I use a sort of artistic shorthand. All the basic information I need is there, but how I interpret what looks like a series of numbers and marks is a much more intuitive process. You can think of it like a sheet of music to the untrained eye, just a series of lines and squiggles, but inside my maker’s head I have the cipher to interpret the code. So, like a conductor, I am not only free to join up this numerical message as I choose, but I can also change my mind at any time and re-interpret it in many different ways. The end result is therefore an intuitive response, not a predetermined consequence. My knitted pieces each contain individuality, because they are created by a real person, not a pre-programmed machine.

So what is it about the making process that I love so much? Is it the feel of the materials or perhaps my sense of control over them?

Touch certainly is important because many of the intricate processes I use can only be achieved by hand, not automatically via the actions of the knitting machine. However, this also brings unwelcome consequences – prolonged actions will physically wear away my fingernails. So I have to self-regulate both discipline and stamina. I think the sense of control I get from making holds a clue to its allure. The repetitive actions are very familiar, even meditative, and I do feel more balanced and in control when I make things. As I work I can lose myself in a private head space, accompanied by music or typical everyday sounds around me. In my workroom I feel calm – it is easy to forget day-to-day negativities when greed and selfishness just slip away.

Having worked with this medium for over twenty-five years, there is one technique that typifies my work. It is a hand process, meditatively slow to produce, known as bead knitting, and I use it to add colour and texture. But why do I find it so captivating? As a maker I rarely question what to me feels so instinctively right. However, when I stop to consider the reasons it is actually pretty basic. Let me start with the materials.
Enamelled copper wire. Available in a range of different gauges, and even the very fine is still strong. It is smooth, colourful and easy to use so I can create a structure that is knitted, but not from a conventional yarn such as wool, cotton or even a manmade fibre. This colourful metal has far more intriguing potential.

Glass beads. There are a number of reasons why I am so attracted to these. Yes, it is to do with colour and the textural quality they will give to the surface, but also their affinity with light. That is to say, it is the effect light has on the beads – transformative, magical, unpredictable, spontaneous, changeable. I think of it like my connection with nature, because the effect I am aiming or is transitory or fleeting like a rainbow – something that just appears then disappears across a darkened sky, nature’s smile perhaps? By using glass beads I can attempt to capture this effect. It may only be a momentary dash of light across the surface, or a change in the intensity of the colour, like illuminated stained glass, to highlight all or just part of a section, or perhaps simply the curve of an outline, but this is enough. It leaves me feeling calm, reassured, like watching sunlight sparkle across water.

Choosing the right bead is therefore vital. Some look lovely on the surface but held to the light they appear cold and black, their colourful beauty just a veneer; these will never glow, so it is important to know your beads. I am always searching for the perfect bead, one that combines changeable colour with transparency. Not that my bead collection is lacking. The shelves in my workroom are lined with an inspirational pallet to choose from, all shapes and sizes, from large right through to really tiny. However, colour and texture alone is still not enough, there is something else. It is more fundamental and it goes back to my passion for structures. Look closely at the knitting and you will see that the surface is not just embellished with beads. Like an embroidered afterthought, these beads actually sit between the knitted loops. They form an integral part of it, each needing to be threaded on to the wire first then knitted in one by one – the process is slow. The metal thread now forms a continuous link passing through every bead as it connects the stitches, side by side, row above with row below, each reliant on the next for stability. The resulting textile is strong, yet flexible with a beautiful jewel-like quality to catch the light. This is my reward for the time-consuming, nail-breaking addiction to beads and light.

So is that all? Colour, texture, form? No, not quite. I’ve talked about light as an agent to transform the colour of the beads, but what else can it do to the sculptures? Why is light so important to me? I pondered the question for quite a while then realised the connection with shadows. Let us consider the difference between an object and a shadow. A shadow is created when an object blocks out the light, but light can transform an object. Shadows are transitory, there but not there. Objects are physical, touchable. When I look closely at my knitted wire structures I am reminded of this. The stitches are physically the gaps in between each wire loop, the holes – both inescapably linked, just two different parts of the whole thing. When light falls upon the sculpture it casts a unique shadow, expanding the piece beyond its physical boundary. The shadow not only connects the work to its immediate environment, but also releases it to dance free across any surface, or playfully distort size and shape. For me the shadow acts like a metaphor for the human soul. A unique part of each one of us, but not physically touchable, yet we connect soul to soul via human emotions: love, anger, sadness, etc. If physically making things taps into a fundamental desire to connect, then the act of transforming one thing into another also has the power to connect because it engages our playful minds. Novelty and fun are more attractive to me than fear and hate.

When I am knitting I am responding physically to the materials. It is a very tactile activity. Although the end result takes time to produce I can still connect with other things at the same time, for example listening to music, talking, and watching television. My hands are busy but my mind is free to think and move around. Sensory connections such as touch, sight, sound all work together, they synergise. I do not feel trapped.

By contrast the appeal of invisible connecting, by that I include the internet and social media, is very different. I am excited and impressed by their potential, but need to master a very different code to connect and interact with them. Fundamentally my senses are limited because computerised hardware does not smile, laugh or offer body language clues to help. It is inanimate until activated by someone else, so my fascination can soon melt into frustration. I can feel blocked and vulnerable, sparking negative emotions – fear, anger, even hate. Wanting to master these new skills comes back to time and repeated effort. It is like learning a whole new language: codes, sequences, shortcuts, passwords, etc. I believe it is important to connect with new technologies, but it does not necessarily follow that I understand the
world any better. Yes, it may be fast, but so is running to a trained athlete. This is like comparing talking and communicating – you need time and a genuine desire to hone the skills needed to communicate effectively. However, knowing what you want to achieve or simply believing in the process can open the way for new collaborations. Skill sharing or interacting with new things on this level is very exciting.

By way of summarising ‘Jan the Maker’ I have identified the importance of the complete experiential journey, relying on my senses and emotions to understand and connect with people, materials and light – all vital for me to comprehend the changing world around me. If any of these elements were removed it would feel far less meaningful, like dancing with shadows, searching for light. Having said that I have not yet mentioned balance, and this is paramount because not all elements or senses are required in equal measure. For me one stands out above the rest, it unites everything like a continuous thread. The element in question is light. But why am I so fascinated and drawn to it? As I delve deeper to understand the answer a picture emerges in my mind. I am at a beach near the shoreline. The thrill I get from connecting with light can be likened to that of skimming pebbles across water. Each time the stone touches the surface it creates tiny ripples. The further it bounces the greater the likelihood of merging the circles, but even as the pebble sinks below the surface the expanding ripples continue to move. This analogy reminds me of life and our own fragile connection with it. Continuing to keep the creative energy flowing within me is important because when it is blocked it triggers a sense of negativity. Negativity is the black hole for my soul. I am lost without light. Nature is my cure, my guide and inspiration. Light is like water and love, essential for life.

So to conclude Jan's passion for making I return to my love of bead knitting, which allows me to play with colour and light, tapping into my positivity to dispel negativity. However, in the process of writing this paper I now realise I also have a hidden quest for 'synergy', that unpredictable spontaneous moment of connection which transports me and others to a new level of consciousness – understanding, then beyond. Synergy cannot be forced or scripted but touches the soul as clear as a rainbow against a dark sky.

Synergy adds the missing sparkle that drives my passion for making ... I wonder what your driver for life is?

Note

1. KNAG are the knitting NANNAS, an Australian activist group against fracking – drilling for coal bed methane and unconventional gas developments. KNAG Knitted giant yellow triangles as a community blockade to protest against areas of their land being selected for drilling. The campaign called ‘Lock the gate’ (LTG) united ordinary grandmothers and friends by enabling them to say no to something they believe is toxic to their people, the land, and the planet as a whole. See: http://www.knitting-nannas.com/glossary.php

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Post-Fordist Perspectives on Consumerism

This session sought to disentangle and explore some of the cultural and economic perspectives that help define the position of the contemporary crafts in relation to the political economies of industrialisation in its Fordist and post-Fordist phases. Fundamentally, it invited participants to explore whether, and how, the modern subject of liberal individualism could be reconfigured around a new ‘post-consumer’, ‘prosumer’, or, (following Soper), ‘hedonistic consumer’, whose desire is orientated towards a more socially-equitable and environmentally-sustainable mode of being. In doing so the session reflected upon the relationships between craft practices and new emerging materials and media, and whether a post-Fordist sustainably aware future necessarily implied a return to some pre-industrial form of craft-based past?
At the beginning of the nineteenth century, 2% of the global population lived in cities. Now in 2013 more than half the world’s population live in cities. By 2030, this will increase to at least 60% with significant growth happening in cities of developing countries and the emergence of meta-cities with 20 million inhabitants. The twenty-first century has been called ‘the century of the city’ by UN-HABITAT, the United Nations agency for human settlements.

This paper brings together three seemingly divergent concerns and practices to address this condition - urban, interior, craft. The paper will pose the role and contribution (and hence potential) of craft and interior design practices to the urban environment with a particular focus on the question of inhabitation and ‘a world in making’.

From small to large-scale projects, from individuals to communities, an approach to the question of urban inhabitation is invoked. The paper will draw on research conducted through practice and situated in the disciplines and fields of craft and interior design; a curatorial practice which values craft as a way of working and thinking in relation to practices of interiorisation and spatial-temporal designing; where craft brings a particular attention, sensitivity and mode of working (an ethics) to questions of inhabitation and urban environments; a practice engaged with ideas of making and materiality where there is a sense of hand(s) in making, and an attention to and valuing of this in relation to modes of inhabitation and cities.

What might a craft sensibility bring to urban inhabitation? What of an expanded idea of craft practice as a way of working and thinking which addresses spatial and temporal urban conditions?

The paper will focus on two curatorial/editorial projects: an exhibition titled Urban Interior Occupation held in a gallery dedicated to craft and a call for a special issue of a journal dedicated to craft - titled A World in Making. Cities. Craft. Design. In the first project, a research group composed of various disciplines and titled ‘Urban Interior’ took over a craft gallery through performances, actions, changes, sound, smell, thoughts, image, discussions, presentations, night and day; redistributing and enfolding outside and insides, individuals and collectives. The gallery became arranged by acts of crafting as distinct from craft artefacts, by process rather than outcomes; a space of work and worked space. With the second project, a call for journal papers focused on the conjunction between craft and the urban environment attracted submissions that engaged the practices of jewellery, tapestry, urban planning, architecture, landscape architecture with cities.

Each project made connections with craft as a practice involved in a world of making - making futures through making. ‘The thing is what we make of the world. … It is our way of dealing with the plethora of sensations, vibrations, movements, and intensities that constitute both our world and ourselves’ (Elizabeth Grosz’ The Thing).
Suzie Attiwill


Introduction

This paper brings together three seemingly divergent concerns and practices – urban, interior design, craft – to pose the value, contribution and potential of craft and interior design practices to urban environments through a particular focus on the question of inhabitation as a ‘a world in making’. A motivating force of this paper is the significant transformation that is happening globally in relation to cities and urban density where by 2030, it is predicted that at least 60 per cent of the world’s population will live in cities. This is a significant increase from the beginning of the nineteenth century, when only 2 per cent of the global population lived in cities. The twenty-first century has been called ‘the century of the city’ by UN-HABITAT, the United Nations agency for human settlements (Tibaijuka 2010). Urban density, globalisation and mass migration are radically transforming ideas of place, context, site specificity, belonging and modes of living. ‘Globalisation has evicted us from the world we thought we knew’ (Buchanan and Lambert 2005: 7). The question of habitability – how to live in the world – becomes critical and vital. The proposition of this paper is that practices of craft and interior design, when plied together, offer a way of attending to these concerns. To do this, however, also involves teasing open common assumptions about these practices so as to ply them anew. The paper draws on research conducted through practice and situated in the disciplines and fields of craft and interior design; this practice is positioned as curatorial and one craft is valued as a way of working and thinking in relation to a practice of interior design concerned with interiorization and spatial–temporal design.

A plied practice

This practice has been produced through a nexus of craft and interior design. For many years, I have been involved in both disciplines. I studied weaving and practised as a weaver after completing a degree in art history. I then decided to undertake a degree in interior design and developed a practice as an exhibition designer and curator. My connection with craft was re-established through an invitation to design an exhibition, Production Reproduction, for the Jewellers and Metalsmiths Group of Australia’s annual members’ exhibition and conference in 1995. This was followed by an invitation to curate an exhibition for Craft Victoria and guest edit their members’ magazine. The exhibition I curated and designed was called box: an exhibition of boxes from different disciplines including craft practices such as jewellery, metalsmithing, ceramics, glass, textiles and wood, as well as architecture, interior design, painting, magic, graphics and others. Gathered together in a space of craft, i.e. the gallery of Craft Victoria, viewers were invited to consider what could be said and seen about the differences and similarities between disciplines in terms of techniques and material. The boxes were displayed on the four walls of the gallery as distinct from the conventional plinth-form of craft display and viewers were situated in the centre of the space. The exhibition became a boxing ring with the works surrounding viewers like an audience to watch as viewers become boxers in their grappling with ideas. It is interesting to discuss this exhibition design and curatorial strategy within this paper as it has made me aware of the implication of interior – as enclosed space/boxes – and how craft informed this practice even in these early projects.

As the guest editor of the Craft Victoria members’ magazine, the bringing together of these two practices was more explicit – as space and craft. As noted in the editorial, the initial intention was to address the issue of the space of craft however:

Now in the assembling of this issue, I find I have lost the ‘of’ and that my thoughts lead me to spacecraft. Singular sightings and unexpected encounters surface while reading the texts … spacecraft is defined in dictionaries as a vehicle (or receptacle) which is capable of travelling in space. There are spacecrafts which are built to fly to the moon. There are those which appear on horizons or in the sky at unexpected times. With these latter craft there is a singularity about their appearance. Their visibility leads
to speculation rather than identification. A UFO; a flying aeroplane; its intentions, flight, paths, destinations, occupants, physical form, trajectories, language are unknown. As I mentioned at the beginning I have lost the ‘of’, the particle of possession, which sits between space and craft. In the process something unidentifiable has been as embodied – a spacecraft. It emits different kinds of light and moves at different velocities, twirling and whirling, carving up space and pursuing invisible trajectories. (Attiwill 1996: 17)

In late 1996, I became the inaugural artistic director at Craft Victoria and worked with the organization until 1999. Craft Victoria is a membership organization that advocates for, and promotes, contemporary craft. During this time I was also responsible for the direction of both the exhibition program and Craft – the magazine of Craft Victoria which we redesigned and relaunched to position the publication as a critical vehicle for the publication, advocacy and dissemination of the value and distinctiveness of craft. After leaving Craft Victoria, I continued to work with craft practitioners and craft as a curator and experimented in several projects with the ideas of spacecraft – and the bringing together of interior design and craft.

In 2001, I was invited to curate an exhibition of craft and design for the Monash University Gallery in Melbourne. I worked with the concept of spacecraft again. This exhibition was titled SPACECRAFT 0701:

A double reading of the word ‘spacecraft’ is explored here – spacecraft as UFO and spacecraft as space that is crafted. This engages with space that exists but is in excess – extraspaces, space beyond, virtual space. In this exhibition, the conjunction between the object, viewer and space is one which is not reduced. The moment of encounter becomes a creative moment of interiorization. Rather than a neutral space where meaning resides either in the object being viewed or the viewer, a new meaning happens in the excess. Sensed rather than reflected, what the affect is – an only be made intelligible after the encounter. (Attiwill 2001: 16)

This exhibition was followed by an invitation to curate the 16th Tamworth Fibre Textile Biennial, an exhibition of Australian textiles and fibre that toured nationally for two years. When the biennial began in 1975, it was a survey show. In 1996, this changed to a process involving a guest curator who was invited to develop a curatorial proposition and exhibition with the view to engaging Australian textiles and fibre practice in a critical discourse addressing contemporary issues. My curatorial provocation was not a theme or a brief but a quote from an introductory essay by craft theorist Sue Rowley in a book she edited called Reinventing Textiles: ‘It is useful to think of craft in terms of multiple temporalities’ (Rowley 1999: 13). At the time, her quote also made connections for me with interior and interior design as I was bringing the question of time into a rethinking of the history and theory of interior design which had been dominated by ideas of space and in particular enclosed space, i.e. the inside of architecture. The exhibition – a matter of time – was composed of the work of twenty-six practitioners and toured Australia from 2004 to 2006. I installed the exhibition at each gallery and changed the arrangement each time through different juxtapositions of work, thus producing new encounters and different inflections.

In 2006, I was invited to curate a craft and design exhibition for Contemporary Art Services of Tasmania – the first curator of three ‘outsiders’ (i.e. curators who were not from the island of Tasmania) as part of an initiative to address the exhibition of craft and design in a state where there is no dedicated craft gallery; making relations presented the work of twenty-two Tasmanian practitioners whose practice and artefacts made relations with exteriors through techniques of making and materiality.

During this period, I was referred to by colleagues and critics as a spatial curator and became known as someone who worked with craft and design. The interior design practice plied with craft in the projects above is one that poses interior as a question where the question mark comes beforehand – ?interior – to effect a pause and pose interior as a contemporary problematic where interior is not defined in advance as being inside something, but is produced through designing and practices of interiorization. I am interested in interior design as a practice of interior-making, which attends to questions of interior and interiority in relation to habitation – the arrangements people make so as to live. Posing ?interior opens interior to an exterior of contingency, chance and variation.

**Interior. Craft.**

Hence my connection with the disciplines of interior design and craft produced a practice that plied the two together. This plying did not seek to homogenise...
them to produce an interdisciplinary practice but to maintain the vigour and the knots of both so that the inflections and xes of each contributed to, and were apparent in, the projects and my practice. There is a sense of working in the midst of these forces, the conversations and debates with other practitioners. When plied together, the inflections of craft a practice, which values making and materiality, highlights practices of interior design that engage with making and materiality where there is a sense of a hand(s) in making, a valuing of haptic encounters and an attention to the relation between people and surroundings. Plied with an interior design practice, craft is engaged with spatial and temporal concerns to produce a space crafting. Together an attentiveness to signs of matter, a privileging of the haptic (a tendency that invites close attention) as distinct from the optic (a tendency towards detachment), a working and reworking that differs from design techniques of abstraction. Both craft and interior design are practices situated between people and things and/or environments, making relations of closeness and immediacy as lived, live and living relations.

In this practice, expanding ways of thinking about both craft and interior has been enabled through engagement with the writings of philosophers Gilles Deleuze and Elizabeth Grosz. In relation to rethinking craft, Grosz offers a shift from thinking objects to things in a way that makes connections for me with craft as a spatial and temporal production. She writes:

The thing is the precondition of the living and the human, their means of survival, and the consequence or product of life and its practical needs. The thing is the point of intersection of space and time, the locus of the temporal narrowing and spatial localisation that constitutes specific y or singularity. (Grosz 2009: 125)

This idea of the thing made as a ‘locus of the temporal narrowing and spatial localisation that constitutes specific y or singularity’ connects also with the practice of interior design as a temporal and spatial practice as one of interiorizing to make specific and singular, and through this to enable inhabitation physically, mentally and socially. This idea/potential of specific y or singularity is what interests me in relation to craft, interior and inhabitation; a way of making specific and singular as a response to the contemporary city and urban environment of increasing density shaped by forces of globalism and migration; a plied practice that enables an inhabitation of cities as a counterpoint to the vastness and remoteness of globalism. Here, both the thing and inhabitation involve processes of slowing down forces to coalesce, to stabilise and make specific through a ‘temporal narrowing and spatial localisation’. As expanded practices plied together, craft and interior design have much to contribute to modes of habitation, the urban environment and the twenty-first century as the century of the city.

**Urban. Interior. Craft.**

This plied practice of interior and craft has been experimented with in relation to the urban environment in various projects including undergraduate interior design studios, exhibitions and journal papers. For this paper, I would like to focus on two research projects: *Urban Interior Occupation* (Attiwill 2008) and *A World in Making: Cities Craft Design* (Attiwill 2013). In September 2008, Urban Interior – a research group of designers from the School of Architecture and Design at RMIT University – occupied the galleries of Craft Victoria for two weeks. With the second project, a call for journal papers focused on the conjunction between craft and the urban environment, and attracted submissions that engaged the practices of jewellery, tapestry, urban planning, architecture and landscape architecture with cities and the question of inhabitation.

In this paper I would like to take the opportunity to think through what these projects offer thinking about plied practices of craft and interior design in the urban environment. It is important to make a distinction here and note that these concerns were not necessarily those of the practitioners/makers/designers involved – although for some it was – rather the following text discusses what the projects have enabled me to think in relation to the concerns of this paper. And while I refer to my practice as curatorial, this does not mean that I was the curator of each project. With the occupation of Craft Victoria, my curatorial practice was one that came during and after the event rather than one that pre-organised the exhibition. The journal involved an editorial role and was perhaps more like a curator’s role in the sense that I called for submissions and then selected and arranged them to make the issue of the journal.

Urban Interior, a research group with which I am involved, focuses on the relation between people and the urban condition, and in particular the material, sensory, physiological, cultural and experiential dimensions that create and affect social
relations. Members of the group are from different design disciplines including industrial, landscape, architecture, fashion and interior design. Questions posed by Urban Interior include: What might be the contribution of design disciplines to new modes of urban inhabitation? How can temporary, interrelated design actions in urban conditions mediate the qualities needed to sustain and enrich the increasing inhabitation of urban areas? With the project in the gallery space of Craft Victoria – the idea of occupation referred to not only Urban Interior’s occupation of the gallery space for a period of two weeks but, through the inflection of craft, an attention to occupation as one of work and the techniques one uses in practice, and the kind of occupation one had. As an interior designer, I focused on practices of interiorisation in the production of the project and referred to my occupation as ‘interiorist’; initially with an ‘s’ and later with a ‘z’ – interiorizt (Attiwill 2012: 149).

Over the period of two weeks in 2008, the galleries of Craft Victoria became arranged through acts of crafting as distinct from craft artefacts, by process rather than outcomes involving performances, actions, changes, discussions, presentations, night and day. Urban Interior members occupied the galleries in different ways and at different times redistributing and enfolding outsides and insides through design and craft. For a couple of hours on specific days, the interior of the main gallery transformed into the Cycle Craft Workshop, a workshop for customising bicycles and testing them out. The long length of the gallery was perfect for riding a bike. Mick Peel, who teaches in Fashion at RMIT University, moved his workshop into the gallery space of Craft Victoria – the interior design program, inverted the interior of the gallery, bringing its exterior inside and in the process bringing an attentiveness to the materiality and activity of the urban surrounding. Along the length of the gallery wall, a series of photographic images of the exterior wall of the gallery space, taken over the course of twenty-four hours, were projected along the full length of the corresponding inside wall. On the wall at the end of the gallery, a live video feed of the street outside the gallery was projected. Entering the gallery then was a way of encountering and inhabiting the urban exterior – yet in a way where the inflection of craft as present and drew attention to haptic qualities of this selected exterior.

Malte Wagenfeld – a product and furniture maker whose discipline is industrial design – also selected and interiorized exteriors in the space of the gallery. He collected smells from around the outside of the building: cigarette butts, rubbish, restaurant smells as well as smells from craft practices such as oil, metal filings, etc. These were then placed in boxes made by Malte and displayed in a darkened space behind the main gallery wall. Visitors were invited to open the boxes and smell them, then asked to fill out forms saying what they thought they had smelled. Crafting air and smells, Malte described his contribution as ‘an exploration of the relationship between, space, place, materiality, body and the atmosphere’ (Attiwill 2008).

A different interiorization was made in the Nomadic Archive, a series of discussions and presentation organized by Robyn Healy, whose practice is curatorial and situated within fashion. At the time, Robyn was involved with the assemblage of an archive of Melbourne design. The archive did not have a public interface and so Robyn selected items
from the archive and brought them to the Craft Victoria gallery (via one of Mick Douglas's bicycles) where she would arrange them – either on display tables or in some cases, project archival footage – and invite people to come (including the designers and others whose work was in the archive) and talk about the archive, bringing a temporal exterior (the past) to the present. The Nomadic Archive brought this historical material into temporal and spatial proximity – making an encounter which was specific and singular.

The second project I wish to discuss is a journal dedicated to craft and design. The journal was the initiative of Craft Australia, Australia’s primary body for craft, with the aim of encouraging and publishing research in the field. (Unfortunately, in 2012, after forty-one years, Craft Australia ceased due to lack of funding. However, the journal continued and is now published by the Australian National University.) For each issue, a guest editor is invited and in 2011, I was invited to edit issue #5, for publication in 2013, with the suggestion that the issue could address the relation between craft and the urban environment.

I proposed to bring craft and the urban environment together – however with a spatial and temporal focus, i.e. plying my practice of interior design together with the threads of craft and urban. I titled the issue ‘A World in Making: Cities Craft Design’ and posed the following questions in the call for papers:

What are the potentials in ‘this century of the city’ for craft and design practices? What is the contribution of craft and design to cities and live-ability? What might a craft sensibility bring to urban inhabitation? What of an expanded idea of craft practice as a way of working and thinking which addresses spatial and temporal urban conditions? What of the emergence of new forms of practices to engage in the condition of the urban environment and the social, political and cultural forces of the twenty-first century? (Attiwill 2013: 4)

During the process of editing the journal, assumptions about craft became apparent as people were surprised by the range of submissions that expanded craft beyond its familiar role within the urban context as a form of public art. The call attracted abstracts that situated the practices of jewellery, tapestry, ceramics, gardening, blacksmithing, graphic design, product and industrial design, service design, interior design, urban planning, architecture and landscape architecture with cities. While not all the abstracts made it into papers, some of the inflections of craft which expanded the concept of craft are interesting to note: landscape rethought as patchwork; craft as a creative strategy for enhancing place, for engaging and producing communities; craft’s relation and influence in the emergence of DIY and Open Source which has led to a transformation of the twenty-first century city; craft as a strategy in relation to contemporary social, political, historical, cultural forces; and the difference between crafting and designing cities in relation to colonialism and migration. The following is a discussion of the projects explored in some of the published papers.

In her paper, ‘Jewellery, the urban milieu and emergence’, Jacqui Chan invites the reader into a series of projects connecting jewellery and cities, specifically the cities of Melbourne, Ramallah and Christchurch. Her practice engages with the materiality of these cities; working with matter picked up from the urban environment which she then reconfines into brooches. People are invited to wear a brooch and move through the city as an urban milieu. This process transforms people’s sense of where they are and invites them to have a different awareness from the familiar and habitual; qualities surface as affects and intensities create feelings of specificity and connection. As Jacqui notes, through the projects she ‘came to realise that colourising someone’s experience, fostering a state of wonderment or provoking interactions with the city was a radical thing for jewellery to do’ (Chan 2013: 31).

‘The generative loom: Tapestry in the community’ by Kirsty Darlaston presents her PhD research through practice: a practice of weaving situated within a public urban space. Over a period of time, Kirsty wove strips of photographed textile objects from other places and cultures to produce a map of the city of Charles Sturt, a local government area in the western suburbs of Adelaide, South Australia. As she wove, people passing would slow down to watch the process, her technique and the materials used as the image slowly evolved. Many of those watching were migrants from countries such as Iran and Afghanistan, who had first-hand experiences of weaving. Here now in the urban environment of Adelaide, people from different spaces and cultures were brought close in this world in making. The loom and process became generative in that each gesture of her hand wove not just a material thread but also cultural, temporal and spatial threads and memories that produced a new sense of belonging in the city of Charles Sturt.
Service/product designers Marzia Mortati and Beatrice Villari discussed their urban interventions which aimed to create ‘temporary communities of makers’. ‘Temporary’ in that it was gathered around a particular project; ‘community’ as a ‘collective subject’ that is different to the sum of its parts; ‘makers’ in that ‘the community originates to make something that is designing and developing an idea in particular contexts, sharing languages and tools’ (Mortati and Villari 2013: 135–6). For them, this approach involved a shift from design to craft and making; a shift that was vital to their project’s aim of regenerating the city of Milan. Mark Richardson, Susie Elliott and Brad Haylock’s paper addressed the transformation of cities in the twenty-first century due to contemporary technologies that have effected a shift from mass manufacturing to distributed making via home as factory. The situation of the contemporary city and the potential of craft is addressed by Erin Hinton and Craig Bremner in relation to the practice of urban planning. For them, the crafting process requires a dialogue between practice and thinking: ‘craft demands listening to its material’ and the inclusion of consistent interrogation. They point to these as critical to the designing and planning of the contemporary city (Hinton and Bremner 2013: 83).

Landscape architects Marieluise Jonas and Heike Rahmann address the voids that are overlooked and neglected in the urban environment, specifically in the cities of Tokyo and Melbourne. Referring to their practice as a dynamic urbanism, they intervene in these incidental spatial and temporal conditions in a way that does not attempt to transform them into purposeful designs, but enables and makes apparent transitory, fleeting, ontent and poignant moments. The scale here is different from that usually equated with urbanism, there is a focus on the experiential 1:1 scale between people and their surroundings with an intent to foster and nurture social, psychological and environmental relations that value and encourage attentiveness, curiosity and care.

A World in Making

In conclusion, the final part of this paper’s title: ‘a world in making’. This phrase has two inflections that are both in play here: as an immersion in a world of making, of craft and design, of practitioners and practice, of matter and techniques; and a theoretical orientation that poses ‘world’ as always in making – ‘a worlding’ (Massumi 2002: 128; Murphie 2008: 2).

Reflecting on the projects as urban, interior and craft in relation to ‘a world in making’, the question of habitability comes to the foreground and a number of ideas and future potentialities emerge. Each of the projects manifests a world of making where practice immersed in issues, momentums, interests and forces, produces interventions/projects that gather and slow down movement to bring in close and make arrangements in a way that enables habitation.

Urban Interior occupations encouraged people – practitioners and audience – to think about the role of craft in relation to urban environments. Relations were made between the city and people through bringing into proximity and closeness urban matter, smells, sound, air and atmosphere, and enabled an inhabitation of the city in a different way through new experiences. The potential of transforming and making new relations through craft practices become foregrounded. Craft Victoria curator Nella Themelios wrote of the value of the project:

As an organisation specialising in the exhibition of contemporary craft, this project represented for us a particularly pertinent series of provocations: To what extent are the relational elements of a space or environment relevant to the gestures of craft? How can the notion of ‘urban interior’ extend the conceptual parameters of contemporary craft practice? Is the strategy of ‘occupation’ a new elaboration of exhibitionary practice in this context? Importantly, this installation encouraged audiences to participate. (Themelios 2009)

Examples of this are encountered in the papers of the journal which discuss craft through projects where techniques and gestures are manifested as vital urban practices. For example, how jewellery can transform someone’s experience of the city through wearing; how the practice of tapestry weaving as a performative intervention in a public space enables people to traverse cultures, times and spaces to make connections which become critical to their ability to make a sense of belonging. The question of habitability in relation to the problematic of how to live in the twenty-first century urban environment is addressed here through craft and design practices – as a world in making produced and experienced through making and in the process of making.
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Fiona Curran

Ecologies of the Object: Technology, power and the corruption of nature

Landscape as a subject of representation has a long history in relation to the visual and applied arts and it can be argued that it continues to hold critical significance in examining conditions of power in the context of 21st century late-capitalism and the rise of “technocapitalism” as a new driver of social, cultural and political space. Any contemporary examination of material objects and the spaces of their production and presentation must confront the notion of virtual space and the circulation of the digital. It must also consider the effects of anthropogenic climate change as the environmental impact of global warming accelerates, resulting in an increasing fragmentation and reorganisation of the geophysical and geopolitical terrain. In considering these shifting notions of space and the social, political and cultural urgency of an ‘ecological thought’ (Morton, 2010), this paper will argue that we need a radical repositioning and redrawing of discursive and representational territories and that craft processes and practices have a significant role to play in this field.

Through focusing on a number of contemporary objects that repurpose forms and motifs from the decorative and applied arts (specifically those derived from the pastoral traditions of 18th and 19th century blue and white ceramics) a question will be asked: ‘How might the objects and decorative images derived from this period of ‘high’ imperialism provide historical perspectives on the production and representation of landscape spaces and sites in the present period of high-capitalism?’ The selected objects will enact a discussion on the relationship between landscape, power and technology as their meanings and the values ascribed to them transform to reflect contemporary concerns about the precarious conditions of our social and ecological present.

Objects will be explored via theories of landscape that link the ‘conquest of nature’ (and its appropriation as a visual symbol) with the conquest of capital (Mitchell, 1994 and Cosgrove, 1984). This discussion will evolve into a consideration of ‘new’ technologies and the effects of these technologies on our (Western advanced capitalist) relationship to space. Ideas of “acceleration” (Virilio) and space-time compression (Harvey) will be mapped in relation to the politics of landscape space. These themes will be reflected in the objects selected where historical forms/motifs are blasted and blown apart through the interventions of technology (via digital crafting), or where the presence of the handmade resurfaces and the physical and tactile conditions of production are key.

The contemporary objects selected present landscape and ‘nature’ in a constant state of flux. Once static forms and motifs are destabilized and corrupted in a process that, it will be argued, mimics the corruption of landscape space by capital.


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This paper has evolved out of my current doctoral research project investigating the continuing significance of landscape as a subject of representation in the visual and applied arts. Landscape, in the context of this research, becomes a pivotal term for thinking through a number of interrelated concepts concerning ecology, technology and ‘nature’, and it offers a site (or sites) for re-thinking how spaces are produced, organised and re-produced through shifting relations of power and through shifting cultural formations.

Engaging with landscape at this point in the twenty-first century means acknowledging the effectiveness of anthropogenic climate change as the environmental impact of global warming accelerates, resulting in an increasing fragmentation and reorganisation of the geophysical and geopolitical terrain. It also means acknowledging the new technologies of perception that exist from personal computing devices to global satellite systems, and considering the impact of these technologies on the landscape as both material site and in terms of their shaping of contemporary perspectives/sights.

This focus on landscape has developed from a belief in the political urgency of ecology as the question of the global present. Landscape as a subject of representation has a long history in relation to the visual and applied arts and my research aims to investigate whether it can offer critical significance in examining conditions of power in the context of twenty-first-century late-capitalism and the rise of ‘technocapitalism’ (Suarez-Villa 2009) as a new driver of social, cultural and political space. In considering these shifting notions of space and the urgent need for what the critic Timothy Morton refers to as an ‘ecological thought’ (Morton 2010), I intend to argue that, if we are to meet the challenge of our rapidly changing environmental conditions, then we need a radical repositioning and redrawing of existing discursive and representational territories and that visual arts practices, including craft, have a significant role to play in this process.

Morton’s writings on ecology focus on the continued use of the term ‘nature’ in discussions of the environment. He argues, following a growing number of recent philosophers from Bruno Latour (1993, 2004) and Michel Serres (Serres and Latour 1995) to those associated with the field of object-oriented philosophy and a number of feminist environmental thinkers (Plumwood 1993; Merchant 2003), for the need to break down the ontological distinctions that have been drawn philosophically between nature and culture and the human and nonhuman, for example. This challenge is seen as a necessary precondition for thought to be able to generate new political and epistemological environments where the idea of any political ‘constitution’ might open up to include nonhuman ‘actors’ and their relations with both humans and other nonhuman actors. Within this philosophical framework ‘ecology’ can do without a concept of a thing ‘over yonder’, called nature, which is ‘an arbitrary rhetorical construct, empty of independent, genuine existence behind or beyond the texts we create about it’ (Morton 2009: 22).

It is through this separation that ‘nature’ has become idealised as an independent realm that is somehow free of the social and cultural world. Nature in this sense is idealised and it is this picture that is frequently called upon in environmental politics which presents a holistic view of the environment/planet that aims to persuade us of our ethical obligations to ‘preserve’ or ‘conserve’ the natural world as it exists (or might exist) independently from us. Perhaps nowhere has this separation and idealisation taken place more fully than in the field of the aesthetic. Morton argues that this thinking about (and representation of) the natural world has continued to permeate contemporary structures of thought and prevents the possibility of moving beyond ‘the constant elegy for a lost unalienated state, the resort to the aesthetic dimension (experiential/perceptual) rather than ethical-political praxis’ (Morton 2009: 23).

Too often, when the visual arts attempt to tackle issues of ecology they continue to ‘split’ nature off ontologically from social, political and technological processes and appeal to an idealised conception of nature as an untouched realm free from human...
interference. Instead, what is being argued for in this paper is a move beyond this static, unchanging state towards practices that engage with territorialisations and deterриториalisations in ways that begin to disturb the signification of ‘nature’, ‘landscape’ and the ‘environment’ as stable terms. Focusing on a small number of contemporary hybrid objects that can be seen to blur the distinctions between art, craft and design, the discussion that follows will focus on the ways in which these contemporary objects repurpose historic forms and materials from the decorative and applied arts quoting an earlier decorative iconography drawn from the natural world to represent it in shifting and unstable ways highlighting, in the process, the political implications of ‘how we produce nature and who controls this production of nature’ (Smith 2010: 89).

W.J.T. Mitchell’s seminal edited collection, Landscape and Power (1994), has made a significant contribution to contesting the meaning of ‘landscape’ as a neutral term used within the visual arts. In the introduction to this collection Mitchell discusses how the visual representation of landscape does not simply stand as a signifier or symbol of power relations but is ‘an instrument’ and ‘perhaps even an agent’ of cultural power that appears to be independent of the social and political realms of human action and interaction. In this reading he argues that landscape, as a cultural medium, ‘naturalizes a cultural and social construction, representing an artificial world as if it were simply given and inevitable’ (Mitchell 1994: 2).

The development of the decorative and applied arts in Europe from the seventeenth century have complex histories that are bound to issues of power through the rise of capitalism via trade and colonialism, and through the visual representation of landscape, race and otherness. Originating in China as early as the fourteenth century, blue and white porcelain, for example, found its way into the wealthy collections of aristocrats, royalty and the church in Europe in the following century as trade routes opened up and goods began to circulate. The Dutch East India Company, established in 1602, secured the sole right for the Netherlands to trade with China and began importing Chinese porcelain into the Netherlands and distributing it to the rest of central and northern Europe. The consequences of this early monopoly on acquisition and distribution contributed to the increased value attached to the product through notions of rarity and exoticism. Mitchell considers whether the term ‘landscape’ might also be rethought as ‘something like the “dreamwork” of imperialism’ (Mitchell 1994: 10). He goes on to comment that:

“Empires move outward in space as a way of moving forward in time; the ‘prospect’ that opens up is not just a spatial scene but a projected future of ‘development’ and exploitation. And this movement is not confined to the external, foreign fields toward which empire directs itself; it is typically accompanied by a renewed interest in the re-presentation of the home landscape, the ‘nature’ of the imperial centre. (Mitchell 1994: 17)

There was a growing fascination with the exquisitely observed details of the natural world that were rendered by the Chinese porcelain painters – birds, insects, flora and fauna, narrative landscapes with rocks, rivers, waterfalls, distant mountains and swirling clouds, borders of foliage, scrolls and unusual plants, all served to present an exotic world beyond the familiar landscapes of Europe. The unusual quality of the porcelain in comparison to European ceramics added to its value as a sought after commodity; it offered a remarkably refined material characterised by a paper-thin appearance and a transparency and luminosity when held up to the light, coupled with a physical robustness.

As imports of Chinese porcelain increased during the seventeenth century, the effects on European domestic ceramic production in the Netherlands and England were profound as they struggled to compete with and to emulate the qualities of the fine porcelain in both material and decorative terms. A domestic war in China in the middle of the seventeenth century, however, meant that imports of porcelain were seriously diminished, enabling a gap in the market for the Europeans to increase their production, refine their products, and to add new styles of object tailored to their domestic audiences – in addition to tableware, for example, the Dutch producers began to make intricate garnitures, vases, flower pyramids and garden urns, reflecting the growing interest in botany and gardening amongst the upper classes.

The development of ‘Faience’ in the Netherlands (also known as Delftware in England) meant that domestic European products began to rival the imported porcelain in quality and design. Initial European designs were heavily influenced by the Chinese style, but as the seventeenth century drew to a close
the Oriental landscapes began to be replaced by Dutch and later English landscapes, simple genre scenes and biblical subjects. During the eighteenth century, with the development of transfer printing techniques that enabled the mass production of decorated ceramics, new markets opened up with a growing bourgeois audience who were keen to purchase products previously associated with the nobility. Blue and white china achieved new heights of popularity and became a major factor in world trade (Carswell 2000).

In this brief overview of a specific example of an interior decorative product from its origins in fourteenth-century China to its mass production in eighteenth-century Europe, it is possible to trace a reference to landscape in both its symbolic form and in terms of its political and ideological significance. The idyllic landscape scenes that were represented stylistically on these ceramics reflect a changing engagement with landscape – both real and imagined – and with nature in general. Advances in science from the sixteenth century on contributed to a greater understanding of the natural world and an increased demand to harness, manage and control its forces for social, cultural and economic development. As the European powers extended outwards on their imperial quests for greater wealth, space and natural resources, the home landscapes also underwent rapid change in the light of industrialisation as large parts of the rural landscape were swallowed up by urban expansion.

There also emerged in this period of expansion a close connection between landscape and cartography, between military surveys and mapping, as the control and domination of spaces and sites became a significant element of state power and private property. The physical geographies of landscapes across the globe were drawn into a complex interrelationship with commerce and capital. From the raw earth used to produce the clay for ceramics, the plants used to produce the cotton and vegetable dyes for textiles, to the use of natural motifs in the decoration and the oceans traversed in their shipment and distribution, the ‘natural’ world became increasingly commodified. David Arvey’s analysis of capitalist forms of production and consumption is useful to this discussion. In his book *The Enigma of Capital*, he writes that: ‘What can be said with certainty is that the conquest of space and time, along with the ceaseless quest to dominate nature, have long taken centre stage in the collective psyche of capitalist societies’ (Harvey 2010: 158).

Across the decorative arts of the period the depiction of idyllic pastoral landscapes can be seen to present a view of man in harmony with his natural surroundings. Bucolic settings, vignettes of rural life with scenes of farms and animals, peasant girls dancing, children playing, men hunting and fishing were common, as were ‘exotic’ scenes and floral motifs drawn from the landscapes of the newly ‘discovered’ territories. What such landscape views and use of natural motifs as decoration can be seen to represent was a way of bringing the outside world in. Decoration was a means to tame and control nature – it offered a fixed reference point and a sense of stability in a world undergoing dramatic change and transformation.

The appeal of bringing the outside in through the use of the decorative arts has continued to hold an enduring fascination into the twenty-first century where traditional pastoral and exotic motifs continue to adorn ceramics, textiles, wallpaper and furniture. In light of this continued relevance of the natural world to the decorative, I now consider a series of recent objects that reference blue and white china and reflect on the pieces from a contemporary perspective arguing that, far from simply recycling imagery from the past, these objects appropriate their visual language to raise questions about our present.

Two contemporary designs that quote the tradition of blue and white ceramics can be found in the work of the Dutch designer Marcel Wanders and in the work of the Swedish design team, Front. Wanders’s *One-Minute Delft* from 2007 took a series of classic Delft tableware forms, fired them in bare-white porcelain and then hand-painted them in expressive brush-marks of blue glaze that were completed in ‘one-minute’. For Wanders, this gesture offered a way of combining industrial production with the handmade to create mass-produced objects that are also unique. The swathes of blue brush marks are entirely abstract in their composition yet, due to the iconic nature of the objects being painted, and the colours used, they start to take on a reference to the landscape genre with the suggestion of mountain peaks, rivers and trees and a sense of the scenic unfolding around the three-dimensional surface.

In another example of the use of the Delft tradition, the design team Front designed the *Blow Away* vase for Dutch firm Moooi in 2009 that took an original Royal Delft vase and scanned it digitally, using three-dimensional modelling software. This virtual vase was then subjected to a simulated blast of wind
and the animation of this event was then slowed down and the frames were isolated to enable the moment when the vase was ‘blown’ to be modelled again as an actual three-dimensional mould which was then cast in porcelain. Each vase is handmade and hand-painted and is, like Wanders’s pieces, another example of the industrially-produced brought together with the presence of the handmade. In this example, however, the industrial aspect is also bound up with highly complex and advanced technological computer modelling. In a process that mimics the natural act of a gust of wind yet is in fact a simulation of that act, or a substitution for it, the distinctions between the natural and the artificial begin o blur.

Similarly, in Robert Dawson’s work Spin, from 2010, the artist takes a ubiquitous blue and white Willow Pattern and, over a series of plates, enacts a gradual dissolution of the image through digital manipulation and corruption of the original pattern. These static plates give the uncanny illusion that they are in motion, in the process of speeding up. There’s a witty nod to the movement of the potter’s wheel here, yet the technology advances to defy the laws of human touch and time. The landscape appears to be out of control, spinning off the place’s surface, moving too fast for us to focus.

At first glance you would be forgiven for thinking that Francesca di Mattio’s recent sculptural stacks combine found historical ceramic objects with hand modelling techniques but, in fact, the forms are all hand-cast, fired and painted in a complex and time-consuming process of mimicry and craftsmanship. In pieces such as Sévres Vase à Bobèches (2012) and Milton Vase (2011), forms and decorative detailing are referenced from various periods of ceramic history, only to be combined in an irreverent assemblage of different times, geographies and styles. The value systems that have accrued around these objects are disrupted as high and low forms are merged and the kitsch copy collapse. In a number of di Mattio’s works the objects appear to be undergoing a process of transformation or contamination, a self-devouring or engulfment by a neighbouring vase or the surface decoration that has taken on a life of its own.

In each of these contemporary examples there is energy and movement: a sense of entropy pervades the surface decoration or the form as the objects offer up land caps of turbulence and fragmentation. These contemporary examples of historical precedent point to dimensions of contingency, disorder and randomness that might be seen to disrupt the earlier historical project of understanding, dominating and reshaping the natural world, of ‘fixing’ nature and subjecting it to control and management by the human will. Nature, in these objects, is now represented as being in flux, in a constant state of change and transformation.

In Timothy Morton’s discussion of ecological thinking he offers some hope for rescuing the aesthetic from its reification of the natural world and continuing to imbue it with political agency. He does this through his appeal to a notion of ‘dark ecology’, likened by Morton to film noir where the central protagonist is implicated in the very crime he sets out to investigate from a neutral perspective – the moral of the story being that ‘there is no metaposition from which we can make ecological pronouncements’ (Morton 2010: 17). Instead, we have to immerse ourselves in the crime, as the reality is – as many recent commentators on climate change are now warning (see, for example, McKibben 2010; Kolbert 2006; Parenti 2011) – that we are no longer waiting for the catastrophe to happen, it is in the very process of happening. Or, as Morton states, ‘it has already occurred’ (Morton 2010: 17). Dark ecology is therefore ‘a perverse, melancholy ethics that refuses to digest the object into an ideal form’ (Morton 2009: 195). It must work instead to reframe our notion of the ecological itself through a sense of openness to radical otherness, to that which cannot be easily assimilated.

Advanced digital technologies have entered the picture in these objects and they appear to be subject to a form of acceleration, whether by the presence of the hand (in Wanders’s one-minute paintings), through the intervention of the computer (in Front’s and Dawson’s works), or through the pictorial conventions of the digital, where images are cut and spliced together from different sources and different historical moments (in di Mattio’s sculptures).

The philosopher Paul Virilio has charted this process of acceleration in relation to the development of new technologies and the increased technological organisation of every aspect of contemporary life. Virilio links these developments to the military-industrial complex of late capitalism and its erosion of the lived space-time of human experience through the loss of our physical and material engagement with each other and with the earth. In this he echoes David Harvey’s comments regarding space-time compression and the ‘conquest’ of space by capitalism cited earlier in this paper.

For Virilio, however, it is less a question of conquest than one of ‘pollution’ (Virilio 2009), a pollution
and a crisis of space that is brought about by the dematerialised, and instantaneous experiences of screen-based media. Digital media now enable access to local, regional, national and international sites simultaneously; territorial boundaries dissolve as one geographical location is caught up in another; distances collapse due to the compression of the near and the far, and Virilio concludes that:

Today it seems we live less in our own habitat (its field having practically disappeared) than in the habitat of velocity, assimilated to reality; its verisimilitude alienates us to the point of eliminating the optical effect of elerity, thereby normalizing the blurring of perception caused by acceleration. (Virilio 2005: 121)

For Virilio, it is our mode of perception and therefore the ways in which we encounter the world that are challenged. The speed of technology is contributing to a sense of fragmentation and ‘blurring’ of the perceptual field. Images are illuminated, colours intensified, the instantaneous ‘real-time’ screen reality supplants the ‘real-space’ presence of objects, places and people and our vision becomes saturated with a sensorial overload which is, in reality, a ‘sensorial privation’ (Virilio 2005: 37). There is a loss of material, experiential and affective engagement with the world and with others who inhabit that world.

This might be a moment to pause and to ask ‘Is it here, in this distancing from the experiential and affective engagement with the world, that we might find a role for craft processes and practices?’ I suggest this as a possibility, not in any appeal to a nostalgic notion of ‘authenticity’ in craft’s celebration of and immersion in the senses but in the increasingly hybrid role that craft practices and processes are playing in relation to other forms of aesthetic and cultural production. It is beyond the scope of the current paper for me to explore this suggestion in any more depth at this point. I want only to suggest that the distinction between the digital and the non-digital is too simplistic to hold as a binary in the present, as what happens in digital space is significantly affected by the material conditions and the social and cultural prescriptions of non-digital space. The development of contemporary craft practices into new areas of digital crafting and the appropriation of craft processes into other fields of cultural production are testament to craft’s ability to combine differing emporalities and modes of materiality simultaneously.

It is difficult to see the forces at play behind the new technological landscapes that we increasingly inhabit; their presence has arguably become as naturalised as the Imperial landscapes that Mitchell spoke of that I referred to earlier in this paper. Yet, the fight or the control and management of software licences and intellectual property rights, the virtual flow of information, and the social, political and ecological forces at work in the creation of the technology in the first place—from the labour used in the production of the machinery, to the rare earth minerals harvested for its internal mechanics, to the server farms that are running to store all the information being produced, the e-waste being generated on an exponential scale and the location of the factories and the labour producing the hardware (predominantly located in the Global South) – all contribute to new technology’s imbrication in a global restructuring of capitalism along transnational lines and to a renewed ‘conquest’ of space that might be referred to as a form of techno-imperialism.

I would like to suggest that the contemporary objects that I have been exploring can be seen to engage with these themes in their appropriation of historic decorative forms, many of which belong to the height of European colonial expansion from the mid-eighteenth through to the late nineteenth centuries. In reviving the forms and the symbolism of these historical antecedents, these contemporary responses playfully subvert their appeal to an image of the natural world as fixed, bountiful and untroubled and, in the process, call into question the self-evidence of ‘nature’ and ‘landscape’ as stable ontological categories. As well as the clear allusion to conditions of social and ecological collapse, these objects present us with a dark ecological vision that ‘refuses to digest the object into an ideal form’ (Morton 2009: 198), as Morton so succinctly puts it. Instead, it could be argued, in these objects what remains of ‘nature’ is corrupted and destabilised in a process that can be seen to mimic the co-option and corruption of landscape space by capital in its endless quest for new spaces to colonise and exploit.

References
Selling the Forever: The use of display in contemporary craft exhibitions.

I believe that purchasing a piece of craft is investing in longevity; that by owning the forever, not the throwaway, it is the ultimate socially-accountable consumerism. As such I contend that sustainability actually means choosing to buy a crafted object that will endure over a mass-produced one that will not. The manner in which craft is positioned to consumers in order to emphasise its unique and enduring qualities is a dimension that requires examination; as does the way craft retail can challenge consumer attitudes and offer 'an alternative hedonism' (Soper, Making Futures II, 2011). This paper offers an exploration of how exhibition display techniques can help influence consumers' perception of craft as a sustainable purchase.

Socially accountable consumerism should not require a return to more basic and pre-industrial forms of selling; rather it should stimulate new, imaginative directions. Purchasing craft allows consumers to display signals about themselves: a piece of work that sustains trends and fashions; that is long-lasting and crafted rather than mass-produced and short-lived; that signals social and ethical concern rather than 'disposable' disregard.

I would contend that there is a degree of complacency in the craft world: galleries, retailers - and often makers themselves - expect work to sell itself and do little to give it the display it deserves to illustrate its unique traits or consumer offer. As online sales opportunities increase, craft galleries and shops should look to - and beyond - the trends and techniques of visual merchandising to offer an engaging, multi-sensory experience worthy of the unique nature of the work.

My practice, Crafting Spaces, seeks to offer craft buyers - both actual and potential - a more enhanced customer experience. Creating a context for craft - a suggestion of a domestic setting with an added twist of stylised narrative - can remove craft from the vitrine confines of many exhibitions and allow audiences 'close encounters' (Campbell and Falk, 1997) with pieces that are intended to be handled or held. Placing craft in environments that enhance its quality and uniqueness, as well as its purpose, can help to position craft as a long-term treasure, an enduring and sustainable purchase at the centre of a more equitable consumerism.

This paper reports on the findings of a focus group and interviews with attendees to Crafting Spaces exhibitions (February and June 2012; purchasers and non-purchasers) and reveals how aesthetic display can influence audience reactions by creating a pleasurable retail environment where the mainly female consumers (Morris Hargreaves McIntyre, 2010) can enter into a 'daydream state' (Campbell, 2005) and enjoy an 'alternative hedonism' (Soper, 2006). This initial research is expanded by interviews (May 2013) with purchasers who reveal how their relationship with their purchases has evolved over the year; and if they have welcomed a piece of 'forever' into their home. Although limited in scope and sample size, this paper does offer a timely insight into the views of potential and actual craft buyers.

craftingspaces.co.uk
Introduction

Purchasing a piece of craft is investing in longevity: I contend that sustainability means choosing to buy a crafted object that will endure as a treasured item over a mass-produced one that is unlikely to. Owning the forever, not the throwaway, is the ultimate socially accountable consumerism.

The manner in which craft is positioned to consumers in order to emphasise its unique and enduring qualities is a dimension that requires examination, as does the way craft retail can challenge consumer attitudes and offer a more engaging customer experience or ‘an alternative hedonism’ (Soper, Making Futures II, 2011.) This paper – which has helped inform the development of my business, Crafting Spaces – offers an exploration of the impact display can have on commercial craft exhibitions, and how styling techniques can help influence consumers’ perception of craft as a forever purchase.

A Crafting Spaces exhibition shows contemporary craft in a recognisable, but stylised, domestic context to give a suggestion of how pieces of craft can work together in the home. Exhibiting craft in this way also creates a more engaging environment to allow both potential and existing craft buyers to experience the allure of beautiful, unique work. For this paper I conducted interviews with attendees to my exhibitions: a focus group held in February 2012, the findings of which informed my subsequent exhibition – A Bed of Roses; and to interviews with ten attendees to that exhibition. These responses are supplemented by the findings of follow-up interviews conducted in August 2013 with four respondents, from the group of ten, who purchased craft pieces at A Bed of Roses.

Although this study is limited in its scope and sample size, and cannot be taken as a definitive measure of the success of my display concept, it can give a tentative understanding of the impact display can have on craft consumers.

What makes it forever?

To coincide with Making Futures III, Malcolm Ferris invited me to curate a foyer exhibition at Plymouth City Museum and Art Gallery – Lifecycles of Material Worlds. All the pieces I selected for the exhibition were new works of craft created out of unwanted and dismissed items. These pieces are now arguably much more desirable and more likely to be ‘forever’ items in their new form than they were in their previous lives: more treasured as a stunning Magie Hollingworth pot than as the discarded paper from which it is made; more likely to become an heirloom as a Mirjana Smith assemblage teapot than as an empty Bisto tin.

While there are of course works of craft that by their nature won’t last forever – that will have a short natural lifecycle – I contend that much craft endures and is a forever purchase.

But, what makes craft something to treasure forever? Why is a work of craft something that can outlive decorative fads and fashions? Is it because it is a skilled, handcrafted item? Or because of the medium from which it is made? Or is it because of the way in which the consumer interprets its value?

The respondents I interviewed following my Crafting Spaces exhibition A Bed of Roses (May 2012, Westcroft Gallery, Kingsand, Cornwall) were asked for their initial reaction to a piece of desired craft:

‘When I first saw it, something inside me recognised straight away that it had something to say about who I am.’

‘It was a real physical feeling that I just wanted it.’

‘I loved the skulls and roses detail – it seemed to describe my personality, I just felt in love with it.’

‘It’s all gut reaction: gimme, gimme. I hate the thought that someone else would get it first.’

These responses indicate that seeing a ‘forever’ piece is a physical reaction – an item connects to the potential purchaser.
Is this a purely chemical reaction to a desirable object, a happenstance or a reaction that can be encouraged by the way in which a piece is presented for sale?

I would contend that the way that craft is displayed colours the consumer’s impression of the piece. As one respondent commented:

‘If work is presented badly or in a cluttered fashion you don’t feel enough emphasis has been put on the value of them. I’m not going to want to buy something the gallery owner hasn’t invested enough effort in trying to sell.’

Can craft retail stimulate buyers to see craft as a must-have purchase – as well as a forever one? Can exhibitions encourage buyers to view craft in this way? And at the same time offer them a consumer experience as memorable as the craft?

Socially accountable consumerism shouldn’t require a return to more basic and pre-industrial forms of selling; rather, it should stimulate new, imaginative directions. I think there is a degree of complacency in the craft world: galleries, retailers – and often makers themselves – expect work to sell itself and do little to give it the display it deserves to illustrate its unique traits or consumer offers. As online sales opportunities increase, craft galleries and shops should look to – and beyond – the trends and techniques of visual merchandising to offer an engaging, multi-sensory experience worthy of the unique nature of the work, and which online cannot – currently – offer.

I think there are two key elements missing from most commercial craft exhibitions: context, and a sense of theatre.

**Context**

Firstly, context. I believe that craft – whether functional or purely decorative – should be shown in a way that gives consumers a suggestion of how it could look in its ultimate destination – the home.

All too often works of craft, intended for use in the home, are either positioned on a white plinth in a white cube gallery and venerated as a piece of art or are squashed on to an overfilled shelf in a crowded craft shop.

As glass artist Charlotte Sale observes:

‘In plinth exhibitions – the craft isn’t in the environment [the buyer] is taking it home to. Who has white walls, floors and tables in their home? Very few!’

(Interview with author, 2012)

I would contend that by stripping craft of its domestic aura, it diminishes its nature as a crafted item. Craft that is shown and judged in a fine art context has to divest itself of much of its origins. It is interacting with works of craft, whether they are purely functional or not, that gives them identity.

As Paul Greenhalgh observes, ‘we prefer to drink out of glasses rather than look at them … pottery is best when held’ (2002: 12). Presenting craft in a recognisable and appropriate context where the viewer or user can identify with it is fundamental to our understanding of the relationship we have with the pieces.

Greenhalgh asserts:

The majority of the genres associated with the crafts were not invented for displays in galleries, museums and other public spaces and are intrinsically unsuited to them … when an object enters into a museum its context automatically changes. It may well still remain a great work of art, but it won’t be the same, and in some cases, notably most of the crafts, it may well lose something vital. (2002: 13)

For museum, read white cube.

It would seem that for a piece of craft to be deemed as ‘museum-worthy’, the further removed it is from any suggestion of domesticity the better. In an essay for the Collect 2012 catalogue, Emma Crichton-Miller (2012: 25) observes that:

Interestingly, there is some disagreement about the best environment to display contemporary craft. Sarah Myerscough\(^1\) believes that exhibiting turned wood in her white cube gallery off Bond Street has, ‘really made a difference. As soon as you put it in that context people do re-evaluate it. These pieces are now securing museum sales.’

These exquisite pieces of wood just beg to be touched and stroked – and it is unlikely that this will be allowed in the ‘captivity’ of the white cube, for Robert Cook despairing that craft in gallery exhibitions...
is ‘withering for … lack of human contact … frozen in an inglorious moment of rictus’ (Cook 2002: 25).

The origin of much contemporary craft is the studio. Gloria Hickey suggests that seeing work in the maker’s studio is the only ‘authentic way’ (Hickey 1997: 96) to buy and experience craft. ‘The majority of craft in a retail environment is more often promoted, sold and bought as a distinctive article, an objet d’art or collectible than as craft’ (1997: 96).

Why should craft not be all three? Its attractiveness and uniqueness do not stem solely from the work being shown by the maker – some admit that they much prefer others to do the exhibiting and selling for them:

Ceramicist Remon Jephcott says:

‘I don’t like open studios as I find it in rusive. I prefer gallery settings for my work. I like to see how differently my work is set out and also the viewer is given another opinion on the work than my own.’

(Interview by author, June 2012)

While I agree with Hickey’s view that ‘sources of inspiration, delight in materials and the making process … are frequently lost or misplaced in the retail context’ (Hickey 1997: 96), I disagree this is because the pieces are divorced from their maker. Rather, many craft shops, galleries and museums, and even makers themselves, do little to enhance the originality, ‘forever-ness’, and even purpose of the pieces they are showing.

Some craft exhibitions are bringing a flair of the home into the white cube. In September 2010 hotelier and designer Kit Kemp curated A Living Space at London’s Contemporary Applied Arts; her ‘Bloomsbury Group’ inspired sitting room featured work designed and made by CAA members. The gallery followed this in September 2012 with Domestic Matters, an exhibition that married modernist furniture with contemporary craft to create a domestic setting.

Both these exhibitions featured stunning craft, stylishly and beautifully curated. Offering context and the suggestion of how craft can look in the home is wonderful but, for me, without an extra layer of narrative I didn’t feel drawn into the exhibitions or totally connected to the work. Without an extra-sensory component it felt just a bit too much like being in Heals or John Lewis’s furniture department.

But both those businesses sell lots of products …

Theatre

Ken Parker asserts, ‘many of our desires and aspirations are created in retail centres; who we want to be, or how we want our home to look, is represented in shop window displays’ (Parker 2001: 1).

It is the job of marketing and visual display to tempt consumers into a store and present the products to highlight their qualities and desirability: ‘It is not objects that people really desire but their lush coating of images and dreams’ (Cummings and Lewandowska 2000: 76).

Since the advent of department stores in the mid-nineteenth century, retailers have embraced visual merchandising – turning shopping from a previously dull necessity of everyday life into ‘an astonishing, sensory experience’ (Parker 2001: 3).

The great expositions of the period created a new phenomenon in display methods that the early French department stores adopted: theatrical flourish and luxurious settings transformed everyday goods into sought-after objects of desire (Cummings and Lewandowska 2000).

In the current economic climate craft has the opportunity to be positioned to consumers as a genuine luxury product: a unique, handcrafted object. The inherent qualities of most craft may not need ‘aesthetically appealing arrangements to maximise their desirability’ (Parker 2001: 1), but using display techniques could enhance craft’s individuality, its enduring appeal – and the consumer’s experience of shopping for it.

Women are the key consumers of products for the home, and indeed of craft. Marketing consultants Jane Cunningham and Philippa Roberts note that ‘the female aim is to create a safe, secure environment … women are engaged in a continual effort to improve the state of things and enhance their surroundings’ (2006: 18). They avow that brands that ‘sell the whole aesthetic … offer a vision of an aesthetically enhanced world … and the chance to buy a little piece of it’ (2006: 81).

They cite The White Company as a shop where ‘everything allows you to participate in their vision of utopia, and gives you a sense that you have been given access to a charmed and beautiful place’ (2006: 83).
I think that the offer of a craft consumer should be a mix. It should offer beautiful works of craft curated in a cohesive and stylish way – the feeling of the whole aesthetic, where buying just one product feels like buying a part of the overall atmosphere – but it should also have a bit of theatrical spectacle; something which surprises and delights.

In her keynote speech for Making Futures II, Kate Soper described craft’s potential to offer ‘an alternative hedonism’ or a different way of consuming; an alternative to what she saw as retail environments that ‘blunt sensory delight’ (2011). The sociologist Colin Campbell also uses the word hedonism when he talks of the ‘joy of longing’ or daydreaming about the pleasure of expectation of a purchase rather than the short-lived satisfaction of buying (Campbell 2005: 95).

To offer a more enhanced experience I believe the way craft is displayed should offer consumers an enriched experience where they can be in a space to daydream and imagine; an environment which, as Cummings and Lewandowska put it, is ‘both seductive and interactive’ (2000: 76).

I want to offer craft I vers – and craft makers – a new kind of experience that is both seductive and interactive. To show craft in the context for which it was intended, but to add a bit of theatre and by doing so give visitors an experience – irrespective of whether they purchase or not.

**But what do the consumers think?**

I’ve conducted research both informally and formally after the three Crafting Spaces exhibitions I’ve staged since 2010 – the findings have fed into my evolving curatorial approach and the business development date of my new gallery, The Byre, which opened in October 2013 with the exhibition Made in Colour.

My first Crafting Spaces exhibition Expectations in September 2010 offed plenty of theatre – but perhaps not as much appealing aesthetic: a dining room setting offed an instantly recognisable domestic environment – as well as the practical solution of surfaces on which to display work; a narrative theme of Gothic Revival informed the décor: dark green walls, black-painted furniture.

Expectations, Westcroft Gallery, October 2010. Photo by Elaine Dye

Expectations was well received and was thought dramatic – if slightly unsettling – as revealed by the twelve participants in the focus group I held in February 2012:

‘Expectations had real wow factor – it was so different.’

‘Expectations was all about high drama; [it] turned people’s perception of the gallery upside down. It made you stop on the threshold, pause and take in what you were seeing … everything needed examination because nothing was what it seemed to be.’

But the high impact was not for everyone and did not really create an aspirational aesthetic:

‘I was a bit daunted by [Expectations] … I didn’t like staying in there too long, I was interested but I was unsettled … I didn’t think there would be anything I would want to buy.’

But On Reflection, staged in September 2011, was closer to achieving the ‘buying the whole aesthetic look’. For a more tranquil aesthetic – and a more feminine-appealing theme – I chose pale blue walls and pieces of craft in complementary cool shades.
On Reflection, Westcroft Gallery, October 2011. Photo by Elaine Dye

‘The real success was getting people to look at pieces that they may not envisage for the home and making them appear accessible.’

‘The dining table in On Reflection was a masterstroke – it was a domestic piece of furniture but using mirror on the top created impact – it felt like the glass pieces were floating.

‘Tables are sociable, you can talk over them. If you see something on a plinth you look at it as a piece of art, if you look at something on a table you have a very different relationship and interaction with it.’

‘I loved the feel of the room you created – the colours, it was so cool.’

‘The display was stunning: clean and fresh and inviting.’

The emotive language was one of ‘inviting’ and ‘feel’ – creating the aesthetic I wanted.

The domestic setting of both exhibitions as a vehicle for exhibiting craft was commented on positively with furniture being seen as a more interactive – and less restrictive – way to experience craft.

I used this feedback to help create A Bed of Roses, my third Crafting Spaces exhibition held in summer 2012. It was an unashamedly feminine setting with just a few dark edges in the narrative – metaphorically hidden under the chintz.


The findings here are from ten face-to-face interviews: eight women and two men, a mix of ages and backgrounds. Five purchased – four for themselves and one as a gift. Obviously this is a very small sample and, as noted earlier, should not be taken as a definitive measure of the success of my method of exhibiting craft.

In summary, I asked the interviewees about context: did displaying craft in the suggestion of a domestic context as opposed to a white cube affect how they perceived – and interacted – with the craft? Did a domestic setting enable them to envisage the work in their own home? Did the setting help to illustrate the originality of the work and its inherent value as a desirable ‘forever’ object? And theatre: did the setting and the suggestion of a narrative enhance their visit to the exhibition? Did they think an element of theatre in a gallery setting made their purchase more likely?

Six out of the eight women interviewees responded very positively to the initial impression of the setting:

‘The overwhelming feeling was wanting to have everything in the exhibition because everything seemed so lovely.’

‘I could quite come and live here; a dream of a bedsit.’

‘I felt as though I was in an exquisite feminine room where everything was carefully placed and chosen.’

‘It was welcoming because it didn’t look like an art gallery – and those fantastic pinks, and the wallpaper.’

‘The feel of the space was very cosy … I could see [the work] in my own home … If I’d just seen these pieces in a cold studio I don’t
think I would have had the same emotional attachment to them. Seeing them in context is what you need.’

Two were less enthusiastic:

‘A girly boudoir – part of me likes it but part of me thinks it’s not intellectual enough for me.’

‘A more gender orientated display than the previous exhibitions … I was a little overwhelmed by the intense colour.’

The response to the setting was not solely gender based, as both men commented positively:

‘Luscious. Impressed by the whole experience.’

‘I thought the overall setting was stunning … quite contradictory to my normal tastes.’

The male responses may be explained by the welcome surprise of a new experience, or by the ‘romance’ of Westcroft Gallery’s setting in a picturesque Cornish fishing village. One of the male respondents who had not previously visited the gallery or a Crafting Spaces exhibition commented:

‘It was an adventure getting from the car park to the exhibition: winding smuggler’s lane … the narrative seemed to start at the street … so by the time I reached the exhibition there was anticipation about what might lie ahead.’

This response suggests Colin Campbell’s (2005) ‘daydreaming’ and ‘fantasising’ in the build-up to a purchase. While these male responses are positive, the point made by the earlier respondent is valid: creating too ‘gender-orientated’ a space could be alienating to both men and women.

In terms of interaction with the craft, the use of furniture was commented on positively:

‘The bed … really encouraged interaction with the pieces on it and beside it – I think people can be nervous about touching because craft is such a precious thing but it is very tactile and I think this exhibition encouraged that.’

‘The whole place felt warm and welcoming – and you could touch things, which you don’t feel you can do with plinths. People are less inhibited about touching something on a piece of furniture – a white plinth feels more museumy.’

But it didn’t work for everyone:

‘As beautiful pieces in their own right I would have preferred to see them in a more gender-neutral setting. The exhibition lay-out was more like a bedroom setting in an interiors store than an interpretive piece – not what I was expecting based on the previous exhibition.’

‘In a white cube gallery you just look at the object, but with the setting and the narrative aspect … there was a distraction in a way, I didn’t see [the pieces] in quite the same way; you look at them as if they all belong together whereas they don’t and you know that they don’t.’

This would imply that craft isn’t something that the user has a relationship with – quite contrary to the intentions of most makers.

Creating a narrative in what is almost a theatrical set is a key part of my Crafting Spaces offer – to give an enhanced customer experience irrespective of purchase. For some of the respondents this worked:

‘[The setting] made me look more closely at the work … I felt I was looking at a story rather than just individual interesting objects.’

‘The narrative was subtle, it never got in the way of the work nor was it overplayed … the pieces held subtle stories that only revealed themselves on closer inspection. I found myself thinking about the exhibition afterwards … and piecing together strands of the story – the whole was far greater than the sum of the parts but the realisation took time to mature.’

‘Initially you are walking into a beautiful room where everything is lovely and very feminine, but as you went around things weren’t quite the way they seemed, which added interest for me – very slightly off-kilter.’

Creating an overall aesthetic, which consumers find attractive and want to spend time in to ‘daydream’, should also encourage exploration of the individual works of craft:

‘I really couldn’t wait to start looking at specific pieces and I looked forward to coming back when there wasn’t such a crush [at private view].’
Charlotte Sale’s glass ‘spritz’ bowls sold very well: three pieces at private view, then a further six; her work was one of the most commented on among those who didn’t purchase:

‘The glass pieces were … particularly ‘wow-ful’ with a delicious jewel-like quality.’

For those who bought the glass, the reasons given for purchasing were display:

‘[The setting] made me much more inclined to buy – the whole way it was put together it was so inviting. The glass pieces stood out immediately because of how they were displayed – they were like jewels.’

‘It hit me immediately, sitting on the mirror … If I’d just seen that sitting on a wooden shelf … [it] wouldn’t have had the same impact, the setting absolutely made me more attracted.’

For the other purchasers, how did the setting and aesthetic influence them?

‘I believe the setting did influence the decision. I might have bought the piece anyway … but the setting had a drama and a sense of immediacy about it, and I suspect I was caught up in that … I was excited to be part of the drama and play a part, by – literally – buying in to the narrative.’

‘The setting definitely helped, because I could see that piece working with other things I have in my home. If there wasn’t any suggestion with the setting then it might not have had the same emotional response.’

None of the purchasers had planned to buy at the exhibition – though one who has bought at both previous Crafting Spaces exhibitions thought she might; two have previously never bought craft.

Of those who didn’t buy, for some, the aesthetic played a large part in their enjoyment of the exhibition – irrespective of purchase, offering one of Soper’s ‘alternative hedonism’ (2011).

‘[The setting] made me more attracted to the work, definitely … I would have loved to have bought … but just can’t afford it at the moment.’

‘I thought even the props were wonderful – the chair, the overmantle – I could covet all those things … but I didn’t have a reason to buy this time. I loved the glass bowls but I’m not sure where it would go.’

It should not be assumed that creating an attractive environment in which to show craft will always encourage sales. All consumers are driven by different desires, and practical considerations can override an emotional response to the setting.

‘Buying for me is rational … I don’t think the setting affected me one way or another in terms of buying something. I like to think I’m not affected by advertising and if I like something, I like something.’

For those who did buy, what does owning a piece of craft mean to them?

‘I think it reflects my personality; and I think it’s human nature to want to have something that no one else does – to have something that suggests you don’t follow the crowd.’

‘I think having original craft is about values: buying from an individual producer rather than mass-market – it’s buying inspiration rather than something dictated by a focus-group. The works you choose reflect something private, and choosing to reveal a part of yourself in such a way changes the feel of your home – in a really positive way.’

‘I’m not afraid to buy pieces that are different and not always viewed as safe. So perhaps people may see what I own as an illustration of my personality … and it makes me feel good about myself in that I chose it and own it.’

‘I’m not a victim of chain store hype about “this season’s look and colours”; investing in original and beautiful pieces gives me great pleasure.’

This would suggest that craft items they bought were very personal purchases that held the potential to become treasured items, forever pieces. But a year on, what is their relationship with the piece? The following findings are from the four interviewees who purchased pieces from A Bed of Roses and were re-interviewed in August 2013 and asked about their relationship with their piece of craft a year later: is it a forever piece or has the thrill worn off.
‘I have a huge emotional attachment to it; I can’t see me being parted from it or imagine it belonging to anyone else.’

‘They are my treasures and will be with me always. They are not for the charity shop or dump when high street fashion changes.’

‘The glass piece has been in three homes in the past 12 months. It’s amazing how a strange house becomes home when a loved craft work is unpacked and given a place. The piece is a physical expression of who I am. In each house, there has always seemed to be a right place for the piece; it’s been obvious.’

‘A forever piece? Well, yes – they are what I’d grab if the house was on fi e.’

And what of the impact of the exhibition? Do the respondents still think it played a part in the purchase? Does the event still register a year on?

‘Part of the joy of the piece is the way it brings back memories of the exhibition. I thought it was so special that it almost lives on as an echo in the craft work.’

‘I remember it felt warm and welcoming and really wanting to buy something – and then seeing the Anja Lubach piece and my heart sang.’

‘It was such a diffe ent experience to have in a gallery that buying that bowl was a much more memorable experience.’

‘I remember the colours – and the Charlotte Sale bowls – and wanting to buy the big one, but being happy I could affo d a small one. Is she in your next show?’

In responses to A Bed of Roses, a number of the interviewees commented on the success of using a domestic setting to illustrate how craft could look in the home. However, I don’t believe it was solely domesticity that enhanced the customer experience. The domestic setting gave the work a context, and allowed for interaction with the craft, but it was an element of narrative, of theatre, which helped to create ‘an atmosphere that was both seductive and interactive’ (Cummings and Lewandowska 2000: 22) and that gave consumers an indulgent experience, a chance to daydream.

**Notes**

1. Of Sarah Myerscough Fine Art, London
2. Craft buyers are more likely to be older females: 57% female (compared to 35% of those not in the market to buy craft) and 53% aged 45 or above (Morris Hargreaves McIntyre 2010: 16).
3. The White company was established in 1993 as a mail order company specialising in high quality but affo dable white products for the home. It now has shops throughout the UK – including a ‘lifestyle store’ in central London.

**Conclusion**

Craft can be a forever purchase – an investment in longevity. It can offer a deeply per onal connection as it makes a narrative contribution to the home – something that I contend is much less likely to happen with a mass-produced item.

I believe that exhibiting craft in the suggestion of domestic context allows audiences to envisage how pieces of contemporary craft could be shown in the home, and allows audiences to engage with the work in a way a traditional gallery setting cannot. However, any setting has to retain the craft’s integrity and not devalue it. I’m not suggesting that all galleries should create a homogenised retail-focused environment to lure consumers into sales; rather, they should use imaginative means to give consumers more of an opportunity to develop a relationship with a piece of craft – by experiencing it in a way that emphasises its unique qualities.
References


Dr Sandra Fagbohoun

The Makers: An anthropological study

In a period of globalization, cultural homogenisation has become a trend that gives cause for concern, as it runs the risk of diminishing existing cultural diversity. In fact in this second decade of the 21st century we can identify a growing reluctance to adhere to this homogenisation. The makers culture illustrates this phenomenon because it goes against the different cultural forms and dominant production systems, and endorses the accessibility of creativity and innovation for all.

From an anthropological viewpoint it is interesting to analyse the way this cultural community has built itself. We will examine its multiple sources of inspiration, from economic systems and more primitive companies, to the cultural hacker whilst observing its humane philosophy of social equality. Culture maker seize their elements of expression in order to renew themselves continuously through an action of developing and expressing themselves.

Culture makers put this into practice through regrouping individuals, knowledge, disciplines and practices. A freedom of access to information and digital production systems is favoured. We will demonstrate how their conception of giving is far from naive or unrealistic: the culture maker verifies social pragmatism and knows how to find inspiration from more traditional social and economic models. Giving is not treated lightly: the notion of giving instigates the possibility of cognitive and relational links.

Belonging to this cultural community does have its constraints, since it requires certain obligations. We will see precisely that the culture maker sources its ethical engagement from productive attempts and collaborative creation: innovation is valued as an investment for social change.

Thus we have chosen to study in more detail the importance of this means of expression (the Fab Lab), the values supported (hospitality without exception and the act of giving) and the different behaviours that this promotes (creative collaboration). Through this method we can understand more clearly the uncertainty of choice that divides the culture maker: between moral utopia and technological and digital pragmatism.

Bibliography:


Within the context of globalisation, the trend towards cultural homogenisation may be seen as a threat, as it tends to dissolve the wealth of cultural diversities. In fact, in this second decade of the twenty-first century, we can ascertain that organised resistance to this blurring of identities is actually growing. Increasing flows of wealth, goods, people and information nurture the various cultural communities. Each culture reincorporates these new elements, associating them with others, which it recognises as belonging to its own tradition, in order to create and constantly renew its specific cultural expressions. Every culture is thus reshaped, reinvented, according to the various re-appropriation strategies followed by individuals, and according to what they choose to present to the outside world. Globalisation has been so disruptive through its homogenising drive that it has strengthened cultural specificities and crystallised assertions of identity.

Maker culture illustrates this fact in an interesting way. Indeed motivations for the emergence of the makers’ cultural model are diverse. Trying to analyse this community from an anthropological point of view, it may be interesting to study the values it chooses to disseminate and the kinds of behaviour that are thus promoted. In this way, we may better understand the ambivalence upon which makers’ culture seems to be based, somewhere between moral utopia and technological pragmatism.

**Cultural belonging**

Generally speaking, every community or cultural group defines its affiliations arising from predefined requirements. Members of each culture thus become perceptive, being supported and trained in recognising as their own the group’s practices and representations. This specific culture is thus handed down both consciously and unconsciously, whether through formal training or not, by observation and imitation. It is internalised through assimilation of the group’s values and norms, but also through the identification of penalties as aimed at those who turn away from conventional usage. The makers’ cultural model largely takes its inspiration from the hackers’ cultural model, since makers twist hacking, and turn it from the virtual to the real world. A great many values are thus common to hackers and makers, even if, as we shall see, the latter uphold their specific claims. As in every cultural community, being acknowledged as a member of the group requires that individuals share the codes and take part in its representations. This is the dual role fulfilled by every culture, according to Edward T. Hall (1989: 196): a communication role, operating through a code (the often learned relationship between a given gesture or utterance and a corresponding meaning), and a participation role, operating through symbols. Symbols are more than a code because they refer to values, to founding myths and, as such, they entail support or rejection from individuals. Their meaning is more hidden, though more structuring for the cultural community. Inasmuch as cultural values carry an emotional and/or ideological charge, they represent a particularly rich subject for anthropologists. This is why we will turn to values, which define the ethics as promoted by maker culture. Interacting within this group, makers are led to perceive and act in the same manner as other members of their cultural community, inasmuch as they master the codes and symbols suggested by the context.

**Demand for recognition**

According to Clanet (1993), each individual develops a particular cultural identity ‘according to his adherence, or identification to the ways of doing, being or thinking of a given community, but also according to oppositions or exclusions relating to the ways of doing, being or thinking of neighbouring communities’. Thus individuals who choose to be identified as makers are defined by their choices in matters of identification to the practices and values of the maker community, as opposed to those of other community groups. The maker movement is sometimes described as a ‘counter-culture’, considering the strength of its demand for recognition. It allows the proclamation of a set of values and counter-values, which are antagonistic to other systems of thought, production, consumption...
and communication, taken to be less relevant or less morally acceptable. This is precisely the important point for us: maker culture draws its own contours and develops its ethical principles, in response to what it rejects: the oligarchy of production systems, individual ownership, restricted information, social stratification. On some counts, maker culture shares the principles of hacker ethics, as codified by Levy (1984). This drive towards creation, innovation and emancipation has allowed maker culture to develop a narrative pattern, a discourse that is inseparable from its proclaimed values.

The value of hospitality

The makers’ purpose, which is to open spaces for the sharing of knowledge with as many people as possible, corresponds to one value, which is already highlighted by the hacker community: hospitality. In any case, the diversion or re-appropriation of existing objects as practised by makers, as well as the use of technical resources beyond the scope of commercial licences, is a form of ‘hacking’; thus the boundary between the two cultures is rather thin. In the same manner that the web browser, a nomadic being in the virtual world, found a refuge in the ‘net islands’ as offered by hackers, any person who wants to may absorb knowledge and freely exchange information in a Fab Lab (FABrication LABoratory). The delimitation of an enclosed space where one can derive knowledge plays an essential part in these two cultural models. Several theorists had compared the hacker cultural model with Ulysses, the Homeric model of scholarly discovery, a man who is an ‘expert in various subjects’, a ‘connoisseur in human places and observer of intellects’ (Benyon 1998).

Hospitality presupposes a circumscribed space, which might be opposed to the open space and preserve the terms and conditions for the exchange of knowledge such as conceived by maker culture. To allow access to means for the manufacture of parts in a single original or in short production runs, the Fab Lab, ‘hackerspace’ or ‘makerspace’ offers local grounds, buildings, equipment and means for carrying out shared projects with a community of inventors, computer scientists, designers or artists, all participating in the same philosophy.

However, and this is the most important point, the ‘local grounds’ do not just represent a physical space and a materialised place. Maker culture is shared by individuals living in different territories, in spite of widely diverse cultural heritages, which they may refer to. Maker culture is trans-borders, trans-national and delocalised, which does not preclude it from putting a value such as hospitality at the heart of its reference system. At the moment there are nearly sixty Fab Labs in the world, distributed in seventeen countries, from Ghana to Norway and from India to the United States.

This is a primary question for anthropological epistemology. How can one categorise artefacts, which appear in the worldwide web, in trans-national cultural networks such as this one? Groups and communities, subject to the various mechanisms of globalisation, participate in the diversification of local grounds. Local grounds imply widened networks of belonging, sets of individuals brought together in a constant mingling of strategies and interest groups. Local grounds tend to split up, and to make more diffuse the homogeneity of what was the local factor of classical anthropology.

The whole wealth of Appadurai’s research (1996) may be brought to bear here: the local factor may no longer be synonymous today with any permanence in a given place or territory. In this sense, the word ethno-scape, such as he uses it, coincides with maker culture, because it allows one precisely to account for the production of a group identity, based on given images, on a ‘shared landscape’ (Abélès 2001, pp.17-19).

The author’s thesis may be compared with some constituents of maker culture, such as opposition to the pessimistic dissertations on the disappearance of cultural specificities as characteristic of a territorialis ed world. As a matter of fact, cultural identity is perceived as a permanent invention and belonging may no longer be defined in relation to a given place, or territorial spots:

The concept of ethno-scape aims to offer a dynamic perspective on constantly self-redefining identities …. Generalized mobility creates new subjective sets of references, making more and more anachronistic traditional forms of identification as linked to a given territory and a given State. (Abélès 2001, pp.17-19)

The essential point is thus to highlight the possibility of ‘new ways of doing and thinking which explode ever more arbitrary rigidities and frontiers’ (Abélès 2001, pp.17-19). Appadurai (1996) puts imagination at the heart of new identity inventions; so does maker culture, while valuing shared innovation and practical applications.
The logic of gift and counter-gift

The utopian dimension of maker culture relies on the social link it intends to establish between individuals. This community is founded on the principle of exchange and cooperation through the provision of numerical control machines, tools and information. Sharing is free and based upon the sole initiative of individuals who cooperate closely but who may exit or enter manufacture premises just as easily.

Gift as promoted by maker culture consists of providing know-how, knowledge and techniques to other members of the community. Gift then changes because knowledge and methods undergo multiple alterations, improvements and adjustments. The interdependence between makers generates a steady flow of exchange, based on the sharing of expertise, the multiplication of projects and mutual recognition. The individual nourishes the collectivity and the collectivity welcomes, embraces and attends to the individual.

However, we may identify a form of dependence which is inherent in belonging to the maker community, in the likeness of the ‘Homerian traveller who, during his journeys, never ceases to negotiate gifts and counter-gifts, thus increasing his personal fortune and his social engagement network’ (Casilli 2004: 100). To be sure, sharing is free and based upon the sole initiative of individuals, but it induces a counter-gift system. This is akin to Mauss’s notion of the gift as a set of three duties: give, receive and give back. In maker culture, the dissemination of knowledge and know-how, the free production of new goods or services, are not entirely free of charge. While the idea of individual property is firmly rejected, the logic of gift does not cancel the expectation of a counter-gift.

The collaborative creation requirement

The Fab Lab or makerspace proclaims to be ‘open source’, that is to say free, leaving the possibility for the creative individual to file a patent application; whereas a hackerspace is opposed to the notion of individual property.

Maker ethics prescribe handing back technology and production tools to the citizens, but what is at stake with Fab Labs is before all the creation of collaborative projects. In other words, a gift of knowledge or techniques necessarily leads to counter-gifts in the form of new knowledge or techniques, or of proclaimed and widely disseminated acknowledgement of indebtedness, so as to heighten the reputation of the donor.

One recognises here the particular working of the potlatch, as studied during the twentieth century by many anthropologists, such as Malinowski (1963[1922]). This is an ostentatious ceremony for the allotment of goods, as practised among the fishin’, hunting and gathering populations of the Pacific coast, from the state of Washington to Alaska (as among the Kwakiutl Indians for instance). In a potlatch, gifts cannot be refused, and must be given back at a higher level: ‘the underlying principle being that of an investment in goods, to be repaid with an interest’ (Boas 1897) as a means for enrichment and social advancement. Boas likens the counter-gift to a repayment of capital with interest, at a time when capitalist ethics encouraged stock market speculation. This interpretation was an inspiration for the liberal school of economic anthropology, and gave support to Marcel Mauss’s gift theory (Mauss 1923). In the maker community, the possibilities for participation are taken to be free, and cooperation between peers aims to dissolve social stratification and existing forms of exclusion; but the maker culture only temporarily cancels distinctions between individuals. While neutralising real world status, it reconstructs other forms of competition, and the prestige, which can be derived from the act of giving, is indeed similar to that which is obtained by a person who initiates a potlatch.

Another dimension of the potlatch corresponds to one aspect of the maker culture: as Piddocke demonstrates, the potlatch offers a means for redistributing resources, which in some cases allows the redressing of social inequalities (Piddocke 1965).

Social utopia

The central idea put forward by Neil Gershenfeld, the founder of the Fab Lab programme, in a collaborative effort between the Grassroots Invention Group and the Center for Bits and Atoms (CBA) at the Massachusetts Institute of Technology (MIT) was to hand back the development of production forms to the masses, that is to say to the people.

Other makerspaces or hackerspaces as developed outside this programme have stuck to the same guidelines, as a foundation of maker culture. We can compare this idea with the founding myth of the hacker utopia, as presented by Bey (1991). According to Bey, the hacker movement finds its inspiration in the pirate utopias of the sixteenth and seventeenth centuries, which had succeeded in creating a veritable network of temporary autonomous zones
nests and shelters: the Isla de la Tortuga in Haiti, the town of Port Royal in Jamaica, or the semi-legendary kingdom of Libertatia. In effect, these places for commercial shelter allowed them to develop political utopias of radical equilitarianism and of abolition of any prejudice pertaining to race, sex or social origin, at a time when slavery was practised globally on a large scale. According to Bey, when the European states repressed piracy, communities made up of pirates, but also of fugitive slaves and native Indians created small isolated zones on the American continent (tri-racial isolates), where they pursued their social utopia. These welcoming groups could have later influenced the structure and life style of hippie communities in the second half of the twentieth century, which, in turn, inspired the cyber-global culture of the nineties (Casilli 2004).

Local users of makerspaces progressively reclaimed the stakes of this innovative sharing of resources in order to contextualise transnational projects. Thus, projects originating from the maker community in India made it possible to mechanise agriculture; in Ghana, energy transformation was carried out thanks to gas turbines. Better still, the maker utopia fosters local innovation and independent creativity to solve essential questions, such as the handling of energy, ecology, education ... with which every local community is confronted, more or less directly.

Local development is boosted by this autonomous engineering and managing of projects, far from the centralised circles of international development organisations, which rely on tools that are said to be universal. The maker utopia then also offers an alternative to the dominant system which operates in the circles of development and international aid. In this sense, it may be considered as a part of the critical current as opposed to positivism, asking that ‘popular wisdom’ may be given a hearing. This determination to collect the innovative power of individuals on the fringe of large production systems in order to think, produce and conceive differently and locally, is essential in the maker utopia. It aims to find solutions that are better adapted to the main sets of issues posed on a world scale.

In conclusion, the maker cultural creation is rich in meaning because it attempts to fight against the inefficiencies of the economic, social and environmental models employed in the last decades. As such, its ambition endows it with a utopian dimension, but the fact remains that this discourse echoes the representations held by individuals who are members of this cultural community and that it generates indisputably real deeds. Thus maker culture embodies strong values of hospitality, autonomy through exercise and gift in order to promote social bonds. It goes hand in hand with the decompartmentalisation of individuals and knowledge, and of the various branches of learning. It fosters freedom of access to information within the framework, not simply of the logic of free gift, but of sharing and development of collective intelligence. Although one cannot escape thinking of the utopian dimension of the aims of that particular culture, its idea of the ‘gift’ is neither naïve nor unrealistic. Due to its socially pragmatic aspect, certainly, but also when one takes inspiration from economic models applied by traditional societies, a gift is not understood as being unselfish: it is a deed that inaugurates the opening of cognitive and relational links. Belonging to this cultural community has its constraining side: it generates moral obligations. Maker culture relies precisely upon the ethics of creative commitment – innovation and experimentation are fostered as investments, making social change and collective accountability possible.

References


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Centred on the home, this paper reports on design research serving the broad social agendas of affordable, sustainable housing and food sovereignty. Intended to inform ecological design practice, the project has revealed rich sites of values-driven craft and design as the enactment of sustainable living by householders. Practices of self-provisioning through growing, preserving, waste cycling, re-using and re-purposing feature strongly in this exploration of twelve Tasmanian households. Discernible within these settings, is a craft-design interface resonant with Christopher Frayling’s (2011) call for a renewed ‘head-heart-hand’ convergence. Distinctions between ‘professional’ and ‘artisanal’ designers and makers are blurred as multiple factors collaborate to transform default domestic space into ecological infrastructure, enabling targeted practices and ways of living. Intermeshing the interface are flows of technology-enabled interaction. Observable in householders’ embrace of social media, is partial bridging of inter-generational ruptures and discontinuities in craft knowledge, aided by Guy Julier’s (2008) discussion of the role of design in mediating information and producing cultural activity.

The project’s backdrop is cast through an initial thematic analysis exploring dominant norms in housing and food culture. Invoked, for example, is the global flat-pack kitchen’s role in erasing culturally-nuanced food practices and their embedded crafts, along with the rise of ‘green counterpart’ consumer goods.

Insights and examples from the multi-household ethnography follow, emphasising the potential for homecraft to illuminate values, experiential knowledge, skills and practices bound within deliberative sustainable living. Selected design proposals are then profiled, drawn from project participants’ own responses to generative design tasks, aimed at informing future sustainable housing design and adaptation.

Reflections upon the methodological approach are offered in conclusion, including a questioning of David Orr’s (2002) ‘design as pedagogy’ conception of ecological design which, while compelling, risks privileging professional designers’ knowledge over richly instructive craft knowledge. Resilience thinking, I suggest, offers a more integrative and productive means of unifying craft and design knowledge and practice. The socio-ecological problem-solving central to design for resilience and regeneration will depend increasingly on connecting diverse domains of knowledge with social, material and post-material practices. This project has demonstrated great potential for bolstering resilience in the domestic realm. I close therefore with a call for all new and adapted housing design to make space - both conceptual and material - for resurgent homecraft, irrespective of tenure, as conditional to living more sustainably, every day.
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Resurgent Homecraft, Design for Resilience, and the Everyday Practices of Sustainable Living

Abstract
Centred on the home, this paper reports on design research serving the broad social agendas of affordable, sustainable housing and food sovereignty. Intended to inform ecological design, the project has revealed rich sites of values-driven craft and design as the enactment of sustainable living by householders. Practices of self-provisioning through growing, preserving, waste cycling, re-using and re-purposing feature strongly in this exploration of twelve Tasmanian households. Discernible within these settings is a craft-design interface resonant with Christopher Frayling’s (2011) call for a renewed ‘head-heart-hand’ convergence. The project’s backdrop is cast through an initial thematic analysis exploring dominant norms in housing and food culture. Invoked, for example, is the global flat-pack kitchen’s role in erasing culturally-nuanced food culture. Invoked, for example, is the global flat-pack kitchen’s role in erasing culturally-nuanced food culture. Emerging from project participants’ responses to generative design tasks is the potential for resilience thinking to productively unify craft and design practice, and connect diverse domains of knowledge with social, material and post-material practices. I close with a call for all new and adapted housing design to make space – both conceptual and material – for resurgent homecraft, irrespective of tenure, as conditional to living more sustainably everyday.

Introduction
At the core of design research serving affordable, sustainable housing and food sovereignty is a profound questioning of how to live – how to shelter, nourish, and bolster the health and well-being of burgeoning populations, equitably, within the finite limits of the biosphere. The potent notion of our times being defined as the ‘Anthropocene’ recognises that humans have shaped irrevocably the environments in which we live (Moberg and Hauge Simonsen 2011). Craft and design are implicated deeply in this centuries-long transformation of our planetary living environment and bear great responsibility for how, and how well, we will proceed to live. As Richard Sennett noted, ‘the craftsman’s [sic] skills, if natural, are never innocent’ (2008: 294).

In this paper I explore the craft-design interface relative to post-sustainability discourses that attend to the flaws and limitations of sustainable development’ as conceived in the 1980s. My critical point of departure aligns with Tony Fry’s argument that our way of living, perpetuated by the status quo in design and the logic of capital, is inherently ‘de-futuring’ (2009). This captures the way humans typically degrade environments and resources, rather than regenerating them for the future of their own and other species. Accepting social and ecological systems as interconnected and increasingly unpredictable, resilience thinking offers a problem-focused framing of this dilemma. Resilience is ‘the capacity of a system, be it an individual, a forest, a city or an economy, to deal with change and continue to develop. It is about the capacity to use shocks and disturbances … to spur renewal and innovative thinking’ (Moberg and Hauge Simonsen 2011: 3).

Resilience thinking has come to the fore in recent years, increasingly in connection with climate pattern shifts, major weather events and sea level rise. It also recognises the need for ongoing adaptation given that ‘sustainability’, as a targeted, steady state, is both elusive and improbable. As to describing this goal, the term ‘sustainable’ is often pegged with efforts to make current resource use more efficient and for people to conduct their lives doing things ‘less bad’, as William McDonough and Michael Braungart underscored in Cradle to Cradle (2002). In their subsequent work, The Upcycle (2013), we are urged to think beyond sustainability, to perpetual and boundless regenerative cycles that far eclipse current accepted measures such as carbon footprints and product lifecycles.

A ‘sustainable’ state is achievable in ecological terms when genuine regeneration is achieved, as is observable in functioning ecosystems, and for this
reason I have elected to retain its use in this paper for its broad comprehensibility. The descriptor still serves to convey the intent of design conducted according to a cradle-to-cradle ethos, and to describe the intentions of people who are engaged in regenerative practices, such as those involved in the design research project in focus.

The craft-design interface under scrutiny is that threading through the domestic realm, at the intimate scale of homes, gardens and the communal spaces in between. At the planetary scale, homescapes claim a considerable portion of habitable space and resources, and shape how we live in manifold ways according to their materiality, cultural norms and social mores. Within homescapes, I view ‘craft’ and ‘design’ as constitutive of human experience and ability in the embracing manner applied to craft by Sennett (2008), and similarly to design by Nigel Cross (2006). In these ‘folk’ settings, craft and design are entwined in the making and re-making of artefacts, and the conduct of everyday practices such as cooking and parenting. The entwinement as expressed by Peter Dormer reveals design’s presence within craft, enacted as ‘designing through making’ in the case of building, for example, a boat or a house (1994: 92).

The design research project I draw upon, however, illuminates several nodes along the craft-design interface that connect folk design and homecraft with broader design culture and the studio crafts. Three nodes are presented below, derived from and corresponding to each phase of the project conducted in Tasmania, the island state southernmost in Australia. The first phase involved a thematic analysis of dominant norms in Eurocentric housing, kitchen design and food culture. It intersected with a multi-sited ethnography within twelve households representing densities ranging from high density, inner urban through to rural settings, with both owners and renters. The third and final phase engaged householders, who had self-identified as being committed to ‘sustainable living’, as co-designers in re-visioning the home for self-provisioning and enhanced resilience.

At the first node I implie flat-pack commodit y design in the progressive erasure of everyday making practices and their skilful embedded crafts, drawing on practice theories and conceptual tools derived from material and visual culture studies. Resurgent homecraft and adaptive strategies understood as values-driven social practice feature at the second node, along with the embrace of social networks and media to help bridge discontinuities in craft knowledge. The third node profiles the potential of the home to respond to growing ecological literacy, as a ‘craft workshop’ of sorts in which the making skills and knowledge of self- and community-efficacy are rekindled, and materially and spatially enabled.

**Node 1: ‘Flat-pack design’ and the erasure of embedded crafts**

At the first node I argue that professionalised design, in the service of modernity, has overwhelmed both homecraft and studio crafts, undermining the resilience of households in the process. Here, design is shown to have exerted an excessive influence, fulfilling its propensity to produce cultural activity in the manner described by Guy Julier (2008). The flat-pack kitchen, replicated and distributed globally in the example of IKEA retail outlets, symbolises well the dominance of mass design over craft. While the kitchen was traditionally, and remains in many regions, a site of arduous and repetitive labour performed most often by women, its genesis reveals a ‘workshop’ in which a dialogical relationship existed between its forms and the cultural practices carried out there. Turning to vernacular housing and highly nuanced forms of bread-making as an example, the availability of grains and milling techniques, hearth arrangements and oven typologies all interact in the enabling and reinforcing relationship between kitchen forms, tools and utensils, food traditions and wider cultural practices.

Enfolded within these practices is an immensity of craft skill and tacit knowledge that I term embedded crafts: ‘the thousand little everyday moves that add up in sum to a practice’ (Sennett 2008: 77). In referring specifically here to tacit knowledge, Sennett pinpointed the conversion of the unspoken and uncodified into habitual, embodied knowledge and practice in which numerous ‘granular’ crafts are embedded. This embedding is exemplified once again through the practice of bread-making, in which one handles and nurses the dough in response to the weather, shapes and decorates according to tradition or festivity, assesses the oven’s optimal readiness via the senses, and finally judges the bread’s eventual doneness. Whether rejected as a nostalgic notion or not, the point is that when practices change or cease, so too do the embedded crafts. Obscured by the deservedly maligned white sandwich loaf are a thousand such little everyday moves.

Significant at this node in the craft-design interface is also the logic of the craft kitchen, against the logic of
transformative practices have been reflected swiftly in our material culture, with ‘green’ and ‘eco’ artefacts filtering into mainstream markets, creating opportunities and challenges for product design and the studio crafts. Mindful of the accusations of ‘green-washing’ the public through mere appeals to these labels, material agency offers a frame for further scrutinising the wave of green design targeting the home and kitchen. With implications for craft and design, I draw a firm distinction between artefacts serving as counterparts for their non-green versions and those seeking to challenge the status quo or initiate ecologically-aware practices.

In the second category are artefacts arising out of, and inviting or prompting alternate practices as agents of, ecological literacy (Holm et al. 2010). Among such artefacts are those supporting waste minimisation and recycling, composting, ‘making from scratch’, and the sourcing and storing of non-packaged, bulk and lower embodied energy foods. The subsequent question for design and craft practitioners is how they engage with ecological literacy and account for the material agency of their artefacts, themes I foreground at the third node of the interface.

**Node 2: Home-based ‘head-heart-hand’ adaptations**

While this design research set out to explore and strengthen the ability of housing to support local food systems, resurgent homecraft emerged as a theme demanding further focus. It claims, therefore, the second key focus in my discussion of the craft-design interface, and I frame it here as a form of values-driven social practice, integral to householders’ broader approaches to living more sustainably. Householders were variously motivated to lower their ecological footprint (in their own parlance) by consuming less, recycling, re-purposing and reducing waste, installing renewable energy sources and conserving water. In some settings food growing was embraced as part of an ecosystem awareness also pursuing biodiversity, land remediation and wildlife habitat.

Householders’ homecraft practices observed in the twelve household settings under study can be...
represented as a suite of practices, which in turn prompted the crafting of bespoke infrastructure in the service of those practices. A rich site of making was revealed, oriented towards the adaptation of existing domestic environments to better align them with householders’ deliberative practices. Within these settings, the practices included growing, seed-saving, preserving and storing food as well as brewing, soap-making, furniture-making, spinning, knitting and sewing, and the making of other decoratively functional household items.

In making the corresponding enabling infrastructure, householders sourced (and coveted) materials such as hardwood, stone, ironwork and steel for their potential to be transformed into garden beds, trellises, whimsical chicken coops, drying racks, compost bays, and robust kitchen benches and shelving used for processing and storing produce. Found objects and vessels were also seized for their potential to enable planting and worm-farming. Utility was clearly core to these forms of homecraft; however, goals of convivial place-making and meaning-making were also expressed, along with considerable pride in having wrought positive transformations to their homes.

In sum, these settings evoke Christopher Alexander’s (1964) seminal notion of ‘fi ‘ between form and context, but the fit is e-cast in the sense that the domestic ‘vernacular’ is no longer subject to unselfconscious and incremental adaptation. The extent of householders’ adaptation and re-valuing of making their own environments conveys a challenge to, and in some cases rejection of, default housing design and norms. This active re-making and expression of values by householders in the project through homecraft as sustainable living I interpret as one model of the renewed ‘head-heart-hand’ convergence urged by Christopher Frayling (2011). Homecraft arising out of grassroots ecological literacy has the potential to guide and interact productively with the studio crafts and housing design, indeed with all the actors responsible for shaping our material living environments.

The homecraft knowledge and skills required by householders were not in the possession of all, however, with several participants naming a limiting loss of skill between their grandparents’ generation and their own. In response, many were actively gaining making skills, and it was here that the role of professional craftspeople, makers and mentors came particularly to the fore. Several of the adapted home environments had arisen from collaborations between householders as ‘folk’ designer-makers and professional craftspeople, the latter being especially valued for their ability to produce enduring forms of great utility, quality and meaning when thrift and ‘making do’ otherwise abounded.

Foreshadowed in these domestic collaborations are the fruitful intersections between craft and design, and the activities of sustainability and Transition-style groups. These are networks in which householders are increasingly seeking homecraft knowledge and skills, and engaging in learning opportunities with craftspeople and skilled peers. In the example of my local sustainable living group, manual, low-energy building methods, woodcraft, spinning and knitting have proven popular for their enabling potential. There is recognition among members in these cases that making skills applied to renewable and re-purposed materials are integral to ecologically-aware ways of living. Craft and design practice serving such agendas necessarily become more interdependent because resilience, as I argue in the next section, arises from diverse knowledge and skill domains and an active engagement in practices through which ecological literacy is developed.

**Node 3: Integrative craft and design for resilience**

Design and making skills – whether rooted in homecraft, studio crafts or workshop crafts – represent a key thread in the manifold knowledge and skills underpinning resilience and adaptability. In conditions of finite and unpredictable events, individuals and communities depend increasingly upon their adaptive capacity: knowing how to sustain themselves, and how to make and re-make their living environments and livelihoods. In Australia, for example, the significant bushfires and floods of recent years have necessitated such adaptive re-making over time, with skilled, volunteer ‘work gangs’ being deployed to devastated townships. At this third node of the craft-design interface I propose, then, two strategies for how craft and design might become a more integrative practice in the service of resilience, mobilised by underpinning ecological literacy. The first strategy locates craft and design within a ‘shadow network’ of actors working to a resilience agenda, while the second draws on the participatory design concept of ‘design-after-design’, or making space for making in the context of this project.

Derived from the framework of the Stockholm Resilience Centre, shadow networks are identified as a means of activating and applying social–
ecological knowledge to international governance of the environment (Moberg and Hauge Simonsen 2011). Such networks are assembled to apply diverse knowledge and skills, including often marginalised indigenous and folk perspectives, to social–ecological problems at various scales. Transposed to the domestic scale and the households under study, the existence of networks resembling this notion came to light. The networks extended outward from householders as initiators, into several forms of craft and design practice, interconnecting with sustainable living movements, their discourses and prominent actors. The roles identify across the households included joiners, metalsmiths, artists, horticulturalists, permaculture designers, furniture-makers, landscapers, and various teachers, mentors and peers. Participants also referenced the input of broadcasters, activists and writers.

While the small-scale shadow networks I discerned were not assembled with the same formal purpose intended by the Stockholm Resilience Centre, they present a fruitful zone for craft and design to interact. The approach productively weakens professional design knowledge in my view. It demands more than professional designers commissioning ‘packaged’ craft contributions into projects; it involves working from the grassroots up, for example, from within a sustainable living or Transition-style group. This located form of practice provides an experiential basis for designer-makers, and the opportunity to develop a *lived* ecological literacy well beyond that codified i professional regulations, standards and rating schemes, which, while important, are nonetheless partial. When regenerative practices become the drivers for designing and making, the craft-design interface becomes productively more permeable and flexible.

Applied to housing, food and resilient communities, the challenging of material and spatial norms by householders in the project is a response to design’s ecologically blind legacy of the twentieth century, identified at the first node. I argue that housing design must cease to over-determine and foreclose the everyday practices of householders by normalising flat-pack kitschens, dispensing with utility rooms and exchanging appliances for practices. Instead, integrative craft and design for resilience rest upon a valuing of what Sennett captured as ‘a positive embrace of the incomplete’ (2008: 430). In this conception, design makes intentional space for homecraft and depends upon studio and workshop crafts as an ecologically literate means of materialising the domestic environment. This was exemplified in the study by woodcraft enabling the transformation of lawn into productive garden beds, for example, and ‘waste’ hardwood re-materialising as robust kitchen joinery and chicken coops.

Resonant with an embrace of the incomplete is the participatory design tenant of ‘design-after-design’. Such an approach involves the users of the artefacts, systems and environments of design in further adaptation and refinement (Bjö gnisson et al. 2012). I came to view the re-making of domestic environments in the study as a form of design-after-design, though of a remediating kind rather than the positive approach advocated by participatory design practitioners. In the role of co-designers of speculative, sustainable living environments in the study’s third phase, householders expressed a strong desire for the home to function more as a *workshop for making*. High demands were placed upon the utility of housing to support targeted practices such as producing and storing food, making and mending personal and domestic items, and establishing systems to maximise the regenerative capacity of the home itself through the cycling of energy, waste and water. There exists enormous potential, I conclude, for ecologically literate craft and design to partner with householders to this end.

**Conclusion**

This design research and its methodology has provided the opportunity to partner with householders committed to living more sustainably and to explore their practices from the inside out, productively weakening the privilege accorded to professionalised design knowledge, by designers. The resurgent homecraft encountered in these domestic settings has in turn provoked a way of rendering resilience meaningful and tangible at the intimate scale of the home, scaling out in its significance to vast urban homescapes. Befittingly, these householders are now embraced as members of my own shadow network, lending valuable folk knowledge to the project and co-engaging me in their practices and embedded crafts.

At the first node of the craft-design interface my critique of dominant norms demanded an invocation of John Ruskin, who Sennett characterised as one who ‘refuses the present, [and] looks backward in order to look forward’ (2008: 114). Resurgent homecraft has presented a reflexive frame through which to look backward and re-connect making with antecedent practices of sustaining households and cultural practices. Looking forward, the frame positions homecraft as a crucial thread in sustainable living and the adaptive capacity demanded by resilience thinking. Reflecting upon the logic of the
artefacts and environments we design and make, we can ask if we are simply re-making the status quo via counterparts, perhaps exchanging a low embodied energy, ‘green’ material for a substance implicated in greater waste or harm. I suggest that truly regenerative everyday practices, and their evolving embedded crafts, are bountiful sites of instruction for our practice.

Craft and design merge as interdependent knowledge and skills in the grassroots networks working toward more resilient households and communities. The subsequent remit for ecologically literate designers and makers is twofold: make space for homecraft through realising the regenerative potential of the home, and advocate for enduring artefacts of great utility and meaning as you re-materialise the home as an enabling workshop.

References
How often do we discard something rare and precious without even realising it?

In today’s developed societies we own an unprecedented amount of “stuff” and nothing is more representative of this than our consumption of mobile phones. In 2011 alone 1.6 billion new devices were manufactured and shipped around the world with 1,000 phones being replaced every hour of every day just in the UK. Research indicates an estimated 85 million phones lay unused in UK homes containing more than 40 different chemical elements and with precious metals worth in excess of £150 million. This waste of resources cannot be sustained and a responsible action from us all is needed. But what do we know about our technological stuff; the origin of materials used in their manufacture, methods of extracting the raw elements and quantity of material resource left on the planet? Matthew Crawford suggests that in order to be responsible for the world we need to feel that it is intelligible and the provenance of our things need to be brought closer to home. (Crawford 2009) However, for the vast majority of people, making and material knowledge is limited and a sense of agency with our ‘stuff’ is missing.

This paper discusses how contemporary studio jewellery is used as a device to engage audiences in a commentary concerning the preciousness, scarcity and ethical sourcing of materials and minerals needed to make technological devices. Craft knowledge and practice is used to interrogate the emotional connections between people and their things, exploring whether creative making can influence human behaviour. It presents a case study project, What’s in My Stuff?, launched in 2011 and funded by an EPSRC Engineering for Life grant.

This interdisciplinary project (Craft and Material Science) combines material analysis with multi-sensory/participatory activities, creative jewellery making, exhibitions and exchange systems that explore ways of raising awareness about material sustainability that aim to engender the reduction, reuse, and recycling of products.

Pop-up field laboratories provide the framework to engage audiences in active participation rather than being passive recipients of information. These interactive labs enable participants to deconstruct a mobile phone and discover for themselves what materials and components are used in their manufacture. Various creative methods are used within jewellery making with outcomes exhibited in public spaces, field labs and through lectures, presentations and workshops. Using the jewel as data visualisation provides commentary on key facts gathered from Scanning Electron Microscopic (SEM) material analysis, and statistics about material/product manufacture and consumption. Intrinsic preciousness is emphasised by reclaiming, transforming and relocating physical fragments from deconstructed phones into wearable jewels; exploiting aesthetic characteristics giving material new value that promotes the notions of recycling and second lives. These events and activities are used to both communicate information and knowledge and act as mechanisms to collect quantitative and qualitative data. Observations, interviews and questionnaires revealed information about how people interact with their phones and what they value, exploring attitudes to ownership, emotional attachments and barriers to recycling.

whatsinmystuff.org
Keywords: sustainability, art and science, interdisciplinary, mobile phones, consumption, craft-making

Introduction
In today’s developed societies we own an unprecedented amount of stuff, and nothing is more representative of this than our consumption of mobile phones. In 2010 alone 1.6 billion new devices were manufactured and shipped around the world (Gartner 2011), and with an average replacement rate of eighteen months, accounting for 500 million new handsets during 2009 in Europe alone, we have to ask ourselves how sustainable is our mobile phone (Zadok and Puustinen 2010)? There are many key issues relating to sustainability and mobile phone life-cycles, including the finite supply of material resource. However, these are incredibly complex, involving many economic, political, cultural and environmental challenges. Although efforts are being made by governments and manufacturing industries to address material life-cycles and issues surrounding emissions, there is still much work that needs to be undertaken relating to mobile phone ownership, replacement and disposal practices in order to understand how changes in consumer behaviour might be encouraged.

Research indicates an estimated eighty-five million phones lay unused in UK homes containing more than forty different chemical elements, and with precious metals worth in excess of £150 million (Hanson et al. 2012). This waste (but not to landfill) of resources cannot be sustained and a responsible action from us all is needed. But what do we know about our technological stuff – material content and origin used in their manufacture, methods of extracting raw elements and quantity of material resource left on the planet? Matthew Crawford suggests that in order to be responsible for the world we need to feel that it is intelligible and the provenance of our things need to be brought closer to home (Crawford 2009). However, for the vast majority of people, material knowledge and making is limited and a sense of agency with our stuff is missing.

Context/background
A number of key elements in the periodic table are becoming endangered due to a combination of their scarcity, cost and low recycling rates. The limited economically available supply of some elements means that they are being listed as strategically important elements. This problem is recognised globally, with significant reports on the subject from a number of governments and leading manufacturing industries including the US Department of Energy (Bauer 2010). The UK Government Science and Technology Committees report on strategically important metals (2011) and Price Waterhouse Coopers report on minerals and metals scarcity in manufacturing (Dubreuil and Sinclair 2010). Much of the demand for these strategically important elements comes from the increasing use by digital technologies, especially smart-phones and large-screen digital TVs.

The constant developments and improvements in technologies result in a consumer culture that needs and/or wants to stay ahead, with the result being one of accumulation. In 2008 a global survey undertaken...
by Nokia revealed that when we upgrade our mobile phones only 3 per cent are recycled, 41 per cent are passed on or resold, 4 per cent go to landfill and a staggering 44 per cent remain within domestic and work environments, hibernating in boxes, drawers and cupboards (Nokia 2008). Despite European legislations about electronic waste (WEEE directive), the increase of mobile phone recycling from 2008 to 2012 only rose by 6 per cent, but the level of phones that remain unused in people’s households remains the same (Nokia 2012).

There is much discussion and debate about the concept of the throwaway society, which is accompanied by a view that a lack of social responsibility results in the careless creation of waste. However, this is a very simplistic view, where the term ‘throwaway’ is used all too glibly and is challenged by researchers in design and the social sciences (Gregson et al. 2007; Cooper 2005). Although the level of waste reaching landfill is at an unacceptable level, Gregson suggests that households consistently engage in simultaneous practices of saving and wasting when getting rid of consumer objects. Through their qualitative ethnographic study of individuals and households in the Midlands and north-east England it was consistently demonstrated that although people did dispose of consumer objects via the waste stream, they were also very proactive in passing on and selling prior to this act.

It also revealed that certain objects were kept beyond their useful (functional life), often being forgotten, living redundant lives in garages, lofts and drawers. The notions of object hoarding and object attachment are also the focus of many research studies (Belk 1988; Odom et al. 2009; Csikszentmihalyi and Halton 1981). Identifying issues surrounding self-identity, memory and meaning, this paper draws upon the research and findings from these different disciplines through the following case study project.

What’s in My Stuff? Case study

Overview

What’s in My Stuff? is a Sheffield Hallam University (SHU), Engineering for Life (EFL) research network project, sponsored by the Engineering and Physical Science Research Council (EPSRC) and the Harisco metals group. It is a collaborative project between Maria Hanson, Reader in Metalwork and Jewellery in the Art and Design Research Centre (ARDC), Dr Hywel Jones and Dr Karen Vernon-Parry from the Material and Engineering Research institute (MERI). The EFL research network at SHU was funded through the EPSRC, ‘Bridging the Gap’ scheme and spanned the boundaries of the university’s research structures. This three-year funded project fostered the creation of multidisciplinary teams in order to find pioneering ways to enhance people’s lives. In particular, it addressed problems related to the following three themes:

- Rehabilitation and assisted living
- Sport, physical activity and medicine
- Sustainability

The network offered seed-corn funding towards the best multi-disciplinary projects derived from these collaborations. What’s in My Stuff? evolved from an interdisciplinary sandpit event held in January 2011 that focused on the theme of sustainability.

The project

We live in a society where most of us are so removed from the reality of how and from what all the stuff we consume is created that we don’t really give it a second thought. This appears (in general) to be particularly pertinent in relation to our technological devices. What’s in My Stuff? brought together material science and craft-making through a project that aimed to understand how aware the general public are about the chemical elements used in their everyday technological gadgets. It explored issues of sustainability, recycling and growing concerns about the scarcity and ethical sourcing of the minerals and materials that we take for granted or never knew existed but which are vital for the technology we use every day.

Engaging users in creative and participatory activities enabled both the communication of information about key issues and provided the mechanism to seek consumer and user views through quantitative and qualitative data collection. Observations, interviews and questionnaires revealed information about how people interact with their phones and what they value, exploring attitudes to ownership, emotional attachments and barriers to recycling.

Although the research team was interested in a range of technological gadgets, the initial work has focused on mobile phones primarily because they have become so ubiquitous and, on average, they are a product where the vast majority of people change and/or upgrade every eighteen months (Geyer and Blass 2010). The increasing demand for smart-
phones during the past five years has enhanced the huge market for mobile phones in developing countries through the volume of devices being sold on, reconditioned and then shipped around the world. This has raised particular concerns about the significant loss of scarce and valuable metals from the material life-cycle chain (Bollinger and Blass 2012) and the cost to human life through hazardous material recovery processes used in developing countries. There was also a potential, due to the intimate scale and portability of such a device, to explore the possible connections that might exist between the ways mobile phones are perceived and valued compared to jewellery objects.

What’s in My Stuff? asks the following questions:

- Do you know what your mobile phone is made from?
- Do you know where the chemical elements in your mobile phone come from, how they’re extracted and how much is left on our planet?
- What values do you place on the technological devices you use every day and what factors influence the decisions you make when you discard them?
- What do you do with those you no longer use?
- How often do you discard something rare and precious without even realising it?

The three Rs (reduce – reuse – recycle) are by now a familiar way of expressing how we should think about reducing the impact we have on the planet and its resources. However, the widespread acceptance and implementation of the principles embodied in these three words depend upon many factors, and for mobile phones we appear not to be willing or able to apply the reduce-reuse-recycle to its full extent. The barriers could include:

- A lack of knowledge of what exactly is in the devices
- An undervaluing of the resources within the devices
- A lack of infrastructure for recycling
- A reluctance to give away a device which may contain personal data
- An emotional/sentimental attachment to the device

What’s in My Stuff? discovers what the public’s attitudes to their devices (old and new) are, and explores the reasons why we are accumulating mobile phones in the UK at a rate of about four million per year. It draws upon Huang and Truong’s research that looks at breaking the disposable technology paradigm. Their study ‘investigates how consumers understand the lifespan of their phones’ (Huang and Truong 2008: 323) and, through a qualitative study, ‘what factors such as style, service contracts, and functionality, affect how they [consumers] attribute value to their phones’.

Methodology

Literature review:

Reviewing literature has been an ongoing process within this project as there is so much changing data available about individual products, marketing, recycling and consumption of technological devices. Knowledge about these data and about economic and geopolitical issues, alongside related social science, ethnographic, anthropology and design studies research, have informed this paper. However, a comprehensive analysis of this review is beyond the scope available here. Since the start of the What’s in My stuff? project in 2011 there have been many other organisations tackling issues related to material and product sustainability, consumption, recycling, material recovery, circular economies and ethical concerns. Significant initiatives are the Royal Society of Arts ‘Great Recovery’ project launched in 2012 (the What’s in My Stuff? team contributed to this) and the social enterprise Fairphone, established in 2013.

Lab based work – material testing:

When we purchase food, beauty, healthcare and pharmaceutical products, a list of ingredients are printed on the packaging. However, when we consume most other materials-based products there is no requirement for this information to be provided. During the initial literature review and material research it was very difficult to locate any complete data sets of all minerals and materials used within mobile phones. This is generally because the production chain is so complex with the manufacture of mobile phones and their component parts involve many countries across the globe.

By reverse engineering a range of different mobile phones and using different analytical techniques (e.g. SEM, EDX, XRF, XRD) we were able to build a more comprehensive picture of what’s in our phone. The scanning electron microscope (SEM) was a principle process used as it is capable of taking images of objects and materials with magnifications ranging from 100 to over 100,000 times their original scale. It is particularly suitable for examining rough surfaces as, unlike a conventional optical microscope, the entire
surface is in focus at the same time. By using the X-rays emitted from the material under investigation, it is possible to find which chemical elements are present and where they are in the material. The data collected through this material analysis was compared with other data showing what had been previously missed or not recorded.

**Developing data resources:**
Results from the material analysis work along with findings from the literature review enabled the creation of data sheets on the composition, source, scarcity and value of the chemical elements discovered. They also included information related to consumption, economic and geopolitical statistics and were subsequently used as a resource during the many public engagement activities undertaken as part of this research.

The complexity and quantity of information, facts and data led to the question of how we create knowledge and transmit it to an audience. We began isolating certain key-facts in order to create sound-bites and, although this was endless, ten significant and memorable facts were chosen as a focus for communication as follows.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Every hour of every day over 1,000 mobile phones are replaced in the UK.</td>
</tr>
<tr>
<td>2</td>
<td>An estimated 85 million phones are lying unused in the UK.</td>
</tr>
<tr>
<td>3</td>
<td>The value of just the precious metals in 85 million discarded phones exceeds £150 million.</td>
</tr>
<tr>
<td>4</td>
<td>In 2008, only 3% of phones were recycled, though 41% were passed on or sold. 44% were kept by their users.</td>
</tr>
<tr>
<td>5</td>
<td>By the end of 2010 Apple had sold approximately 74 million iPhones containing components worth £8.5 billion.</td>
</tr>
<tr>
<td>6</td>
<td>Mobile phones contain over 40 different chemical elements and hundreds of components.</td>
</tr>
<tr>
<td>7</td>
<td>Many of the chemical elements used in mobile phone devices have recently been classified as critical materials due to finite resources and geopolitical situations in the source countries.</td>
</tr>
<tr>
<td>8</td>
<td>China is the main producer of Indium (In). It is essential in the manufacture of LCD TVs, computers and touch screens as indium tin oxide (ITO). No viable alternative to ITO has yet been developed.</td>
</tr>
<tr>
<td>9</td>
<td>The UN has cited conflict minerals, used in mobile phones, as a major cause of the prolonged war in the Democratic Republic of Congo.</td>
</tr>
<tr>
<td>10</td>
<td>It is possible that at least one important element in mobile phone manufacture will become economically untenable within 15 years.</td>
</tr>
</tbody>
</table>

These facts were later developed into graphic images by designer Leanne Mallinder (Figure 3) for use during public engagement events, for lectures and presentations and, very importantly, on the project website.

**Public engagement and the field laboratory:**
One of the primary aims of the What’s in My Stuff? project was to raise public awareness about the material resources used in mobile phones. Building upon the design research methods used during the Lab4Living ‘Future Bathrooms’ project at SHU, pop-up field laboratories provided the framework to engage audiences in active participation rather than being passive recipients of information. These interactive labs enabled participants to deconstruct a mobile phone and discover for themselves what materials and components are used in their manufacture. To date the project team have undertaken the following three labs targeted at three different audiences.
The first field lab

In September 2011 students and staff at the Sheffield Hallam University were invited to take part in the first experimental pop-up field laboratory. Constructed in a public space within the university, the lab created an environment where individuals could engage in and participate through an interactive experience. The challenge was to deconstruct a mobile phone into as many pieces as possible. Used phones of various vintages were provided along with the tools to dismantle them and equipment to magnify and record the components that were revealed inside (Figure 4). Key-facts about the chemical elements that are found in mobile phones and emerging issues around critical materials supply, recycling and sustainability were displayed on large screens and posters inside and outside the pop-up lab. Using different display formats of the periodic table put into context the complexity of the forty different chemical elements found within mobile phones. A glass display case housed a previously disassembled Nokia C-500 and a Blackberry 7100V. These components had been carefully cut, rolled, polished and displayed as if they were jewels; highlighting the precious and delicate qualities of individual elements.

Participants who entered the lab to deconstruct a phone generally fell into three camps: those who had no practical hands-on skills who found even using a screwdriver a challenge but enjoyed the experience; those who had an inquisitive approach and enjoyed the physical process of handling materials and discovering something new; and of course the technophiles who revelled in the challenge of cataloguing what everything did. Two surveys were conducted during the three-day event and the structure, content and findings of the event will be discussed in detail in the qualitative and quantitative section of the paper. Some of the more informal comments recorded following the participatory activity include: ‘That’s the most rewarding half-hour I’ve spent today. It was great to do something practical that has made me think about this stuff’; ‘I’ve never taken anything apart before. I don’t know how to do it’; and ‘I was really surprised that not many screws are used. It was so hard to get some sections apart. It was really frustrating at times’.

Creative making / exhibitions / exchange event

Context

The field of contemporary studio jewellery has for more than forty-five years pushed the boundaries of established definitions of what a piece of jewellery/body adornment can and should be, and from the late 1960s jewellery designers and makers in Europe and North America began to exploit the material characteristics of non-precious, discarded and overlooked materials and to re-appropriate found objects. As the field became more radical and expressive, designer/makers also began to use jewellery as a means to provide public commentary about social and political issues, conventions and social taboos. It is within this context that creative jewellery work has been undertaken by Maria Hanson, an established designer-maker and Reader in metalwork and jewellery at Sheffield Hallam University. Seeing the potential in materials, their meanings and associations is something that artists and designers have long been accomplished in. As jewellery has such a rich history in terms of material and social significance that are intrinsically linked to perceptions of preciousness, value and emotional attachments, it is an appropriate device for engaging audiences in a commentary about the materials used in mobile phones.

The creative approach

Using various creative methods, Hanson has explored whether an emotional connection between people and high technology devices can be created through the making of contemporary jewellery objects with outcomes exhibited in public spaces, field labs and through lectures, presentations and workshops. Working with researchers from material science
enabled her to gain knowledge and understanding about objects and materials from a new perspective. Although as a non-scientist the complexity of chemistry was challenging, it also provided an important key in the process of designing and making. She visualises and articulates the complex ideas that surround the chemical elements needed to make the materials used in the manufacture of high technology devices in accessible, playful and stimulating ways. The aim of this was to encourage audiences to connect with the inherent value of their mobile phones and in turn consider in a more thoughtful and responsible way what they own, use and consume.

Deconstructing the first ever mobile phones not only revealed the technology and materials used which give these objects their functionality but also revealed a hidden beauty. Viewing these individual component parts initially under a macro lens created a method for isolating and framing sections and seeing the decorative and structural qualities of the materials used. This framing process inspired some of the early creative artwork in a series of jewels called Reuse – Revalue (Figure 5) where material fragments and component parts are reworked in a way that exploits their aesthetic characteristics; giving them a second life and new value.

The second creative approach was to use the jewel as data visualisation in order to provide a commentary on key-facts gathered from the scanning electron microscopic (SEM) material analysis, and statistics about material/product manufacture and consumption.

Hanson was astonished to discover that mobile phones contain at least forty chemical elements. Discovering what they are, what they look like and how precious they are took her on an incredible journey. The Element Rings (Figure 6) began as a quest to use each of the forty elements in as pure a form as possible to make forty individual rings using craft-making processes. It didn't take long to realise this would be an impossibility, so those elements too dangerous and volatile to handle have been visually represented in playful ways using materials that contain them. For example many people know that bananas provide a rich source of potassium, so a slice of dried banana has been used for the ring (K – 19). Displaying these rings using an adaptation of the periodic table highlights the context of this work and enables the viewer to discover something important in a non-scientific way.

The growth of consumption of mobile phones and other technological devices over the past twenty years has been phenomenal and is continuing to rise. Despite technological developments that have made our gadgets smaller, the global demand means that the quantity of material needed on an annual basis is enormous. In 2010 the global manufacture and shipment of mobile phones reached 1.6 billion. Each phone contains very small amounts of some of the most precious and critically endangered elements to be found on our planet. Individually the quantity and value of these elements are insignificant, but when multiplied by 1.6 billion it is a different story.

The Ring: 3680 Kilometres is a visual representation of the amount of gold used in 1.6 billion phones. A map (Figure 7) showing two rings joined by a 1 mm gold wire connects Sheffield in the UK to Cairo in Egypt, a distance of 3,680 kilometres. This amount of gold wire would weigh approximately fifteen tonnes and be worth more than £1.9 billion, and that's only one of the forty elements needed to make a phone function. Issues connected to sustainability and recycling feel so enormous that as individuals we often think that the little things we do can't possibly make any difference. However, this level of precious material resource use cannot be sustained indefinitely unless we all take some responsibility.

These and other works have been exhibited in public exhibition spaces in Sheffield, Birmingham London, Edinburgh and Glasgow and have been used in displays during the Great Recovery and DCLG field laboratories. They have featured as visual representations in numerous lectures, including Resources that don't cost the earth (Berlin 2012) and the Franco-British workshop on strategic metals in London (2012).

Although responses to the jewellery as a device for communication received very positive comments from exhibition and field audiences (and will be discussed in the next section of this paper), Hanson felt there was a need to test whether jewellery could in fact influence behaviour change in relation to recycling practices. Self-determination theory in psychology research highlights that ‘Human beings can be proactive and engaged or, alternatively, passive and alienated, largely as a function of the social conditions in which they develop and function’ (Ryan and Deci 2000: 68). In this area intrinsic and extrinsic motivation has been widely studied where both tangible and intangible rewards are presented after the occurrence of an action.
Taking the notion of both intrinsic and extrinsic motivation, Hanson engaged in a project that would test how contemporary jewellery might be used as an incentive in the context of mobile phone recycling. She made a collection of fifty Exchange Brooches (Figure 8) almost entirely from materials recycled from previously reclaimed mobile phones. The audience of a public lecture she was giving (about this project) at the Goldsmiths Centre in London on 11 June 2012 were invited to bring a discarded phone that lay no longer used in a drawer or cupboard and exchange it for a crafted jewel. 52 per cent of the audience participated in this exchange process which took place at the end of the lecture. It could be argued that this was tested on a responsive and targeted audience. However, since this event, Hanson has, through the process of wearing one of the exchange brooches, encountered (somewhat randomly) six other people who have exchanged a phone for one of the remaining jewels.

**Qualitative and quantitative data**

As discussed earlier, the field labs, exhibitions and exchange event were used to both communicate information and knowledge and act as mechanisms to collect quantitative and qualitative data. This was done through observations, interviews and questionnaires and has drawn upon other studies within social science, qualitative market research and humancentred interaction (Gregson et al. 2007; Cherrier 2010; Huang and Truong 2008). A comprehensive recording of all surveys, questions and results is not possible within the confines of this paper, but an outline of the methods used and a summary of findings are detailed below.

Surveys undertaken:

<table>
<thead>
<tr>
<th>Type of event</th>
<th>Place and date</th>
<th>Number of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field lab</td>
<td>Sheffield allam University 27–29 September 2011</td>
<td>29</td>
</tr>
<tr>
<td>Field lab</td>
<td>Department of Communities and Local Government Science awareness day – London 23 April 2013</td>
<td>11</td>
</tr>
<tr>
<td>Jewellery exhibition</td>
<td>The Avenue – Millennium Gallery Sheffie 16 February – 29 March 2012</td>
<td>50</td>
</tr>
<tr>
<td>Lecture and jewellery exchange event</td>
<td>The Goldsmiths’ Centre London 11 June 2012</td>
<td>15</td>
</tr>
</tbody>
</table>

The questionnaires were tailored to suit the different events and activities but all contained the same core questions that established certain demographic details and quantitative data. A series of qualitative questions were used to elicit more in-depth responses in order to reveal information about how people interact with their phones, what they value about them and exploring attitudes to ownership, emotional attachments and recycling. These questions also probed immediate responses to either the experience of participation in the deconstruction lab and jewellery exchange activity or responses to viewing the creative jewellery work.

Two different surveys were conducted during the first three-day field lab event. The first used an analogue poster board format asking two simple questions to discover if people knew what their mobile phones were made of and to catalogue the number of old mobile phones still owned but no longer used. This approach allowed us to capture immediate responses from a large passing audience without everyone entering the actual lab to discover more. The results from the white board poster system used was monitored regularly, photographed and changed at the end of each half-day session.

Question: How many phones do you still own but no longer use?

Total number of respondents – 142
Number of phones still owned but not used

<table>
<thead>
<tr>
<th>Number of phones</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of respondents</td>
<td>25</td>
<td>30</td>
<td>36</td>
<td>35</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Question: What materials do you think are in a mobile phone?

There were a total of sixty-nine notations made in response to this question with twenty-one different materials or chemical elements listed. The following chart shows those most frequently mentioned.

<table>
<thead>
<tr>
<th>Material/chemical element</th>
<th>plastic</th>
<th>copper</th>
<th>tin</th>
<th>nickel</th>
<th>silicon</th>
<th>gold</th>
<th>lithium</th>
<th>lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of times mentioned</td>
<td>10</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

The other materials or chemical elements included were carbon, platinum, rubber, silver, aluminium, diamond, cadmium, bromine and chromium. Interesting to note were the two notations of wire and apps under the category of materials.

The charts below reveal the findings of some of the quantitative data questions from the more detailed questionnaire used at the four events listed above.

Total number of respondents – 105

<table>
<thead>
<tr>
<th>How many mobile phones have you ever owned?</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of respondents</td>
<td>2</td>
<td>4</td>
<td>9</td>
<td>19</td>
<td>13</td>
<td>22</td>
<td>10</td>
<td>26</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How many of these phones do you still have?</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of respondents</td>
<td>3</td>
<td>28</td>
<td>29</td>
<td>22</td>
<td>9</td>
<td>8</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Have you ever recycled or traded in a phone?</th>
<th>no</th>
<th>recycled</th>
<th>sold/traded in</th>
<th>given away</th>
<th>lost/stolen</th>
<th>thrown away</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of respondents</td>
<td>31</td>
<td>36</td>
<td>35</td>
<td>17</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

More detailed analysis of the statistics suggests results are connected to age and lifestyle experience rather than to gender. The largest volume of phones ever owned generally belong to those aged forty and under. This same group is more likely to sell or trade phones, whereas those aged forty years or above are more likely to recycle. More importantly, 92 per cent of those respondents who have either recycled or traded in phones still possess at least one spare phone within their household.
The surveys also began to reveal some of the human factors that are acting as a barrier to a more responsible approach to the ownership of consumer technology. Two of the qualitative questions asked with the most frequent responses are shown here.

Why do you still have unused phones?
Frequent responses:

- Memory / data contained on phone /Stores numbers and photos
- I still use them / some have still got credit / some get better signal than others
- As a back-up in case current one breaks or gets lost
- Laziness to get rid of it / out of sight out of mind
- No use to anyone else
- It still works and not sufficient money to trade in
- Don’t know what to do with them
- I’ve paid for them so I want to keep them
- My son likes to play games on it
- They’re wonderful things – Iconic – Special objects. I keep them in their original boxes in a cupboard

Do you get emotionally attached to your phone and what causes this attachment?
Frequent responses:

- Yes – It’s my life
- Yes, because it cost a lot of money (iPhone)
- It gives answers when I need it
- All the personal data it contains
- I’d be lost without it
- Like to save nice text messages
- It’s got all my photos on it
- Yes – Personalised apps

Fifty people responded to the audience survey conducted over a three-day period during the Millennium Gallery exhibition of Hanson’s jewellery collection. In addition to the core questions asked in all the surveys, the following questions relating to the creative jewellery were introduced in order to elicit data that might reveal the impact this approach might have on a larger-scale project.

Before looking at the What’s in My Stuff? jewellery exhibition did you know what materials/chemical elements are used to make a phone?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Some</th>
<th>Never thought about it</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4%</td>
<td>52%</td>
<td>36%</td>
<td>8%</td>
</tr>
</tbody>
</table>

Has the exhibition made you more aware of the chemical elements needed to make mobile phones?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Some</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>82%</td>
<td>4%</td>
<td>12%</td>
<td>2%</td>
</tr>
</tbody>
</table>
Will seeing this exhibition encourage you to recycle/trade-in your discarded phones?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Don’t know</th>
<th>Maybe</th>
<th>Already do</th>
</tr>
</thead>
<tbody>
<tr>
<td>52%</td>
<td>4%</td>
<td>4%</td>
<td>8%</td>
<td>30%</td>
</tr>
</tbody>
</table>

The personal and emotional response to the exhibition included:

Love it / beautiful / great for raising awareness

Interesting / makes you think / learnt something / stimulating

It needs to be more prominent / more impact / bigger

Funny / enjoyable

Great for raising awareness

42%

36%

16%

6%

8%

Conclusion

This case study project was ambitious given the timescale and resources available to conduct the research, but it has highlighted the positive benefits to be gained from the knowledge and experience that interdisciplinary work can have in addressing complex material sustainability issues. Employing participatory activities and creative making suggests that craft is able to act as an agent of change. However, in order for this approach to make a greater contribution to change in relation to the three R’s (reduce, reuse, recycle) would require a larger-scale project to be developed that includes more ambitious object-making and exhibitions that would reach a much bigger audience. How this might be achieved is the next challenge for this research group. The pilot test that used the exchange brooches as a vehicle to understand the potential of using motivational theory as a method to expand the audience possibly holds the key to future initiatives. Although a craft-made object might well act as the incentive, the implementation and success of this will probably be more dependent on the use of digital technologies and social media platforms rather than on the use of craft-making itself.

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Lab4Living Field Lab: Promoting Interdisciplinary Research. Available at: http://research.shu.ac.uk/lab4living/lab4living-field-lab (accessed 6 April 2013).


Jean-Patrick Péché & Samuel Javelle

Makers: Hobbyists or new economic driving force?

We ask the question of the characterization of the difference between craftsman and maker. Is “makers” just a new form of craft, hobby for the post-industrial town middle-class, or as some say, a new organization of production?

Makers is a protest movement against economic aspects of our current industrial capitalist societies. It leads to empowerment of users by promoting the ownership and the control of the means of production.

Resulting from the ease of communication related to the Internet, the maker movement is characterized by a spirit of community and free trade (object models, knowledge). In return, the maker must enrich the community global knowledge by sharing, in turn, know-how, models, experience.

This operation is a critical posture in two aspects:

- On the social and economic plan - open source based functioning, total freedom of use and worldwide circulation of this knowledge, local production and predilection for the short circuits of exchange;

- At an academic level - no standardized way of thinking, no teacher-student relationship, but a sense of community.

This critical stance simultaneously observes the three spheres of activities which constitute a liberal activity and liberal industry (ie manufacturing, design and market) but without entering these fields who the craftsman situates himself at the core.

Beyond public funding concerns, the question of the economic model is asked. We can notice that three types of activity are emerging:

- Industry Suppliers (Anderson point of view) - if this relationship is not new, the existence of the community and Internet accelerates reactivity and responsiveness;

- Craftsman lying in integration of tools and techniques of a fablab within the craft activity;

- Design where using these new means of production (mock-up or prototyping) in the creation process significantly shortens the development time and testing process.

If we try to project a probable future “makers” movement, based on historically known models of social economic development, three hypotheses can be advanced:

- two hypotheses correspond to integrating makers in current economic activity:

  industry level: the success of an idea can lead to discontinuation of exchange of experience before final launching an industrial activity (cf. Makerbot example). This shift to close sources aims at protecting a level of knowledge that becomes differentiating in the market, to protect the return on industrial investment; 
  crafts level (cutting of tailored furniture, manufacturing house in situ by means from industrial robotics): the development of an economic activity becomes “real” but induces a confidential know-how (except between teacher and student, basic education in crafts);

- the last hypothesis leads to the radicalisation of “utopia” fablab. At a policy level, the consolidation of this critical posture will lead to the creation of social and economic utopia if it finds its political foundation (like the creation of worker cooperatives, trade unions ...).

In this context we propose to redefine the concept of “know-how” and “know-design”, “markets” or “public” that ultimately determine these practices.

In this paper, we raise the question of the characterisation of the difference between craftsmen and makers. Are makers just a new form of craft, a hobby for the post-industrial middle-class urban dwellers or, as some say, a new organization of production? If we want to comparatively study the patterns of craftsmen and the makers’ movement, it is necessary to explore the epistemological foundations of this movement. We believe that a definition of the makers’ movement should be based on an analysis from an anthropological and historical point of view.

I. From the definition of a makers’ movement to a shifting society

The first thing to be pointed out about makers is that they re-appropriate many industrial production skills ‘from crafting to high-tech electronics’ (Anderson 2012: 20), to analyse, modify and adapt them to their needs.

The second observation is that this appropriation is a kind of protest movement against some economic and sociological aspects of capitalist societies. Cory Doctorow, maker, science fiction novelist and journalist, compares makers to ‘people who hack hardware, business-models, and living arrangements to discover ways of staying alive and happy even when the economy is falling down the toilet’ (Doctorow 2009).

Historically, the development of the makers’ movement follows the development of web technologies during the 1990s. Chris Anderson, entrepreneur and journalist, goes further by stating that ‘they’re the web generation’ (Anderson 2012: 21). It is clear that a part of this web generation, anchored in a world where ways of communication are extremely efficient and becoming ever faster, is characterised by a spirit of community and free exchange, of which makers are a part. Indeed, blueprints, design, process and knowledge are massively shared by makers. In return for their membership of a ‘community’, makers must enrich the global knowledge of the makers’ community by sharing models, experiments, experiences, etc.

The community of makers is not very formally structured. For the most part, it’s made up of little groups, centred around sites such as Fab Labs, hackerspaces or makerspaces which are often far away from each other. For example, in the case of Fab Labs alone, the MIT website states that there are less than 200, localized in seventy-seven states or countries. In spite of this kind of ‘diaspora’, thanks to the world wide web, a sharing community does exist. This community uses several web platforms to exchange knowledge, including: GitHub, which is more oriented for code and programming; Thingiverse, where most printable 3D models are exchanged; and Instructables, which creates tutorials that explain all kinds of crafting.

These kinds of support, in the form of websites and forums used by makers, reflect diversity and a much knowledge pooling. From the critical viewpoint of western society, this operation can be considered from two aspects: economic and industrial, and academic.

(i) Economic and industrial

The open source represents a total freedom of use and worldwide circulation of plans, processes or technologies all over the world. It facilitates local production and short circuits of exchange. For example, if Chinese, Peruvian and English makers all produce the same object, it will inevitably be very difficult for them to export their products to the other side of the world. On the other hand, they can produce locally and develop globally.

Makers question the globalization of production, at least partly, by pointing out how it has sometimes resulted in the re-localisation of manufacturing. Paul Soriano (2006), editor of the journal Medium, argues that this re-localisation raises social (poverty) or territorial issues.

To demonstrate this point, we can take the example of the FabFi project realized for the first time in an Afghan Fab Lab. This project facilitated local manufacturing over a high-speed network. FabFi is an open-source, Fab Lab-grown system using common building materials and off-the-shelf electronics to...
transmit wireless ethernet signals across distances of up to several kilometres. With FabFi, people can build their own wireless networks to gain high-speed internet connectivity, thus enabling them to access online educational, medical and other resources. The installation of this kind of network is generally only available to large communities, whose financial or economic interests can vary a lot, depending on their place in the world. By sharing the experiences of these Afghan makers, Kenyans were able to adapt the FabFi project to their own territory and build a network of 3.5 kilometres long. Today, several new networks are under construction in Afghanistan and the United States. This brings us to the second level, academic.

(ii) Academic
Generally speaking, and especially on the web, constant exchange between different cultures and a diversity of disciplines deeply modify the normalized and classical learning model and remove the more traditional pyramid of knowledge in favour of community sharing. The vertical teacher–student relationship is replaced by a horizontal one as makers learn from others and share their knowledge. The apprenticeship contract becomes: if you learn something, teach it to somebody else. This critical posture of makers gives them the status of observer in the three fields that constitute any active innovation: if you learn something, teach it to somebody else. This critical posture of external observer is precisely what allows them to innovate. Basically, the makers are no longer just designers, craftsmen and not even providers, but, working from home, connected to the world wide web, they can study other people’s practices and modify them by experimentation.

II. Assumption for the future of the makers’ movement
At this point, we should raise the following question about the maker’s economic model: if we try to plan a probable future for the makers’ movement, based on previous economic and social models of evolution, two hypotheses can be advanced:

1. The makers’ revolution will probably be absorbed into our society
This hypothesis corresponds to an integration of makers into current economic activity and three types of activity are relevant:

(a) Makers could be suppliers for industry; even if this relationship is not new, the community phenomenon and the internet would accelerate their reactivity. According to Anderson (2010), makers are the new inventors of today. They can more easily conceive products and share their development with early adopters. If the product is a good idea they can just send a simple file of the largest industries and start full production. This vision may seem to be a little simplistic as a system of internet ‘inventors’ connecting to ‘off-shore industries’ does not really revolutionize production.

The success of an idea can lead to the launch of industrial activity. However, this process often leads to the end of the experience of sharing in order to protect the knowledge gain which has been converted into a marketable product to generate a return on investment. For instance, in the case of MakerBot industries, its 3D printer project was originally completely conceived by and for its makers. However, this company now chooses to restrict the licences of its machines even though its reputation originated from an open source community. Today it is more complicated to repair a MakerBot printer and soon it will be impossible for most people to understand how it works.

Not wishing to engage any further with the ‘MakerBot debate’, which generated so many bytes on the network, we can also quote the case of Arduino, a company that managed to generate, on an industrial scale, an open-source community product without denying the maker’s input. The main value of makers, in every sense of the term, which implies something accepted and promoted by the community, can be assumed by the keyword ‘sharing’. Beyond the ‘do it yourself’ element, which is also important for us, makers consider that sharing, the open source, signifies precisely the possibility to download and modify freely. It is a fundamental quality, which can generate a safe and stable network for activities.

The Arduino economic model, as explained by Tom Igoe (see Thompson 2008) is based on selling expertise rather than a product. Indeed, Arduino does not reap huge benefits from the sale of its products themselves but from all kinds of specific developments. Since they are the inventors of an open source product and share their knowledge on a broad scale, the ‘Arduino community’ builds up numerous potential developments. This business model authorizes Arduino’s customers to build devices based on Arduino hardware.
(b) The second field susceptible to integrating makers is undoubtedly design crafts. For example, we can discuss the company ‘Unto This Last’, which is based in London. This ‘craft’ company integrates tools and the process of Fab Labs within an activity of local manufacturing of furniture. Its current catalogue offers more than 2,000 objects made on request. The name of the company is highly significant because it evokes the famous book by John Ruskin and the more recent theories of social economy arising from it. We take this opportunity to quote a passage from Ruskin which can be very effectively applied to makers’ philosophy:

> When we ask a service of any man, he may either give it us freely, or demand payment for it. Respecting free gift of service, there is no question at present, that being a matter of affection, not a traffic. ut if he demand payment for it, and we wish to treat him with absolute equity, it’s evident that this equity can only consist in giving time for time, strength for strength, and skill for skill ... The justice consists in absolute exchange. (Ruskin, 2006)

This fusion of makers with the crafts sector creates a real economic activity, but we think that it also produces a confidential know-how. Indeed, skills, practices and know-how cannot be shared equally. The only way to share knowledge is crystallized in the master–student relationship, the basis of education in craft activities.

(c) Finally – however, we don’t want to insist on this point here – makers are also able to combine activities of conception and design. Indeed, design that uses rapid-prototyping technologies and iterative development process can reduce development and test deadlines.

(2) I have a dream
The second hypothesis we’d like to consider concerns the construction of a ‘makers’ utopia’. The consolidation of makers’ critical posture could result in the constitution of a social and economic utopia only if it possesses a similar political foundation to that of the creation of workers’ cooperatives and syndicates in the nineteenth century.

In France, these cooperatives were started in Lyon in the Croix-Rousse district. In 1831, the silk workers, who were craftsmen, joined together into cooperatives to assure a fixed price for their work and obtain financial guarantees in the event of any work accident. One of the strange facts of this story is that the silk workers, who knew how to inspire new social and political forms, worked on the first numerical control machines – the ‘Jacquard’s looms’ – which facilitated the creation of patterns by using punch cards.

Conclusion and an opening
To conclude this subject, we think that it’s very important, in this context that we have just developed, to redefine the concept of ‘know-how’ and ‘how-to’ design as well as ‘market’ and ‘public’ which finally determine all these practices.

To redefine these concepts, we work on the I.D.E.A. program, transdisciplinary teaching which is led by Design Thinking, which involves alternative methods of knowledge transmission, especially the practice of learning by doing.

Management education is under growing criticism, and calls for a profound renewal of management theories and practices abound within and outside academia. Creative industries in general and Design Thinking, in particular, are being proposed as a possible source of such renewal. Beyond this renewal, the global question of (better) training innovators is being raised.

We propose Design Thinking as a core concept that can address this thorny issue in a program funded in 2011 by two prestigious French schools: the Ecole Centrale Lyon, an engineering school, and the EMLyon Business School. The main idea lies in the integration of Design Thinking and arts into management to develop innovation while providing basic technology education. This model has its roots in the triad developed by Brown (2009), according to which, innovation is the conjunction of three elements: feasibility, viability, and desirability (see Figure 1). I.D.E.A., which stands for Innovation, Design, Entrepreneurship and Arts, is a two-year post-bachelor graduate degree. Our teaching is centred on the practice of project management and Design Thinking, as well as multidisciplinary and cross-disciplinary teaching. This practice aims to develop students’ flexibility in the complex context of becoming future project managers and creators of innovative companies.
Feasibility is covered by courses delivered by the engineering school and viability is covered by courses given by the business school. Desirability, which includes design, as well as creative and cultural aspects, is covered by a diverse, ad-hoc faculty from both schools and external lecturers. I.D.E.A.’s teaching model emphasizes action in the curriculum with the integration of a real fabrication laboratory or Fab Lab (see Gershenfeld 2005) at the heart of the teaching structure. Indeed, innovative management practices are not only about new ideas, but also about action. This is in conformity with recent entrepreneurship research that has shown that action is often the main creator of novelty in the world (Sarasvathy 2001).

Students are evaluated on projects that lead to public exhibitions where they must deliver a mediation between what they have produced and its audience. This two-year programme only began in September 2012. Thus, rather than a clearly-defined and stable education program, it is work in progress whose promoters and educators are very much acting as reflective practitioners (Schön 1983), learning with an abductive approach, just like designers do (Dunne and Martin 2006). Since the I.D.E.A. program can be seen as a pedagogical living lab, this experience is continuously documented and students, teachers and coordinators are closely monitored. This approach leads us to interrogate any common evaluation tools that may be revealed to be insufficient as well as helping to establish a deeper understanding of how to improve our program of training innovators.

Notes
1. https://github.com/ Build software better, together

References


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Facing issues of sustainability, contemporary crafts have attempted to find a solution to facilitate more sustainable consumption. This study aims to investigate crafts within a redefined concept of luxury that can foster sustainable crafts.

First, this study redefines luxury in terms of sustainability as contributing to a better lifestyle experience. That is, sustainable luxury improves consumers’ lifestyles toward a more enjoyable, socially and ecologically sustainable mode of consumption aimed toward the good life. Based on Soper’s theory of alternative hedonism as a way of conceptualizing consumption differently - from the self-interested perspective of pleasure satisfaction, to the wider issues of sustainable consumption which contribute to a collective good - this study reinforces the theoretical background of critical socio-cultural and economic perspectives that support a repositioning of contemporary crafts centred on consumers’ values.

Second, this study redirects sustainable luxury from within the craft ethos. Recently, industrial models combined with craft have gravitated more toward design, particularly in creating products for niche luxury markets manifesting sustainable values aiming toward well-designed, ecologically and socially responsible, long-lasting products, as opposed to what we are faced with today. In this paper, the transferable craft ethos in design is investigated through perspectives of valuations toward high quality goods, of empathic elements, of finding solutions from the fundamental philosophy of craft, and of crafts(wo)manship, through a case study of the Finnish ceramics company Pentik.

The paper highlights that craft entrepreneurships’ survival depends on systems toward authenticity, personalisation, and more sustainable hedonistic experiences with crafts for crafts-consumers.

Last, this paper explores where ‘luxury’ and ‘value’ meet craft from post-consumerist perspectives, which do not simply regard luxury as targets of conspicuous consumption, but rather as a better life choice. Additionally, in similar contexts originating from the phenomena of conspicuous consumption, ‘rarity’ and ‘scarcity’ need not retain their elitist gloss from the past, but can contribute to comparative measures for assessing a product’s level of quality and provide a uniqueness factor that may be crucial to one’s conceptions of self-identity. In the last part, an analysis is given of a case study in which crafts are reconceptualised as appropriate candidates for sustainable luxury, as well as of first-hand experiences in the jewellery field. We found that alternative hedonistic perspectives for sustainable luxury crafts include their personalisable aspects, their high-quality finish and expanded lifespan, and their intimate relationships with makers and co-crafters, which all add extra value to and contribute to new pleasurable experiences of the product.

This study concludes that crafts can be located within sustainable luxury based upon sustainable, alternative hedonistic principles that encourage a higher quality life in crafts’ everyday uses, while also utilising segmented targeting and focusing on individual and personal tastes.
Yuri Na and Michel Lamblin

Sustainable Luxury: Sustainable crafts in a redefined concept of luxury from contextual approach to case study

Introduction

The immediate juxtaposition of the words ‘sustainable’ and ‘luxury’ can lead to at least two ideas with differing aims. One is the project that producers of luxury brand items must undertake if they are to match the changes in consumer demand and awareness of the impacts a luxury item’s manufacture and purchase has on the globe. This essentially addresses the need for luxury brand companies to become more transparent in terms of the environmental and societal effects brought about by their implemented manufacturing processes and supply chains, and to make the appropriate choices that, at the least, reduce the ill effects of luxury item production. Many of the largest luxury brand companies are failing in this regard, rating low on their environmental, social, and governance (ESG) performances (Bendell and Kleanthous 2007: 3). Given that the luxury industry is a €200 billion global market, the project of making this industry a more sustainable and ethical enterprise is of significance, to say the least. Some consumers are of the general opinion that luxury brand companies are by definition opposed to ethical practices; the terms ‘ethical luxury’ or ‘sustainable luxury’ are thus seen as oxymorons (Davies et al. 2012). There is also the sense that luxury companies are less in the business of responding to new shifts in greater, ethically-driven consumer demand and are more in the business of shaping and influencing consumer demand, tapping into consumer desire that is blind to any ethical or ecological issues (Bendell and Kleanthous 2007: 7).

Aim of research and research method

Despite the need for luxury companies to honestly and accurately face these pressing challenges, our research aims to explore ‘sustainable luxury’ from another angle leading to a rather different goal from that of the foregoing project. In this study, we approach ‘sustainable luxury’ as a more inclusive term than traditional luxury, with a wider range of products that can fall under the label. We ask: what are the key features that encompass ‘sustainable luxury’ as a continuous yet differing concept of ‘luxury’ as it has traditionally been understood? After this contextualised approach of defining the concept of ‘sustainable luxury’, we move on to answer how craft can be repositioned as an ideal sustainable luxury that balances ecological, economic, cultural and social dimensions of sustainability. For this question, the balanced dimensions in the creation of sustainable luxury will be examined through a multiple case study.

Based on the initial theoretical framework, in order to examine how craft can be repositioned in terms of sustainable luxury, we collected data from different cases with different key focuses. The research methods employed include interviews with professional designer-makers and craftspeople, participatory observation, documents, and probes for workshop participants. The research data was also gathered from our firsthand experiences in the jewellery business and workshops that we ran and in which we participated. The data was compiled following qualitative research analysis, in which we categorised the data, interpreted meanings, identified patterns and synthesised the results.

Luxury values

‘Luxury’ can mean quite different things for different people. There is a degree of relativity in what is regarded as luxurious, with one’s social and economic standing and environment factoring in quite largely. A BMW may be a luxury item for you, while any four-wheel automobile may be a luxury item for someone in a developing country. Luxury items are often contrasted with the ‘necessaries of life’, as ‘desirable but not indispensable’ (‘luxury, n.’ 2013), but this definition is unhelpful because it is too objective and does not illuminate why luxury items are valued from a consumer’s perspective. ‘I want it because I do not need it’ is either trivial or hopelessly confused. The real motivations for luxury purchases rather speak to a range of values, both personal and impersonal (Vigneron and Johnson 2004), which ultimately lead to an increase in pleasure: the fundamental pleasures sought which sustain a good life in the pursuit of well-being. The centrality of pleasure satisfaction...
in consuming luxury products can be shown when looking closer at the perceived values of luxury items that constitute pleasurable experiences.

A tidy categorisation of values surrounding luxury items can be found in a study by Wiedmann et al. (2007). They organise the values into four dimensions of value perception for luxury items: the financial dimension, functional dimension, individual dimension, and social dimension. The financial dimension is the value of a luxury item as translated strictly in monetary terms, with the ratio of price to quality and functionality significantly higher for luxury items than that of their conventional versions. However, this high ratio is not always indicative of luxury and may not feature as highly as the other dimensions of value when assessing a luxury item. The functional dimension includes usability, quality, and uniqueness value. A luxury item is meant to perform its function at a highly satisfactory level (i.e. usability), to be made of the finest materials and demonstrate high crafts(wo)manship (i.e. quality), and to be in only limited supply, not readily available to anyone and everyone (i.e. uniqueness). The individual dimension is comprised of self-identity, hedonic and materialistic value. Luxury items can symbolically contribute to one's self-image (i.e. self-identity), can provide intangible benefits and positive affective states and emotions (i.e. hedonic), and can satisfy the materialistically inclined who find meaning in possessing things (i.e. materialistic). Finally, the social dimension includes the values of recognition within one's social group, of conspicuousness and prestige. Luxury items can publically signal (i.e. conspicuousness) a possessor's membership in – or, at the least, the desire to be considered a member in – a group of a certain social status (i.e. prestige).

The individual dimension and its sub-values of self-identity and hedonic value hold particular sway in a consumer’s motivations toward luxury products. This will become apparent when analysing how the values from the other dimensions are dependent on satisfactions within the individual dimension. For example, the oft-cited signifier of luxury items has tended to be regarded as its conspicuousness: the ability for luxury items to transmit some message of class, distinction, membership, etc. At the root of this is a desire for the holder of the luxury item to be perceived in a certain way, to be identified and acknowledged as a particular kind of person. This is ultimately tied in with the value of self-identity; for if one's identity is not partially constructed by (or at least responsive to) the ways one is perceived by others, then one has a vacuous notion of one's identity. Thus, the social dimension of luxury-related values can be viewed as parasitic on the individual dimension's value for self-identity: acknowledgement and recognition from others of features of one's identity and personality are valued only to the extent that those same features are valued for oneself.

As for hedonic value, the other sub-value of the individual dimension, this value can also be seen as a foundational anchor for the functional dimension's values of usability, quality and uniqueness. If the usability of a luxury item is highly satisfactory, then its ease of use and functional superiority over related conventional items make for a more pleasurable experience. If the quality of a luxury item is such because it is made of the finest materials, demonstrating high crafts(wo)manship and durability, then the tactile sensations, aesthetic appreciation and longevity of such a high quality item also make for a more pleasurable experience. And if the uniqueness of a luxury item is due to its limited supply and its not being readily available to anyone and everyone, then knowledge of this fact is also pleasing. What we find is that the individual dimension's self-identity and hedonic values play a central gravitational role in the constellation of values that surround luxury goods. The extent to which the functional and social aspects are valued as such is ultimately rooted in their contribution to increased hedonic experiences and the formation of a personalised and meaningful self-identity. Lastly, the financial dimension of luxury items is also dependent on individual and social factors, particularly those of quality, uniqueness and exclusivity: what warrants a higher price tag for the item is its superior quality, in terms of materials used and crafts(wo)manship, and its rarity and limited availability, in contrast with its related conventional versions.

With this emphasis on the individual dimension for the valuations of luxury items, there has also come a shift in the ways self-identity formation and pleasurable experiences have been pursued in general within recent decades. This shift aligns with changes in consumption patterns, which, when combined, point to and make possible the desire for a new kind of luxury: sustainable luxury. Sustainable luxury distances itself from the traditional luxury markers of prestige, conspicuousness, and exclusivity, while still maintaining and even re-emphasising in a novel way the central valuations toward pleasurable and meaningful high quality products. A shift in consumption patterns provides the context within which sustainable luxury can be more fully understood.
Shifts toward sustainable luxury

The general shift in consumption patterns can be summarised by a report conducted by foresight consultants The Futures Company (2010). They contend that consumers are becoming more (1) responsible and (2) vigilant in their purchases, seeking more information about a particular product, and weighing pros and cons in terms of averting lower quality goods and wasting time and money. Consumers are also becoming more (3) resourceful, valuing manual and crafts skills as a means to both pleasurable hobbies and practical money-saving repairs, and are learning to (4) better prioritise and assess what they truly 'need', favouring the richness of a happy life with well-being. Finally, consumers will prefer joining (5) networks of narrower and shared interests, drawing from one another the values of and means to leading more responsible, vigilant, resourceful and well-prioritised lives.

The increased responsibility and vigilance sensitis new consumers to not only fi cal and economical means for an expenditure downshift, but also to sustaining and environmentally conscious means conducive to lifestyles with fewer negative impacts on the planet. Heightened resourcefulness in terms of craft skills and manual repairs also extends to an appreciation for high quality and durable crafts(wo)manship and sustainable methods of production, as well as an appreciation for materials and products with knowable manufacturing histories. Improved prioritisation skills attune people to the distinctions between the ‘necessaries of life’ and the ‘(not indispensable) desirables of life’. Prioritisation also accords with self-identity formation and a greater awareness of the effects an individual’s actions have on the environment at both local and global levels. Networks of narrower shared interests also aid in circulating sustainable ideas and alternatives to the conditioned, advertised and normalised forms of consumption. All the piecemeal shifts contribute to the ideal of the ethical consumer – an ideal that is already on its transformative path to becoming the norm.

Sustainable luxury via alternative hedonism

While the aforementioned ‘better prioritisation’ may suggest a shift to an ascetic life that shuns the unnecessary hedonic elements of ‘rich lifestyles’, such a reading would seriously misunderstand the broadened conception of the category of ‘what [we] truly “need”’. We ‘need’ to live good lives, of well-being and of meaning, and we would be remiss to exclude all hedonic experiences as they, rather than being merely adornments to a life of well-being and meaning, actually are among the constituents of such a life. With the shift toward awareness and responsiveness to sustainable issues, of responsibility, vigilance, resourcefulness, better prioritisation and a sustaining network of knowledge about the means to living more ethically, a new form of hedonism emerges: alternative hedonism. Soper (2007, 2008) articulates this as ‘a distinctively moral form of self-pleasuring or a self-interested form of altruism: that which takes pleasure in committing to a more socially accountable mode of consuming’ (Soper 2007: 220). The alternative hedonist is still a pleasure-seeking individual, but only to the extent that the satisfaction of those pleasures has an ethical component – a regard for this hedonic act as being the best among similarly hedonic acts in terms of its greater social and environmental impact and its contribution to sustainable modes of consumption, transportation, and recreation. In time, the hedonic and the altruistic reasons for doing an activity may become inseparable from one another (Soper 2008: 195).

Sustainable luxury can now come into focus. It includes products of high quality, in terms of crafts(wo)manship, materials and durability, which contribute to a more pleasureable life experience coupled with standards of ethical and sustainable consumption, and which can provide authentic means for self-identity formation that also draw from a meaningful and purposeful form of conspicuousness. The appreciation for high quality goods is continuous with the functional and individual dimensions of traditional luxury, with appreciation for quality ultimately leading to a more pleasureable experience. The shift toward more responsibility and resourcefulness in the new, alternative hedonist consumer also lends to the higher appreciation for quality – particularly when the source of a product’s quality, its materials and method of fabrication, is attributable to sustainably sourced materials and fabrication methods.

The more resourceful and narrow network-inclined consumer may also be driven by a longing for materials ‘or objects or practices or forms of human interaction that no longer are in everyday life as they once did’ (Soper 2007: 212). This ‘nostalgia’ can synthesise with present needs and demands, creating innovative solutions. Through dialogue and experimentation within the networks of shared interests, increasingly facilitated in the web 2.0 era, sustainable luxury items can serve as signifiers of an alternative hedonic lifestyle. These may
include signifiers of a product's membership to environmentally conscious movements like fair trade, ethical financing, and anti-globalation (Lury 2011: 173). Sustainable luxury items are more than conspicuous symbols of distinction or a rich lifestyle: they are themselves proof qua product(s) of the possibilities of living more authentically and ethically, as meaningful tokens that can solidify one's identity as a more authentic and ethical, alternative hedonist consumer, as well as transmissive tokens that can instigate dialogue with others on the merits and philosophy of alternative hedonism.

To reify the concept of sustainable luxury further, the following sections will explore one of the ideal candidates for sustainable luxury goods: craft. The fundamental philosophy of craft as a standard for sustainable methods of production, and its appropriated role in industrial design as a transferable craft ethos, will be addressed first.

The transferable craft ethos ‘Design proposes. Workmanship disposes’ (Pye 1968: 1). This phrase sums up a prevalent relationship between design and craft, with craft often relegated to the ‘mere’ position of workmanship to the ‘greater’ vision bestowed by design. Still, there has been recognition of craft’s merits as an ecologically and socially responsible means for ‘disposing’ in this regard, with an inclination toward high quality and long-lasting products. It is this philosophy of craft that makes it an ideal artifact of sustainable luxury products. As Tapio Koskinen, 2012 Secretary General of the European Design and Innovation Initiative, stated: ‘We need crafts education producing practical artisans with good skills in modern manufacturing and an understanding of the potential of luxury products demonstrating the combination of aesthetic, socially and ecologically responsible, user-friendly [aspects] and quality’.3

This transferable craft ethos can be analysed into four perspectives. First, there is the emphasis on high quality – more specifically, high quality fitting the right purpose. As a bulwark against obsolescence and mass-production, the craft ethos aims to satisfy needs, not demand; bringing pleasure, rather than waste. Second, and again in contrast to mass-produced items, there are empathic elements in craft that fulfil an emotional need for more personalisable relationships with products that add value along the individual dimension. These can be thought of as facilitating ‘high-touch aptitudes’, which emphasise ‘the ability to empathize with others, to understand the subtleties of human interaction, to find joy in one’s self and to elicit it in others, and to stretch beyond the quotidian in pursuit of purpose and meaning’ (Pink 2005: 3). Third, the craft ethos offers solutions to environmental and ecological issues, stemming from its concern for natural resources and the use of traditional and locally sourced materials. Last, the craft ethos embodies slowness; that is, more thinking and a greater awareness of how things are made and how craft processes impact the environment.

One of the problems with design’s appropriation of the transferrable craft ethos is that full responsibility falls out of the hands of the craftspeople – responsibility over, for example, the choices of sourced materials and the extent to which machines are used for multiple productions. One solution, for the sake of craftspeople and craft, is of course not to be appropriated by the design process. But whether appropriated or not, a suggested modification could be in the form of a sustainable craft community that can yield more environmentally responsible production methods, as well as business opportunities with parallel economic benefits. These communities, as networks of shared interests, would allow craftspeople and practitioners from other fields to share in the skills and knowledge for ethical ‘making’ as well as trading, thus facilitating and motivating not only a more ecologically sustainable craft business, but also an economically sustainable craft business for financially and resourcefully sustainable entrepreneurs.

Pentik, a Finnish interior design retailer and ceramics company, produces a versatile range of products to meet demand through manufacturing, with ‘Pentik Studio’, their product line of ceramic art for interior decoration and every day use, balancing their more ‘industrialised’ productions by offering handmade ceramics made by professional ceramists, decorated by hand and in small batches. Suku Park, a ceramic artist at Pentik, works as he would in his own studio, himself deciding what to make and at his own pace. Anu Pentik, the designer and founder, then selects among Park’s finished works those that will be produced as multiple orders.4 Park’s work is not of design’s appropriated variety, such as decorating a work or applying a coat of paint by hand. Decorating, painting and other ‘hand’ contributions, even casting, can be done by skilful workers, not necessarily professional craftspeople. Park and other craftspeople are more involved in the creative processes, given a degree of independence and autonomy in both design and crafting. Professional craftspeople are aware of the...
holistic systems of production in the company since they have weekly meetings with managers from the plastering, glazing and marketing departments, as well as with designers, in order to exchange opinions before a product is commercialised. Pentik provides an idealistic example of craft as a parallel model with industrial design, rather than as only subservient or contributing to a ‘greater’ design process.

**Sustainable landscape of craft**

Sustainability is not only about ‘going green’. There are four dimensions of sustainability that should be kept in balance: ecological, economic, cultural and social (Dresner 2002: 64–5). For sustainable luxury craft, the ecological dimension refers to the materials and methods of craft-making that minimally impact the environment. The economic dimension relates to all aspects that keep craft businesses and entrepreneurs viable and healthy. The cultural and social dimensions reflect the sustaining elements that keep the values, traditions, and social exchanges of craft alive.

The cultural sustainability of craft is about maintaining the traditional skills employed, while also demonstrating a responsiveness to the everyday uses of crafts in our ordinary lives. With a synthesis of forward-thinking vision and tradition-sustaining elements, the culture surrounding craft and the culture expressed through craft can survive our increasingly mass-produced age. Empathic elements of craft’s ethos, and craft’s ‘high-touch aptitudes’, suggest the important dimension of craft’s perception among enjoyers of crafts. There is a need for more personalised and authentic experiences with crafts among crafts-consumers, satisfying the individual dimension of hedonic and self-identity value. But beyond these already mentioned values and drives of the alternative hedonist consumer, there is also an important social element surrounding craft: the ‘experience economy’. Craft represents more than just material objects and traditions, but also ‘signifies’ and ‘reminds’ consumers of a whole experience extending from and around crafts (McIntyre et al. 2010: 7). While the meaning found in experiencing craft and the craft world, as well as in learning of the authentic ‘behind-the-crafts’ stories shared by craftspeople, are important at an individual level, they are also vital for craft’s own cultural and social sustainability as an enduring tradition and practice responsive to communities of craftspeople and those involved in craft activities.

In this relation across the social and cultural realms, and with an eye on the ecological demands and economic means and resources, a balanced sustainability of craft can be maintained that insures its future. The next section will examine case studies that attempt to balance the four dimensions of sustainability for craft as producers (and co-producers) of sustainable luxury craft.

**Case studies**

2. **Elämä Design** (‘2nd Life Design’ in English) is a venture founded in Helsinki in 2010 that focuses on an eco-friendly approach to ornaments and accessories. The inspiration for their work arose from their realisation that designers have a responsibility for breaking away from routine methods that can negatively impact the environment. Their passion for sustainable means and materials to create their jewellery, and their philosophy of giving everything a ‘second chance’, combines into an ecologically conscientious business model. They source local second-hand and discarded materials, from recycled rubber and bicycle inner tubes, to computer parts and carpet tiles. Recycled rubber in particular is a conscious choice for material, because though it may be recycled, the amount of energy and chemicals involved in its transformation incurs a heavy cost that warrants its reuse and up-cycle. When up-cycling materials, 2. Elämä Design avoids using glues or the assistance of machinery, keeping their energy input at a minimum. Cofounder Jaime Vizcaya believes that the recycling and second-hand culture of Helsinki, one of the best in the world he has come across, allows for 2. Elämä Design to source a wide range of locally discarded materials. The end result of their endeavours leads to an ‘alternative lifestyle, full of rich experiences and delights’.5

2. **Elämä Design** is an example of sustainable eco-design that takes the ecological dimension of sustainability as a core feature of their design philosophy and approach. Their sourcing of local materials, giving them a ‘second chance’, as well as giving people a second chance in the sense of offering working opportunities to those most in need, also comport with a concern for the sustaining of second-hand culture and some social goods through their craft. It also contributes to a specific cultural and local identity (Walker 2006). However, there are few opportunities for value creation between the 2. Elämä designer-makers and crafts consumers. In other words, the crafts-consumers only play a passive role in terms of buying.

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In our previous online jewellery shop, CrArt, we tried to emphasise co-crafting in terms of participatory design. In addition to this social dimension, we shared our stories behind the concepts and design of our jewellery, including short biographies of who made a particular piece and the inspiration behind it. The co-crafting dimension gave customers a chance not only to customise their orders by various options, but also the chance to share ideas about what kind of jewellery piece they have envisioned. Through online collaboration by email exchange it was possible to realise a unique jewellery piece based on a customer’s sketches or descriptions, albeit with some limitations due to the feasibility of their ideas. Our customers also felt comfortable in sharing their reasons for ordering a particular piece of jewellery, or for wanting a particular gemstone or design feature, often sharing personal stories about themselves or, more commonly, about what it was that made the jewellery piece an ideal gift for someone. Through these stories we learned of crafts-consumers’ values that translated into not only a shared understanding of the meaning potential for our craft jewellery, but also the ability to tailor our jewellery for particular niche interests for a sustainable and viable business (bridal jewellery was a particularly important market area).

Customised and personalised jewellery pieces can be seen as unique sustainable luxury crafts, satisfying the uniqueness and rarity factor of luxury. The added value is notable when comparing luxury’s traditional ‘one-of-a-kind’ label with sustainable luxury’s customisable ‘made-only-for-you’ label – this added element makes for a truly personalised and meaningful crafts item. Though offering opportunities for customisation, participatory design was limited due to the nature of online interactions. And though our jewellery pieces were generally regarded as valuable, using high quality materials and employing low energy production methods, our attention to the ecologically sustainable dimension was regrettably lacking (e.g. shipping).

The experience economy and social dimensions of craft are about interactions between humans and crafts. It cannot be ensured that craft will construct resolute concepts of sustainable luxury for craft by only playing the manufacturing role and by not engaging in the social dimension. Craft needs to consider crafts-consumers’ participation in ‘making’, i.e. making more authentic value centred on the experiences of all aspects of craft-making. This can be called ‘co-crafting’ (Na 2012: 252), referring to a ‘making together’ activity combining participatory design and workshops with professional craftspeople in communities. Crafts-consumers can become more involved in learning the traditional techniques and skills of crafting from craftspeople inspiring each other through creative processes, while the participants create new values on what they made, attaching more intimate meanings to their crafts.

Co-crafting offers an ideal level of participation in a making activity, moving from the ‘made-for-you’ side of customisation to ‘made for you, by you’. In several co-crafting workshops we attended, participants were able to design the kind of piece they wanted to make based on materials at hand or that they had brought themselves. In a workshop organised by clothing designers Named, participants brought used articles of clothing to be up-cycled into a new piece. In jewellery workshops we ran, participants were encouraged to bring any damaged or detached pieces with the intent not of making a replica or duplicate, but of up-cycling the piece into a different kind of jewellery piece that can still retain any sentiments or meaning the piece originally had. For those who did not bring their own piece, there was plenty of room for inspiration from the materials we offered to make various kinds of jewellery. This was a notably less restricting co-crafting workshop in comparison to some others, such as one in which old silver spoons were the only items to be up-cycled. More than DIY projects, co-crafting allows participants to receive expert hands-on tutoring from professional craftspeople or designer-makers. This form of participatory design affords a creative environment in which craftspeople and participants can inspire each other. The environment and dynamics are different from traditional teaching and learning relationships in which teachers try to convey the depth of tacit knowledge they have for their craft, but rather encourages a more relaxed and freeing experience in the design and making process. Liisa Tervinen of Design Huone, a jewellery showroom and regular host of various workshops in Helsinki, emphasised the point that she sees her role as a facilitator and occasional helper over and above that of a teacher, stressing that participants should feel relaxed and draw inspiration from one another.6

In co-crafting, the social dimension of craft’s sustainability is particularly prominent in terms of sharing the techniques and the ethos of craft to local communities. As a venue for varying workshops, Design Huone functions as a meeting and exchange point for like-minded crafts enthusiasts who can also go a bit beyond their comfort zones and experience new mediums and skills. The learning
experience is not only for co-crafting participants but for professional craftspeople as well: getting a wider perspective of the perception of craft among non-professionals helps to situate craft within the everyday cultural practices of individuals in local communities. In our workshops, we took a keen interest in the thoughts and opinions of our participants regarding the making activity and what they had made. We used a ‘Personal Project Journal’ as a research probe, in which participants could freely write about how they felt during the activity, how they felt about their finished work, what expectations they had had, what they have learned about making jewellery, etc. In these exchanges, craftspeople’s human capital builds up the social capital of craft among craftspeople and workshop participants alike, which sustains both craft’s social dimension as well as the general social capital of civic engagement, mutual support, networks of shared interests, and trust (Fuad-Luke 2009: 7).

Crafts made in co-crafting workshops can be considered sustainable luxury crafts due to the authentic and meaningful engagement in making something only for oneself (or only for a friend), and the tendency for such crafts to be ‘shown-off’ in a positive way that can engender interest in craft-making within one’s network of friends and acquaintances. Most importantly, co-crafting is an alternative way of attaining a meaningful and pleasurable crafts object from making it, to possessing and enjoying it for a long time. In other words, it is the alternative hedonic means to sustainable luxury crafts.

Green Shoes, a shoemaking company founded in Devon, sells handcrafted shoes made by traditional skills and from high quality, eco-friendly materials (non-animal-derived glues, toxin-free dyes, vegan leather alternatives). Repairs, resizing (for children’s shoes) and resoling are also offered by the company, the latter of which effectively replaces the whole bottom of the shoe, extending the life of one’s shoes. Shoes can be ordered for a personal fit provided customers send in an outline drawing of their feet, and customers can also mention previous difficulties with shoes in terms of quarter or vamp tightness. In addition to the personalisation of guaranteeing a perfect fit and customisation, Green Shoes offers shoe-making workshops in which participants can make their very own pair of shoes or boots. Participants in these workshops can appreciate the value of handmade crafts through the direct and shared experience of ‘making’. The social, cultural and ecological dimensions of the sustainability of craft are satisfied in such workshops, providing a continuum toward an appreciation for a traditional craft and the culture that embodies and is expressed through it, as well as extending to a re-evaluation of broader ethical concerns with consumption in terms of sustainably sourced materials.

Green Shoes also exemplifies a making process that has low-energy requirements, and that keeps waste and packing materials to a minimum. The social dimension is further augmented by Green Shoes’ collaborations with fashion designers, such as Lu Flux, which culminated in Green Shoes walking on the London Fashion Week runway. This is an example of the craft ethos working in reaching out and gaining visibility beyond the traditional boundaries of craft. The economical dimension of sustainability is also balanced in Green Shoes’ use of local materials and in providing jobs in the Dartmoor region. Offering sales online as well as shoe-making workshops also diversifies their economic potential.

Value creation for workshop participants resonates well with the alternative hedonist outlook in the creation of sustainable luxury crafts. There is no hidden journey or story behind the shoes: one can answer satisfactorily and satisfyingly ‘Who made your shoes?’ and ‘Where were they made?’ (Dixon 2010). This short production story will bring not only more attention to ethical consumption for consumers, but also more intimate and meaningful product relations. The story of the product may be short, but the meaning and value behind it is deep. The holder will own their self-made shoes longer than other anonymously-made ones, as not only have they made something durable, but they have made something meaningful that satisfies the hedonic principle of developing a personal relationship with a high quality product that adds value to their lifestyles. The balance in craft in terms of the four dimensions of sustainability, as well as between finished craft objects and making processes, leads to a sustainable craft future.

Conclusion

We have suggested that ‘sustainable luxury’ is a more inclusive term that satisfies hedonist desires. Sustainable luxury craft results from a shift in valuations among alternative hedonist consumers and craftspeople toward high quality, personalised, meaningful, ethical, and sustainable goods. The transferrable craft ethos, as a non-appropriated and parallel model to industrial design, can best lead to the creation of value through sustainable luxury craft within an approach that balances the

Notes

1. ESG is a score that takes into account two main sources: ‘what the companies themselves report to the ethical investment community; and what media and non-governmental organisations have been saying about them’ (Bendell and Kleanthous 2007: 3).

2. We do not mention Wiedman et al.’s sub-value of materialism for it seems to be too narrow in scope. For them, ‘materialism can be described as the degree to which individuals principally find possessions to play a central role in one’s life’ (Wiedman et al. 2007: 7). If this is to be an indicator of an individual’s valuation toward luxury items, then the degree of importance given to (any) possessions would dictate the degree to which luxury items qua possessions are valued and hence sought after. This appears uninformative. While the values of self-identity formation and hedonic experiences are more or less universals, the materialistic value of merely having (any) things seems more particular and does not suggest what is unique or inherently more valuable about luxury items other than the other things.

3. Interview with Tapio Koskinen, Helsinki, 28 February 2012.

4. Interview with Suku Park, Posio, 8 March 2012.

5. Interview with Jaime Vizcaya, Helsinki, 16 August 2013.

6. Interview with Liisa Tervinen, Helsinki, 26 August 2013.

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This paper documents a current research project, *In the Frame* that investigates the potential to add value to craftwork through the availability of short videos of makers talking about their practice shown alongside exhibited work. QR codes and smart phone technology are used to deliver this footage and the codes are digitally manipulated and laser engraved in wood to give them a new visual aesthetic, a 'phygital' aspect - crafted physical objects with digital content. *In the Frame* is a pilot study for Supercrafted, a two year research project (October 2012- September 2014) within the Autonomatic Research Group at Falmouth University, exploring and developing innovative digital technology applications that facilitate new forms of online interaction between craft practitioners and other stakeholders in the craft value chain, including audiences, customers, makers and suppliers.

The literature review for Supercrafted has identified four themes where digital technology applications have a potential transformative impact on the relationships within craft value chains. These are narrative, dialogue, personalisation and community.

Within the narrative theme, the literature highlighted an increase in consumer interest in the provenance of an object: where it comes from, who made it and how it was made. One significant motivation for buying can be the sense of having made a connection to the maker, underpinning the object's authenticity and individual authorship.

*In the Frame* explores the narrative potential provided by the availability of video about makers at the point-of-sale, or in exhibition settings, specifically in the context of Falmouth University's Contemporary Crafts 2013 Degree Show. The project aim is to enhance public engagement with the student work by providing a novel and playful alternative to reading a text-based artist's statement, in the form of a short professional video clip accessed via a QR code.

When scanned using a smartphone or other digitally-networked device the code provides access to individual videos which are hosted on the *In The Frame* website. This website provides a digital channel for feedback, audience comments and wider dissemination of the maker's voice, effectively extending the boundaries of audience engagement within a traditionally time-limited exhibition context.

This paper discusses the background, practicalities and evaluation of this application of new technology, highlighting benefits and issues arising in this educational context. The paper concludes with a summary of the lessons learnt from this pilot study and an exploration of the potential to apply research findings within the context of professional craft practice.

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Abstract

This paper documents a research project demonstrating the potential to engage audiences, promote practitioners and add value to craft work, through the use of relatively low-cost and accessible digital communications technologies in the context of a public exhibition. The project involves: filming, photographing and editing together audio-visual material; the creation of a website from which to access films and leave feedback; and a number of options for viewing web-based footage including Quick Response (QR) codes and smartphone technology, iPads and a desktop computer to deliver internet-hosted content.

‘In the Frame’ is an interdisciplinary research project involving a team of researchers, film-makers and technologists, and Level 3 Contemporary Craft students at Falmouth University. It is a pilot study within Supercrafted, a two year research project at Falmouth University, exploring and developing online digital interaction of benefit to craft practitioners and stakeholders in the craft value chain, including audiences, customers, makers and suppliers.

A literature review undertaken for Supercrafted sets out four key themes for forging digital connections within the craft value chain: dialogue, narrative, personalisation and community. ‘In the Frame’, involving the production of short films of student makers talking about their practice, sits within the narrative theme and draws upon literature that highlights: the value of provenance; the use of QR codes in retail innovation; and the need for a mobile-first strategy. This paper evaluates ‘In the Frame’ from the perspective of makers, audience and the researchers, positioning findings in relation to the literature review. Key notes for discussion arising from the project fall roughly into the following areas: the value of providing the provenance of an object and/or the back story of a maker, the importance of delivery in an easily accessible video format providing choice to both maker and audience; the collaborative nature of the process involved in constructing and editing film; the relationships between audience, technology and object viewed in a gallery context.

The paper concludes that this type of intervention amounts to a new form of audience exhibition interaction, allowing the audience to encounter the maker at the same time as the work, disrupting the distance and silence between audience, maker, and work often experienced within exhibition settings. It argues that such interventions provide benefits to both makers and audience. As a pilot project, ‘In the Frame’ provides a basis from which to develop innovative methods for curating contextual information in a digital format, viewed alongside or even integrated within, craft objects, the potential for which is discussed in the conclusion.

Keywords

Craft, short video, audience engagement, QR codes

Figure 1. The Supercrafted logo

Introduction: Supercrafted literature review

The Supercrafted project began by asking: how can the use of the internet, and in particular Superfast Broadband, benefit craft practitioners in regions of relative isolation such as Cornwall? The aim of the project is to work with participants in the craft value chain – makers, consumers, curators, retailers, suppliers – to identify, review, and develop innovative examples of online tools and environments for the craft sector.

The literature review undertaken at the outset of the project looks at research published mainly within the last five years, addressing digital innovation and the business context of the craft sector and applications in related fields such as retail sales. The literature
review identified our areas within which digital media is providing new opportunities for forging connections within the craft value chain:

**Dialogue:** e.g. Practitioners’ use of social media, personal websites and marketing platforms to connect to audiences, build interest, and provide peer endorsement.

**Narrative:** e.g. Digital content used to tell a back story or integrate content within craft objects and digital information accessed at point-of-sale, or in exhibition settings.

**Personalisation:** Digital interaction, e.g. websites that allow customer design input, co-creation, ways of engaging audiences in digitally making bespoke and unique objects.

**Community:** Digital engagement with and for the wider craft community, enabling access to markets, e.g. networked distributed making and marketing platforms; offering craft engagement, knowledge, networking, manufacturing, and selling opportunities. Community-based digital making facilities, such as fablabs.

‘In the Frame falls’ within the narrative theme and draws upon the following particular findings in the literature:

**The value of establishing provenance**

Morris et al. (2010) examine the contemporary craft market in detail in their report *Consuming Craft: The Contemporary Craft Market in a Changing Economy*. This report considers the drivers for buyers (and potential buyers) and the values associated with craft objects. It highlights the way in which key general consumer trends such as personalisation and authenticity are relevant to the evolution of the craft market and discusses the role of provenance – knowledge of an object’s history – as a factor in purchasing decisions.

There is clearly a growing concern that objects should be what they appear – if the object looks handmade, it matters that it really is. Consumers are also increasingly interested in knowing more about the origin of an object: where it comes from, who made it and how it was made. Whilst the feeling of having a relationship with a maker – of being privy to their creativity – has long been acknowledged as a major motivation for buying, this interest in the personal provenance of craft appears to be an ascendant trend. (Morris et al. 2010: 49)

This report also acknowledges the trend towards greater online sales, highlighting increasing audience familiarisation with online routes to craft product information: ‘Whilst buyers’ stated preference for “real world” retail environments becomes more pronounced when it comes to actual purchasing, it should be noted that interest in buying online has roughly doubled since 2004 (Morris et al. 2010: 6).

A further Crafts Council report, *Craft in an Age of Change* (2012), comments on the global context of the contemporary craft market and emphasises the need to establish craft value: ‘The logic of globalisation and greater competition suggests that the future market for UK craft will increasingly become concentrated at the higher end, where originality and aesthetic value count for more than cost and where skills and knowledge can earn a premium’ (Crafts Council 2012: 8). This research signals the need to develop effective ways of communicating contextual information about making and makers’ skills to prospective buyers, nurturing a closer relationship between maker and consumer, and adding value by reinforcing authenticity and authorship.

The ability to create stories around provenance through the use of social media is also noted in recent research for the Crafts Council by Yair (2012). This report suggests that ‘social media can be used to reveal the hidden stories behind the craft object and its maker. By showing the creative making process, the provenance of materials used and the inspiration behind the work’ (Yair 2012: 1). Yair’s report describes how an integration of e-commerce platforms, with sites such as Facebook and Twitter, allows buyers to accept feeds from favourite makers or galleries, ‘like’ objects or makers and discover contextual information, for example from ratings and comments left by other purchasers and on blogs. The report describes this as ‘social selling’ and an important diversification in selling routes for makers. ‘This kind of narrative is about more than making sales however: it is also about adding value, in the longer term, to the maker’s brand’ (Yair 2012: 3).

**Shelflife**

This idea of adding value through provenance was also developed and tested through a Digital Economy, Research Councils UK-funded research project TOTeM (Tales of Things and electronic Memory), part of which concerned Shelflife (http://shelflife.oxfam.org.uk). A series of iterations...
included a pilot that enabled individuals donating items to ten Oxfam shops in the Manchester area to leave a message relating something of the back story of the item via QR codes. Potential purchasers discover this information by scanning a code attached to the object in the shop. The same research team has also run museum projects aimed at creating dialogue, a recent research paper explaining that a museum partner was ‘keen to disrupt the traditional power relationship between curator and public that has historically only flowed one way: read only, with the curator as author to public as reader’ (Speed et al. 2012: 2). Audiences were invited to leave comments regarding their memories or response to tagged museum objects. These projects point the way towards a more distributed and connective exchange of information, as the authors explain: ‘The simple disruption of allowing people to leave a story on a personal object can be identified as part of the paradigm of social media’ (Speed et al. 2012: 2). This is social media taken forward into dialogue about material artefacts. During the first Oxfam pilot, every object (around 50 in total) was sold (Speed 2010: 245), the authors commenting that ‘The actual sound of somebody’s voice associated with an object … gave the object additional meaning’ (Speed 2010: 244).

Mobile First

Designing internet content for mobile environments requires particular design strategies (Wroblewski 2009), for example taking account of the need for simplicity and limited page navigation more appropriate to mobile devices such as smartphones. Increasingly, internet content providers, including retailers, are adopting the self-explanatory strategy of designing for mobile first.

Project aims

‘In the Frame’ falls within the narrative theme of the literature review – it’s about adding value to an object by telling something of its back story. The aim of the project was to test the suggestion from the literature that craft audiences would be receptive to narrative content about craft practice and the provenance of objects. The project aimed to develop a range of content and delivery mechanisms within a controlled time-limited exhibition and evaluate the added value, testing the appetite of audiences to become engaged in a conversation about the work by providing a digital feedback and comments channel. ‘In the Frame’ builds on the belief that the attraction, and ultimately the value of a craft object, can be supported by providing contextual information that bolsters the object’s craft credentials, allowing the audience to gain an insight into the maker’s motivation and process.

A suitable exhibition setting in which to conduct the research was presented by the Contemporary Crafts Level 3 degree show at Falmouth University, providing research participants with a wide range of craft work to exhibit and a willingness to engage with digital media. As a research project looking at online content provision within an exhibition setting, the ‘In the Frame’ project focused on the ease of access to content on mobile devices.

Objectives

Level 3 Contemporary Craft students are required to produce a short text-based artist’s statement, which is displayed alongside their degree show work. It forms part of the professional practice curriculum and helps students to reflect and communicate their intentions for their work. The ‘In the Frame’ project began with the following objectives:

To re-imagine the ‘artist’s statement’ traditionally presented in text form alongside student work in the Contemporary Crafts final year degree show in June 2013.

The development/application of a dedicated website that acts as a home for student-generated videos and links to QR codes and...
the ability to view the videos on mobile devices within an exhibition setting.

To allow students the opportunity to have a short (30 second to 1 minute) professional video made in which they can put forward a positive and informative account of their final work – by answering brief interview questions that focus on aspects such as the process, material, ideas or a detail of the work itself.

To pilot creative applications of ways to add value to exhibited and commercially available craft work by creating a better communication channel to the maker, as a route to inform audiences/customers of the maker’s intentions and process or to enable the maker to receive comments and initiate bespoke commissions.

In mid-March 2013, a small group of students was filmed in a normal film studio setting. They were asked to bring along pieces of work in progress or prototypes. The resulting footage revealed a number of issues: whilst several interviews were successful, it was felt that the outcomes would be improved by using a more authentic context/back drop for the films, the inclusion of more finished work, and allowing the students more time to develop their artist’s statements. In light of this, the team decided to delay the filming until mid-ay and conduct interviews in the Contemporary Crafts studio space. It was agreed that the use of the studio environment would provide a greater sense of authenticity for the audience and a more relaxed experience for participants, surrounded by their own work and their peer group.

This meant there were additional challenges for audio and lighting, as well as meeting health and safety requirements for filming in situ that were subsequently resolved by the film crew who were keen to develop their experience of documentary-style film-making. The finished films benefited from the strong unifying context of the working studios. Delaying the filming enabled the early pilot videos to be edited and shown to students, fuelling discussion with students about a variety of possible formats and potential content. Further discussions were directed towards deciding on the final one and visual effects employed in creating a distinct visual identity. This included a hand-drawn ‘frame’ and a variety of visual filters and effects, employed to produce a consistent and distinctive look. A single camera angle and simple lighting emphasised an informal and discursive visual quality in keeping with focusing on individual makers and their work, within an artistic setting. Delayed filming also allowed the final films to include quite a large element of high-quality still photography – emphasising the connection to the exhibited work. The inclusion of still photography and panning shots also provided useful flexibility in options for editing.

Figure 3. The degree show 2013, private view

Making a short video – the craft of editing

The project involved a team of technologists, film makers and researchers working collaboratively together, drawing on the skills of the Learning Futures** team at Falmouth, and a group of Level 3 Film and Digital Media students as part of a commercial project for their own fledgling company, Joint Effort Studios (www.jointeffortstudios.com).

Early pilot

In mid-March 2013, a small group of students was filmed in a normal film studio setting. They were asked to bring along pieces of work in progress or prototypes. The resulting footage revealed a number of issues: whilst several interviews were successful, it was felt that the outcomes would be improved by using a more authentic context/back drop for

Student participation

Student participation was sought on a voluntary basis. The researchers attended professional practice seminars, introducing the project and the student film-makers, giving presentations that included video, showing the pilot work and encouraging questions and discussion of the project. Simple, open questions were circulated before filming to that students could prepare answers if they wanted to. Questions included: Can you tell us your name? What are the main materials you work with? Would you like to tell us about some of the ideas behind your work? And so forth. All the films were subsequently edited by the film-makers to exclude the interviewer’s voice and reduce the final clip around one minute, focusing very much on the work itself. All the students were shown the films be ore final editing; this was done in
person with the researchers so that reactions could be gauged and decisions taken quickly. At this stage most were intrigued and surprised by how they came across. Around half were happy to go ahead with no further editing. The rest worked with the researchers, filmmakers and staff to improve the editing, for example so that ‘ums’ and ‘errs’ were routinely taken out, information that didn’t relate directly to the work was excluded and in many cases good quality photographs of the most recent work were included at a late stage. All the films were topped and tailed with the project logos, with ‘In the Frame’ leading into the clip and the Supercrafted logo leading out. Making the logos an integral part of each film served to highlight the project origin and ownership of the films. It was felt by the project team that this made it less likely that films could be seen, or used, out of context. A copyright notice was also placed on the website.

Finished films were uploaded to a dedicated Vimeo Plus account. This gave the researchers a number of extra options for control and tracking of film viewing. In total, thirty-one films were uploaded and publicly accessible, with just two students deciding that, in the event, they preferred their films not to be made available. After the degree show, the films of eighteen students who went on to exhibit work at New Designers in London were made available via the website.

Figure 4. The ‘In the Frame’ website homepage

**Web design - iPad, QR or computer screen**

A WordPress template was purchased for a small fee which gave a basic website design that could be customised to the needs of the project. In choosing the template, priority was given to finding a design that was fully compatible with mobile and touchscreen platforms and that gave a very dynamic feel, so that on the home page individual videos moved freely and were re-positioned and re-sized, as they were selected. Visitors had a number of options to access the footage. They could choose not to engage with it at all – the only visual indication of any new technology being present within the exhibition close to any single exhibit was a small (5x8 cm) and unobtrusive QR code tag, engraved in birch ply and placed under each artist’s statement. However, on an invigilation desk set up at one end of the exhibition an iMac computer with a high resolution screen displayed the website as a whole, and films could be accessed this way.

In addition, there were also two iPads which visitors could book out at the desk and carry around the exhibition, watching the films as they encountered a new exhibit, returning the iPad when they were
Evaluation

Audience feedback

During the week-long exhibition at the Falmouth University Design Centre, use of the website was tracked through a statistics package. This indicated that there were almost 2,500 page views of the ‘In the Frame’ website recorded. On average, web visitors looked at 5.5 pages (out of just over thirty) and half of this traffic as on mobile devices. Audience reaction was also gauged through questionnaires. The questionnaires were placed on the invigilation table, so they tended to be completed by iPad users after an iPad was returned. In total, thirty-eight questionnaires were completed. Typical questionnaire respondents were female, with an average age of thirty-four. Respondents were asked to rate how familiar they were with the Contemporary Crafts Course and on average they were moderately familiar, although there was a wide spread of answers to this question, including some visitors with little or no previous contact with the course.

Respondents reported watching an average of about half the videos. If correct, this would indicate around fifteen videos, suggesting that questionnaire respondents were more committed to watching more videos than the overall web traffic. Three out of four questionnaire respondents accessed the videos via the iPads supplied and they were overwhelmingly very happy with their experience. An average score of ninety out of a hundred was recorded (where 0 = not at all and 100 = very much) for how much they felt the videos helped them ‘appreciate the students work’, and eighty-nine out of a hundred for how much the videos had ‘added value to their exhibition experience’. There was a similarly positive score of eighty-two out of a hundred for whether they would ‘like to see such techniques used in other exhibitions or galleries’.

Remarkably, two out of every three respondents were impressed enough to leave a handwritten comment in a box provided on the questionnaire. Of the twenty-six comments received twenty-one were wholly positive, praising the idea of the videos and particularly enjoying the ability to ‘put a face to the name’. Respondents noted that it was good to see the students ‘speaking so passionately’, that it brought ‘the exhibition to life’, and that they had been able to see how ‘ideas had developed’. They used very positive language including the words ‘excellent’, ‘brilliant’ and ‘fabulous’. Of the remaining comments, two concerned positive comments solely about the craft work itself. There were very few negative
comments: two mentioned that the iPads were ‘heavy’ and one mentioned the lack of earphones, commenting that without earphones the experience is ‘in the public domain’, a reference to the sense of greater public engagement with the work, noted above by the researchers.

Two people commented on the need to retain the primacy of the work. One commented: ‘It did enhance it but the pieces that stood out in the first place are the ones I scanned’, and another added: ‘Just got the audio which was good as it didn’t distract too much from studying the work’. The researchers consider that these comments relate to the importance of not allowing an exhibition to move too far away from enabling the quiet contemplation of the work itself, if that is what a visitor primarily wants. The quality of the experience seemed to depend, in part, on giving visitors the ability to choose how, and how much, to interact with audio-visual materials, which may be different for each particular visit or visitors. Family groups, for example, seemed to enjoy sharing iPad viewing, whereas some smartphone users were happy to explore using the QR codes independently. Some comments are highlighted below. The majority of questionnaire respondents were exhibition visitors who had chosen to make use of the iPads provided and, in part, the researchers felt this indicated they would be likely to have a positive attitude from the outset.

- ‘A great insight into the individual artist’s thoughts and intentions’
- ‘Great iteration between exhibits, artists and viewers’
- ‘Good to put a face to the name’
- ‘Listening to the videos made me stay longer’

Student feedback

This voluntary project was popular with students – nearly all took part and almost all were happy to share their finished video with the public. A formal survey was conducted with students by email through SurveyMonkey after the event. Slightly fewer than half the students replied. Most were very happy with their video, although a few reported finding the filming process quite difficult. One hundred per cent of the respondents would recommend taking part to next year’s students if the project were repeated and almost all felt the video had added value to their final project. Most of this small group of respondents also reported that they were likely to use digital media to support and promote their practice in the future. The project therefore functioned as an introduction to digital media marketing for some students, and a few discussed using the videos or similar materials for their own websites.

The ‘In the Frame’ website enabled visitors to leave comments and to share content, for example by linking with Facebook, Twitter and other social media sites. Individuals visiting the exhibitions did leave comments, but these tended to be a handful of short and supportive statements rather than provoking engaged public discussions involving several contributors. The comments were typical of those seen in traditional comments books. The researchers felt that to fully exploit the interactive potential of these technologies would require more emphasis on using the website well before an exhibition opening, for example sharing the site and the exhibition set-up, news of exhibitors and so forth, through a wider established social media network. This potential to build an audience and a broader conversation was not, in this pilot, fully explored and would require the organisers to have a substantial social media following and a strategy to engage a longer-term interest. The costs of the project were kept to a minimum by using available university resources and staff, w-cost technologies and by keeping filming and editing time to an absolute minimum. The external costs for producing the videos were comparable to the printed exhibition catalogue.

Researchers’ reflections

Interviewing, curating, art directing, constructing digital identity

The film-makers played a significant part in developing narrative with the students: using a set of questions that had been agreed by the project team at the outset as prompts, they became adept at drawing out narrative elements through developing and extending those questions and putting the students at ease. Subsequent to shooting these first ushes, a large proportion of the work for the researchers on this project was concerned with the production of films, an the website, working in close collaboration with students, the film-makers and technologists. There was a great deal of time spent critically reviewing footage, and developing a coherent narrative for the films that the students were happy with. A variety of approaches was employed: some students were keen to appear in the video themselves, often presenting, handling, and explaining a piece of work, others preferred to be heard but not seen, the work alone appearing on camera, and a few
opted for a professional ‘voice-over’. This variety of approaches was led by the students and developed through a three-way dialogue between students, researchers and film-makers. In one particular film the student used another’s voice to read a prepared poetic text over more abstracted footage of their work, resulting in a creative piece of film that complemented their work rather than describing it in any direct way. This developing spectrum of approaches is useful in considering appropriate ways for a diverse range of individuals to represent themselves. It is also useful to note that it was possible to host all of these approaches within the standardised structure of the website.

Within the parameters and constraints of an undergraduate professional practice project, the use of a multipurpose standardised structure served to highlight the central role of rehearsing and developing the emerging practitioner’s voice. The authoritativeness conferred by the standardised editorial, high production values and the contextualisation of the videos in close proximity to the curated objects allowed for individual narrative authorship to clearly emerge and demonstrated for participants the significance of presentation, both of themselves and their work, as important aspects of practice.

This process of making narrative raises questions around the construction of identity, authenticity, and subsequently its curation on the ‘In the Frame’ website. For this project it was important that the films were viewed in the context of the exhibition alongside the work on show. The website was initially hosted on the Falmouth University servers and behind a firewall, meaning that it was only possible to see the website when the viewer was on campus. This restriction was designed to make the viewing of the work and the film an egalitarian experience, where the work itself was intended as the main feature. The project revealed multiple layers of curatorial activity undertaken by all members of the team at different stages, including shooting and editing the films; creating a graphic motif for ‘framing’ the films and giving identity to the website; designing the user interface for the website; and considering the methods of access to it. This element of the project raises questions for future work within traditional gallery contexts and entirely online environments. Research in the area of digital curation and its relationship to social media is growing rapidly and is of significance to artists, individuals, retailers, galleries and museums (Cairns and Birchall 2013), and is an implicit area of inquiry for the Supercrafted project.

**Conclusion**

One aspect of particular interest to makers is the opportunity to support an object’s value through information about its provenance, delivered in an easily accessible video format. The audio-visual approach to relating provenance employed in the project was rated very highly in the audience responses, and this was found to be consistent with examples found in the literature that highlight an interest in narrative among craft audiences. The main objectives of this project were to enhance public engagement with the student work by providing a short professional video clip accessed in a number of ways and providing a novel and playful alternative to reading a text-based artist’s statement. The audience reaction to meeting these objectives was overwhelmingly positive, with feedback contributing useful data towards the overall aim of testing audience responses to different types of content and delivery mechanisms. In addition, student engagement and confidence in dealing with digital media and the potential interest in their work was greatly enhanced. However, the potential for video and website hosting to fully engage an audience before and after an exhibition was not fully realised as the pilot was not integrated into a wider social media strategy. Conversations with the audience were begun within the exhibition timeframe but were not sustained.

The research demonstrates how this kind of contextual material can provide added value, but its delivery needs to be given very careful site-specific consideration – it’s not a one size fits all solution. Both the content and the delivery mechanisms need to be tailored to the audience or audience groups and sit comfortably within the exhibition setting. In particular, consideration should be given to the level of audio intrusion, and the ease of use of mobile devices. This consideration needs to take account of a range of different audience preferences and scenarios. For example, only those smartphone users who had a QR code reader downloaded and were already interested in this particular mode of access made use of it. The iPads were more easily accessible.

Encouraging feedback and greater engagement through digital channels was found to be relatively easy at an immediate level – direct comments on exhibited work were posted by a number of visitors. However, the research suggests a longer-term strategy that integrates a number of social media platforms and actively promotes makers and work;
using an exhibition website as one element would potentially have a much greater effect in building an ongoing relationship with the audience.

In this case, the high quality of the video production values and the focused passion of the students talking about such an important stage in their career combined to produce a variety of content well worth watching, at an affordable cost for a single exhibition. It is one of the most noteworthy aspects of the research that it proved possible to access, and ‘bolt-together’ into a bespoke technology solution, low-cost or free, and widely available, internet-based applications. Here this included the generation of QR codes, building a WordPress website and linking this to Vimeo video hosting. As a pilot study, it proved both the popularity of video and the feasibility of low-cost applications for craft maker narratives. However, the research suggests more value could be unlocked, both for audiences and the event organisers, by using such projects as part of a wider digital marketing strategy.

‘In the Frame’ is just one example of how projects can make use of the extensive diversification of communication channels and platforms available through internet-based digital media. This enables new types of information to be presented, data exchanged and connections to be made, providing new collaborative opportunities that can fin expression within the work itself, or within the design, manufacture and marketing of work. The conclusion drawn from this project and the wider literature review was that this diversification of communication channels and platforms, facilitated by low-cost internet applications, in turn facilitates a potentially transformative impact on the relationships within craft value chains – the chain of participants actively engaged in craft businesses – from materials suppliers through to makers, sellers, audiences and buyers.

Increasingly exhibition visitors have begun to expect interpretive resources to underpin and enhance their experience. Increasingly too, opportunities are afforded by social network platforms to comment, share, leave traces, and go behind the scenes. The construction of a mobile virtual encounter with the artist through this project can be seen as an extension of these modalities. Enhancing the visitor experience through digital technology presents a curatorial design challenge, one that needs to be tailored to acknowledge the growing sophistication of both visitor expectations and digital literacy.

Relatively recent studies of the use of PDAs and the like in museums and art galleries designed to bookmark selected exhibits in order to extend the visit (Filippini-Fantoni and Bowen 2007) concluded that the idea that visitors might continue their investigation and exploration once outside the confines of the exhibition had been shown to be less effective than might have been expected, and that perhaps the enhancement of experience during real-time encounters with objects should form the main focus of such initiatives. The rise of social media platforms would seem to support the democratisation of exhibition interaction and is shaping an audience-centric world of connected opinion and discourse. As ‘In the Frame’ demonstrates, drawing upon the architecture and vernacular of social media serves to provide a recognisable and sympathetic experience for the exhibition visitor.

Phygital potential

The Supercrafted project aims to build on this pilot by promoting the idea of the value of video-based narratives and social media marketing to the craft community. One area of particular interest to the researchers is the potential for associating video-based narrative even more closely with the crafted object itself. Physical objects that have integrated digital content accessible, for example through scanning a QR (or other code) located within the object design, fall within the broad area of ‘phygital’ technologies. The researchers believe that, as with the ‘In the Frame’ pilot, the main factors in a successful outcome would be building both content, and a process for accessing content, that concentrates on achieving a good audience perception and gives priority to an innovative, aesthetically pleasing and not overly intrusive audience experience. The research demonstrates that digitally crafted content can only complement and add value to physical craft by acknowledging the need to engender a similarly engaging and considered quality, and that this is primarily achieved by maintaining high standards in content, production values and workmanship. In this sense, ‘In the Frame’ was a craft project.

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References


In 2009 Craft Scotland launched its campaign, “the C Word.” The allusion to blasphemy and street slang was deliberate, naughty and inspired. The ‘obscene’ phrase raised the ire of some Scottish craft practitioners, but the campaign, intended for television and cinemas throughout the United Kingdom, attracted attention. Not only were Scotland and Britain alerted to the contemporaneity of craft, the world took notice, too, and several international jurisdictions requested permission to adopt the C Word campaign.

In essence, what Craft Scotland did was rescript craft, both literally and figuratively, in order to attract a new audience. Instead of accepting the status quo, which characterizes handcrafted products as traditional, old-fashioned, staid and devoid of design currency, Craft Scotland rewrote this perception for its cinema video and the field itself. It asserted that the goods under its purview are exciting, street-wise and sexy. The organization made no distinction between Scotland’s heritage crafts and those that incorporate new materials, methods and forms. All craft made now is contemporary, current, and clever, and worthy of encapsulation in the risqué designation “C word.”

Craft Scotland’s example shows that while the objects that are created, and the makers who function under the rubric of craft have not changed, the language with which it is portrayed can. This revised language—the script—altered perceptions and brought attention to a commodity that had been perceived as fusty and dusty. Craft Scotland’s rescripting or remaking of craft serves as a model for the potentiality of bringing prominence to the handmade.

Tony Fry, an Australian design critic and philosopher, explains remaking: “While remaking can mean a literal disassembly and re-creation of some thing, it can equally leave an object-thing totally untouched, but rather transform how it is viewed and used by radically changing its meaning and status” (206).

This paper will address craft’s rescripting beginning with a brief introduction to its theoretical underpinning, Actor Network Theory (ANT), which proposes that objects have agency. Examples of mechanical devices to which ANT has been applied will be provided, followed by ANT’s application to craft. The agency of craft with respect to public perceptions regarding technology, skill and materiality has not been fully exploited and this agency becomes especially relevant in a cultural climate attuned to issues of sustainability. Finally, using studio furniture as a case study for rescripting, the presentation will offer says in which this craft product can be rescripted to make it an ecologically appropriate and ethical choice compared to mass produced furniture. The author’s aim is to inaugurate discussion of rescripting/remaking within the craft community as an element in re-building a sustainable world.

Abstract
In 2009 Craft Scotland mounted a successful campaign to cast craft in a new light. Called ‘The C Word’, the campaign undertook, I argue, the rescripting of the extant perceptions of craft as old, out-of-date and irrelevant to the 21st century. This paper will address craft’s rescripting beginning with a brief introduction to its theoretical underpinning, Actor-Network Theory (ANT), which proposes that objects have agency. Examples of mechanical devices to which ANT has been applied will be provided, followed by ANT’s application to craft. The agency of craft with respect to public perceptions regarding technology, skill and materiality has not been fully exploited and this agency becomes especially relevant in a cultural climate attuned to issues of sustainability. Finally, using studio furniture as a case study for rescripting, the paper will offer ways in which this craft product can be rescripted to make it an ecologically appropriate and ethical choice compared to mass-produced furniture. The author’s aim is to inaugurate discussion of rescripting/remaking as an element in re-building a sustainable world.

Keywords
Actor-Network Theory, rescripting, studio furniture, craft, sustainability, New Zealand

In 2009 Craft Scotland launched a campaign called ‘The C Word’. The allusion to blasphemy and street slang was deliberate, naughty and inspired. The ‘obscene’ phrase raised the ire of some Scottish craft practitioners – obscenity can be defined as offensive to existing notions – but the campaign, comprising print media and a video advertisement intended for television and cinemas throughout the United Kingdom, attracted attention. Not only were Scotland and Britain alerted to the contemporaneity of craft, the world took notice, too, and several international jurisdictions requested permission to adopt the C Word campaign.

In essence, what Craft Scotland did was rescript craft, both literally and figuratively, in order to attract a new audience. Instead of accepting the status quo, which characterises handcrafted products as well made yet traditional, old-fashioned, staid and devoid of design currency, Craft Scotland rewrote this perception for its cinema video and the field itself. It asserted that the goods under its purview are exciting, street-wise and sexy. The organisation made no distinction between Scotland’s heritage crafts, such as knitting, weaving and metalwork, and those that incorporate new materials, methods and forms. All craft made now is contemporary, current, and clever, and worthy of encapsulation in the risqué designation ‘C word’.

Craft Scotland’s example shows that while the objects that are manually created and the makers who function under the rubric of craft have not changed, the language with which it is portrayed can. This revised language – the script – altered perceptions and brought attention to a commodity that had been perceived as passé. Although statistics are not available to gauge the efficacy of the campaign with respect to sales, Emma Walker, the Executive Director of Craft Scotland, stated: ‘it has opened many doors for Craft Scotland, the Scottish sector and I believe the sector internationally’ (2012). Craft Scotland’s rescripting or remaking of craft serves as a model for the potentiality of bringing prominence to the handmade. Tony Fry, an Australian design critic and philosopher, explains remaking: ‘While remaking can mean a literal disassembly and re-creation of some thing, it can equally leave an object-thing totally untouched, but rather transform how it is viewed and used by radically changing its meaning and status’ (2009: 206). Applying the concept of rescripting, this paper examines the practice of studio furniture in New Zealand and recommends ways in which its current ‘branding’ can be rewritten to ensure furniture’s, and society’s, future.

Scripting technology
Madeleine Akrich delineates scripting: ‘like a film script, technical objects define a framework of action together with the actors and the space in which they are supposed to act’ (1992: 208). Latour provides a readily-visualised instance when he...
climbs into his car and immediately encounters the safety, moral and legal scripts embedded in his seat belt. The belt’s installation is to ensure Latour’s well-being, but if he does not want to be strapped in the result is that he is harassed by beeping and flashing lights. These mechanisms ‘enforce’ the legal sanction to wear the belt; were he to seek measures to disengage the mechanisms, he faces his moral contravention of socially-accepted norms. The seat belt prescribes the actions of the vehicle driver and passengers. Yaneva’s example of the keyless door lock embraces other social parameters. Access – and exclusion – are embodied in such locks. Not only has the lock been designed to mechanically differentiate those sanctioned to breach a barrier, it addresses human fallibility, whereby keys are not always at hand, and defines literal and figurative insider/ outsider communities.

Actor-Network Theory (ANT), of which scripting is a part, analyses the relationships among humans, non-humans and organisations. ANT is based in the sociology of science and technology where technology is defined as a tefacts. Within the discipline of anthropology, Bryan Pfaffenberger disputes such a limited definition and proposes two definitions of technology: technique, which constitutes the materials, tools, skills, knowledge and process of making tangible artefacts; and a socio-technical system, ‘the distinctive technological activity that stems from the linkage of techniques and material culture to the social coordination of labor’ (1992: 497). Pfaffenberger’s system places making and the made in a societal context including factors such as economics, geography and politics. Tim Ingold affirms a distinction between technique and the system in which it is embedded, but argues that while technique requires a human subject’s shaping of material to produce things, technology is generalised, objective knowledge that is independent of human production or use. He states further that technique, which comprises both ‘practical knowledge and knowledgeable practice’ (2000: 316), has gradually been replaced by ‘increasingly indispensable’ technological systems that denigrate manual activity: ‘Far from complementing technique by providing it with a foundation in knowledge, technology has forced a division between knowledge and practice, elevating the former from the practical to the discursive, and reducing the latter from creative doing or making to mere execution’ (2000: 316).

As anthropologists, Pfaffenberger and Ingold are conscious of the human component of technology and their research embraces handmade objects. By contrast, Latour and Yaneva centre their discussions on mass-produced objects and the built environment. To date, the majority of ANT-based writing about technology has concentrated on the impact of technical devices – electrical generators (Akrich), computers (Benoit-Barné) and appliances (Slob and Verbeek; Watkins) – on human actors. There are a few exceptions but little notice has been paid to non-mechanical objects such as craft. Neither has particular attention been drawn to the ecological aspects of the technical devices chosen. For instance, returning to Latour’s seat belt, he does not address the additional scripts that the very choice of a personal vehicle entails: the sanctity of the automobile as a mode of transport, the prevailing concept of time/speed that justifies the use of private vehicles, the consumption of finite raw materials to create both the seat and its host, and the morality of donning a seat belt and turning a car’s ignition switch when the consequence is carbon emission. Burgeoning environmental degradation necessitates consideration of these scripts as well.

The history of technical devices is replete with instances of an object’s creation for one purpose and subsequent remaking for an alternative use. Polytetrafluoroethylene (PTFE), marketed by Dupont under the brand name Teflon, as originally employed as a coating in America’s first atomic bomb, and molded into the nose cones of proximity bombs. When the fluoropolymer was successfully adhered to aluminum pots and pans in France in 1954, the product was remade for the domestic environment. Now PTFE is undergoing another remaking/rescripting as a carcinogen whose ingestion, as a consequence of proximity to food in non-stick cookware, should be avoided.

Another adaptation concerns gramophone recordings whose spiral grooves were the means of music and sound reproduction for most of the 20th century. In recent years, hip hop DJs have manipulated vinyl records on a turntable in a procedure called ‘scratching’ in order to create sound bricolage. Recollection of the care with which LPs were formerly handled shows how radical the rescripting can be. Both PTFE and scratching are indicative of rescripting’s time factor – a product’s longevity lends itself to revised uses – and its adaptation by an environment outside the technology’s original context. A gramophone record user is unlikely to employ the vinyl record for anything other than what was intended; recontextualisation of the record leads to its rescripting.
A book – a bound volume of sheets of paper on which text has been written or printed – has an intended script, that of a narrative to be read. But users may devise other scripts: doorstop, missile, flower press, shelf decoration. In François Truffaut’s 1966 science fiction film Fahrenheit 451, a literal script made books into subversive agents that were deemed anarchic: they had to be destroyed. Fahrenheit 451 is a microcosm of the two-fold nature of technology: books as products of materials, tools, skills and knowledge, and an encompassing system that dictates how, when, where and by whom books will be used. This example demonstrates that like a film or theatrical script, a technology’s script can be revised, edited, augmented and interpreted, to alter, enhance, or undermine the original scenario. It also shows that all artefacts are fluid in terms of use, and that ANT is applicable to a wider range of objects than previously recognised.

The possibility for the script for craft to be rewritten is what I now wish to address. My PhD thesis, which examined the practice of studio furniture within the contemporary craft movement in New Zealand, facilitates my proposal to remake handcrafted furniture. My discussion concentrates on furniture but its parameters can be extrapolated to craft generally. I begin with a brief history of craft in New Zealand and move on to the rescripting of furniture.

New Zealand craft and care

Crafts – spinning, weaving, blacksmithing, furniture-making – were practised in New Zealand, of necessity, as soon as the first non-Māori settlers landed. As the nation progressed, the need to spin, weave or make chairs for self or family diminished. Nevertheless, craft activities persisted as modes of expression and were publicly displayed at exhibitions and agricultural fairs. By the 1960s, with the worldwide revival of crafts and the affo dability of travel, European practitioners migrated to New Zealand, bringing not only transferable skills and standards but a reverence for craft that had not previously existed. Esteemed visitors – Bernard Leach and Shoji Hamada, James Krenov and Alan Peters – also came, fostering connections and minimising New Zealand’s isolation from the global craft community.

In 1964, two New Zealand delegates attended the inaugural meeting of the World Crafts Council (WCC) in New York. One of those attendees, Nan Berkeley, enthusiastically embraced the World Crafts Council and adapted it to New Zealand. She undertook the small yet significant deeds – newsletters, exhibitions, regional and national advocacy – that brought craft out of the private sphere into the public one, and inspired other individuals to advance the visibility and standards of New Zealand craft. By 1978, New Zealand’s WCC chapter had evolved into the Crafts Council of New Zealand (CCNZ). Both organisations assisted the burgeoning numbers of crafts practitioners during the 1970s and ’80s by launching a number of initiatives: 1) education, by means of workshops and tertiary certificates/diplomas, that advanced skills and produced a cohort of practitioners who could perpetuate craft; 2) exhibitions, with both commercial and non-commercial aims, that brought the general public’s attention to handcrafted goods; 3) publications, which served as communication, connection, recognition and education devices; and 4) a physically prominent craft centre in the national capital of Wellington that showcased, resourced and advocated for all craft media. Almost all of these initiatives came from the bottom up and were realised due to a handful of visionaries like Berkeley.

During the five-year period from 1987 to 1992, craft lost its foothold. Until 1984 craftspeople enjoyed government protection by means of high tariffs on imported goods, thereby making craft practice and craft products financially viable. With the election of a Labour government in that year, gradual liberalisation of policies and state-controlled enterprises changed the nature of New Zealand society. Locally-manufactured goods were exposed to worldwide competition which, coupled with the stock market crash of 1987, eroded the market for handmade products. As part of the removal of state involvement, the education system was restructured in 1989 so that programmes that were formerly under the purview of a national education department reverted to control by individual institutions. Certificates and diploma courses in craft, that the CCNZ battled to inaugurate, were more expensive to administer than visual art, and were placed under that umbrella in 1991. In addition, the elimination of government funding for the CCNZ in 1992 eroded the visibility and viability of the Crafts Council of New Zealand and its practitioners. Successive governments saw craft only for its potential export earning and were indifferent to any concomitant loss of traditional skills. At the same time, elevation of academic education over manual training overlooked the variation in abilities and interests of the populace, and the basic needs of the social structure. From the mid-1990s to the present, several initiatives – ‘The Persuasive Object’, ‘Volume’, ‘Craft Now’ – attempted to restore the visibility of craft. These
events were enthusiastically attended, yet without a national coordinating body, enthusiasm did not translate into actioned resolutions.

Currently, opinion on the maintenance of the practice of craft in New Zealand is divided. One side of the debate says that society is no longer obliged to make domestic items by hand; beautiful though they may be, handmade chairs, cabinets and tables represent a by-gone technology. The argument proceeds that, since New Zealand is a small country with limited resources, investment in supporting and teaching a craft practice, such as woodworking, is not forward thinking: this country must adopt progressive technologies. Others argue that the time-honoured techniques of artisanry are integral to the culture; because the techniques are still viable and their maintenance may be good insurance for an unknown future, the costs to preserve and disseminate them must be paid. The latter view was given credence after the major Christchurch and vicinity earthquakes of 2010 and 2011. The lack of a coordinating body for artisans meant that grassroots efforts had to be employed to find the new artisans capable of restoring damaged heritage buildings. Until advanced joinery and woodworking techniques – separate from carpentry for the building trade – are recognised as valuable and instituted in the New Zealand educational curriculum, there will continue to be a dearth of skilled practitioners to call upon when needs arise.

The rescripting of craft necessitates a paradigm shift. The distinction between technology and technique, identified by Ingold, represents the prevalence of a modernist ideology focused on innovation. In this respect, New Zealand whole-heartedly embraces technology and design as agents of economic advancement. The rescripting of craft would be a step in ameliorating this attitude. In the 1990s Tony Fry wrote several essays about the future of design in which craft played a significant role. He felt that re-creation of design is so important that he termed it ‘sacred’ (1995: 193), which is not a religious concept but an intangible collective sensibility at the core of being human. Being sacred could be described as having meaning. Fry added that sacredness does not happen by itself: sacred design evolves out of caring: ‘It is by the hand, with care as craft, that the sacred can be made’ (1995: 211).

Fry is saying that meaning can be derived from the handmade, where care is a component of the making. Care is a human quality that enables social functioning and demonstrates an awareness of nature’s symbiosis with society. A continuum of care encompasses people, materials, the environment, and the future. Within the re-creation of design, Fry delineates a place for craft that is not marginal:

Craft knowledge should not be viewed in a developmental lineage in which it is placed behind new or high technologies, for it is essential in keeping and making the world human and in artificially sustaining the ecosystem. Craft knowledge is, therefore, behind, in front of, and in competition with noncraft technologies. It is not, in terms of importance, marginal. Craft knowledge is in fact of central importance to the future. (1995: 212)

Fry envisioned that craft has the potential to embody care of the planet, materials, tools, objects (from cradle to grave), the maker and the user. Such a vision is holistically human-centred. In concurrence with Fry’s argument that craft historically preceded, is informative basis for, and vies with new technologies, I now proceed with the remaking or rescripting of furniture. This rescripting adds ecology to an object’s scripts.

A revised script for furniture

The current script for studio furniture in New Zealand is that it is achieved by traditional, ‘old-fashioned’ means, for a minuscule clientele. For the general public, bespoke or one-of-a-kind furniture tailored to a client’s needs: 1) does not exist; 2) is not affordable; 3) is accessible only through design professionals like interior designers and architects; or 4) is a luxury and financial possibility for the elite few. This script is based on hearsay, not facts. Unless craft generally, and studio furniture in particular, are ‘common knowledge’, the prospect of their purchase does not arise. In addition, there are limited resources in New Zealand to market craft at a local or national level so it’s not in the marketplace. Economic emphasis on export rather than domestic markets has contributed to studio furniture’s infrequent presence in the public realm. The medium did not disappear when imports flooded the market but was accessible solely via a localised network. I propose, therefore, the remaking of studio furniture.

The script for studio furniture in New Zealand could be rewritten both within the context of craft and outside it. Within craft, the rise of studio furniture cannot be divorced from the history of the World Crafts Council and the Crafts Council of New Zealand. The history and demise of the
CCNZ are important parts of the furniture script, in that furniture makers were influential in that organisation, pursuing mandates regarding professionalisation, education, design literacy, standards, and international connections; when the CCNZ disbanded, progress in informing the public about studio furniture went by the wayside too. Within craft, furniture aligns with other media whose essence is hand-making: pottery, weaving, leatherwork, glasswork, jewellery, blacksmithing, etc. As such, it should be seen in a general sacred craft script. A significant basis for craft's rescripting is its ability to provide meaning and generate community. Richard Sennett's latest book, Together, criticises the loss of community that pervades neo-capitalism.

Outside the context of craft, studio furniture warrants its own script. The professionalisation of woodworking removes it from the New Zealand realm of craft, where it sits uncomfortably alongside weaving and lacemaking, which eschew professional aspirations. Instead, a new script brings the public's attention to bespoke furniture as an alternative to local factory-made products and imported goods. The rewrite incorporates practical, ethical and environmental values alongside aesthetic ones. A script for New Zealand studio furniture would include the following elements:

- holistic, meaning that from inception to user it is the responsibility of a human being
- functional, including performing the functions of art
- a designed product with a personal aesthetic, instead of being anonymous
- unique – crafted products are one-of-a-kind
- incorporates quality construction
- affordable when looked at from a long-term cost-benefit perspective
- recyclable – can be passed down through generations; it can be renewed or repaired
- involves the ethical procurement and use of materials
- human-centred – its intended users are individuals, not a 'mass'
- involves local transportation, resulting in a reduced carbon footprint
- provides support for local businesses and resources like timber merchants and materials suppliers
- engages the patronage of local artisans

Each aspect is part of a holistic narrative supporting a 'brand' for sustainable New Zealand studio furniture. Today and tomorrow, this narrative is necessarily directed to consumers conscious of sustainability – in the Sustainment (Fry 2009: 45–7), this narrative will resound universally. The Sustainment is an age when all decisions and actions are determined with a view to sustainability, including destruction of, or change to, the non-sustainable, such as: ‘our relations of material and interpersonal exchange; what we make, how we make it and from what; the way we live and organize our ways of life; what we value; how we treat each other collectively at every level from the local to the international’ (2009: 45).

Fry's Design Futuring identifies further scripting scenarios: ‘Objects actually inhabit complex relational assemblages that constitute particular environments that themselves have designing agency that again evidence a causal determinacy that is contrary to a linear model’ (2009: 35). Fry is arguing that objects influence their environments, echoing Joshua Pollard: ‘objects have the capacity to re-channel human actions and perceptions of the world’ (2004: 56). James Leach, in his research in Papua, New Guinea, came to a similar conclusion: ‘the creation and use of an object elicits a particular form of social and political relations between persons’ (2002: 731). These statements reiterate the arguments of ANT-inspired theorists.

The insertion of a piece of studio furniture into a room has more effect than simply function. A David Haig rocker (Figure 1) or Greg Bloomfield's stereo cabinet (Figure 2), for instance, has considerable impact on its owners' environment. It changes the mood, interior decoration, and focus of a room; it alters sensibilities, in that viewers, both occasional and frequent, are exposed to an alternative realm of possibilities. The presence of the handmade invokes tradition, time and care-full manufacture; the evocation of senses – touch, sight, smell, sound – make the room a desirable destination. Handcraft conveys emotions: security, home, comfort, a timelessness. Whereas knockdown furniture, like Ikea, is functional, designed and affordable, and may elicit pride in its successful assembly, its script differs radically from that of its bespoke rivals. Bloomfield's and Haig's furniture incorporates the characteristics of the sustainable studio furniture brand – functional, well-made, long-lasting, locally-designed and constructed – while satisfying a consumer's desire for self-expression and meaning in their surroundings. In addition, New Zealand benefits environmentally, culturally and economically.
Haig's rocker design, modified over thirty years, is about form and faultless construction.

Bloomfield’s cabinet is inspired by music; the forms are reminiscent of instruments – harp, cello, kettle drums.

Furthermore, studio furniture’s script is about makers who enact and symbolise the human qualities of individuality, variation, and irregularity (Sennett 2008: 84). In other words, they are real and fallible mortals, like you and me. The makers have names and personalities that are embedded, both literally and symbolically, in the work. Purchasers, if they choose, can connect with the furniture maker personally and/or symbolically: the ownership of a piece of studio furniture signifies respect for an identifiable person, lifestyle and code of ethics. The makers are ever-present like-minded guests, and their work facilitates and represents human connections. In summary, the integrity of the object, process, and maker goes on designing – for the maker, the user, the maker/user’s community, the maker/user’s heirs, the nation and the environment – while allowing each participant to create their own relationship with the object.

**A revised script for society**

Whereas my proposal is for a revised script for studio furniture, the next step is a revised script for society. Such a view revisits John Ruskin and William Morris, who created utopian scripts that included craft practices. In this century, Fry espouses the remaking of the traditional in his utopia:

This remaking requires intervention by cultural leaders to expose tradition as a product of incremental change, thus opening the possibility of it being available for future innovation ... craft practices, furniture making ... – things that all initially arrived out of responses to particular environments – there is often the possibility of innovation and reinvention taking traditional forms as a starting point. What is being evoked here is ... the rematerialization of the culture by making new forms, knowledge and values from the old that, above all, recreate a sustaining social ecology as a foundation of change. (2009: 102)

Aspirations to remake and rematerialise culture are cross-disciplinary. T.M.S. Evens, an anthropologist, distinguishes ‘dualism’, which separates subject and object, and ‘non-dualism’, which posits a relationship between the two (2008: 1–2). Non-dualism, says Evens, ‘serves to re-create human nature as a matter of responsibility for self and other. In other words, it re-creates it as a matter of ethics’ (2008: 8). Ethics is a value that Evens believes is a given for all human beings; and the advance of ethics requires remaking of culture via ‘the considered cultivation of a nondualist ontology’ (2008: 13). Philosopher David Cooper suggests that we should not always be seeking something new, but revisiting the old, which is, simply, learning to live life. Acceptance of the holism of new and old would assist in eliminating the unsustainable modernist penchant for novelty.
Tony Fry designates craft as an environmental mediator because of its embodiment of care. Care has been identified as critical in a cross-disciplinary rescripting of culture as it exists (Sevenhuijsen 1998). Care, like craft, is old and re-newable. Rescripting of craft and furniture complements Fry’s foresight for the Sustainment, a time when design will extend beyond a product’s function and configuration to interactions, consequences and endurance. Within the critical discussion of craft, no-one has suggested craft’s rescripting, and this proposal, while still needing development, is an approach towards enabling craft’s and society’s sustainability.

Notes

1. Craft Scotland had six offers, from countries such as Australia and Canada, to buy or lease the campaign (Walker 2012).

2. This paper considers Pākehā (non-Māori New Zealand) crafts. Māori crafts were not within the purview of my thesis. Furthermore, were rescripting of Māori crafts deemed necessary, it must be within the Māori tribal structure.

3. The announcement of a vocational Crafts Education Programme in June 1985 by the Minister of Education, Russell Marshall, was indicative of this perspective: ‘The potential value of the craft industry for employment and as a major earner of local and overseas funds is recognized in an important feature of the Budget education package, with the funding of Certificate courses in craft education at 10 technical institutes or community colleges. … There are few opportunities for people to pursue vocational education or training in crafts in this country, yet the overseas and local earning capacity is growing rapidly, with current earnings estimated by the Crafts Council at $40 million each year’ (Minister of Education).

4. ‘The Persuasive Object’ was a symposium that took place at Unitec Institute of Technology in Auckland in 1998; ‘Volume’ was an initiative of the Hawke’s Bay Museum and Art Gallery in Napier in 2008; and ‘Craft Now’ was staged at the Centre of Contemporary Art in Christchurch in 2009.

5. The Centre for Fine Woodworking, a private furniture-making school, put out a call in its April 2011 newsletter: ‘Many craftsmen will need to be assembled no doubt to restore some of Christchurch’s heritage buildings and this will form a national data-base for that and future projects. The NZ Historic Places Trust [Christchurch] would be interested to hear from any talented craftsmen and women with traditional skills to undertake restoration work on earthquake damaged heritage buildings. … If you or anyone you know are able to offer any of the skills then please send your details to us’.

6. From an introduction to a CEO Summit in 2010 under the auspices of New Zealand Trade & Enterprise: ‘Design integrated companies have evolved to be fundamentally different from other businesses. They create stronger and more appealing products and services, they inspire their people through fostering a dynamic organizational culture, they collaborate to turn their ideas into reality and they create loyal and passionate customers who are willing to pay a price premium. Companies that embed design create new opportunities, new markets and new value.’


8. For instance, the closing scene in the 2011 Oscar-winning movie The Descendants shows George Clooney’s character and his daughters, following the death of their wife and mother, eating ice cream and watching television, under a traditional Hawaiian quilt.

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Translations Across Local-Global Divides

While craft has long been thought of as a placeholder for cultural identity and communal belonging, the relevance of this view has been fundamentally challenged through mass production and, more recently, economic globalisation, leading to the disappearance of many traditional crafts. However, this disappearance of traditional making under modern globalisation has itself led to a revived search for craft’s relevance to identity, heritage and ‘place-making’ across many cultures. This session sought to explore craft as it is defined by the tensions and flows between traditional cultures and modernity, between rural and urban cultures, between local, regional, national and global levels of interaction and translation - between notions of authenticity, cultural heritage and identity derived under the influence of indigenous and global markets, aesthetics and agencies.
Ana Afonso

The Contribution of Anonymous Artefacts to the Development of Portuguese Design

This abstract describes an on-going PhD investigation in Design that postulates that the values of longevity and identity contained in Portuguese anonymous artefacts are essential to the differentiation of Portuguese products.

This investigation intends to activate the value of Portuguese anonymous artefacts towards the development of an integrated and sustainable design process. The starting point is the premise that the revaluation and renovation of daily life utensils are essential in the overall emerging social questions in contemporary design. It is intended to show the influence of objects in the users' universe, to understand their mechanisms of attribution of meaning and feelings and to understand the processes of development and evolution of artefacts.

There are specific approaches in other countries, such as Italy, where there is a vast knowledge map about anonymous artefacts and their importance. There isn't a scientific approach in Portugal, therefore it's essential to understand the variables that will be useful to the portrayal of these anonymous artefacts. By collecting and analysing them throughout this investigation, their importance in daily life will become evident and their project values will prove they can be enhancers of new forms of contemporary construction of products or projects.

Starting from the previous platform of artefacts, the project will proceed with the development of a process of revaluation of the anonymous, a suggested model for object creation. Therefore, this research will draw conclusions on a series of workshops conducted in three different environments:

First, at the market level, it will take place as a personal approach, as a design professional, with a Portuguese company in the revaluation of an anonymous artefact, in order to determine a development model aiming the valorisation of these artefacts for the market.

Second, at the territory level, reflecting with other design professionals their point of view about this issue, envisioning approaches that gather cultures and allow social integration and the optimization of resources towards knowledge and sustainability.

And finally, at the design academies level, building and presenting a program of learning and training about the valorisation of anonymous design, as academia can have an important role in this approach of the interpretation of patrimony.

The results of these workshops will be documented and examined in order to draft a possible development model for the revaluation of anonymous Portuguese artefacts. It's expected that the workshops will result in a set of projects with the purpose of reusing meaningful forms and materials in order to create new artefacts.

The objective is to prove that the values of longevity and identity contained in Portuguese anonymous artefacts are essential to the differentiation of Portuguese industry products through the designers' approach to interdisciplinarity, identity and sustainability.
Ana Afonso

The Contribution of Anonymous Artefacts for the Development of Portuguese Design

Introduction

This paper presents an ongoing PhD research in design which postulates that the values of longevity and identity contained in Portuguese anonymous artefacts are essential for the differentiation of Portuguese industrial products through the designers’ approach to interdisciplinarity, identity and sustainability. By experimenting with them through a development model, we believe it will be possible to promote participation in these artefacts and enhance their revaluation.

The preoccupation with human and sustainability aspects in contemporary design has influenced some designers to analyse daily life artefacts, which they believe enclose a socio-cultural and human component essential to a balanced fitting of the artefact in society (Munari 1998: 113). Those objects are called ‘Anonymous’ and belong to a group of utensils that are usually characterised for their usability and semantics, exempting in this way the necessity of knowing their author.

This research aspires to contribute to the promotion of a more humane and sustainable project culture that deals with issues of technological development in a more integrated way in the socio-cultural framework. Therefore, the intent is to observe the relevance of the ‘Anonymous’ artefacts to the development of products in society in an increasingly incorporated way.

Through different participants, such as design professionals and design students, we want to present a few approaches to this reinterpretation of modern artefacts. Different processes of creation are expected to support the inspiration for design development that this research attributes to ‘Anonymous’ artefacts, and demonstrate their applicability with regard to modern product development in Portuguese industry, aiming to develop distinctive and durable artefacts.

It is important to provide clusters of innovation and differentiation through material culture, associating a set of artefacts representing historical and national identity with global requirements. Starting from this point, the interaction between the market, designers and the design academies will allow the enhancement of identity and the increase of self-esteem of the discipline and the industry.

Anonymous artefacts

Those who create objects must know how to contribute with the appropriate instrumental response that each human collectivity requires. This consists in those things that society is willing to incorporate without questioning in their way of life (Ricard 2000: 60).

A vast number of authors, not only from the design area, have established their definition of anonymous artefacts. By combining all those definitions, it may be concluded that ‘anonymous design objects are everyday objects that evolved throughout time becoming extremely functional and universal, making it irrelevant to know their authorship’ (Afonso 2010: 35).

Although they answer to simple necessities, they acquire personal meaning for their user, conditioning their daily conduct (Norman 2004). According to Alberto Bassi, who has written about a collection of anonymous artefacts in Italy (2008: 7), the ordinary objects contain a timeless essence, creating some stability amongst fashion and technological novelties. In this way they contain their community characteristics, as they become implanted in the social memory due to their significance.

The study of design makes it possible to understand the range and multidisciplinarity and also sets the study of anonymous artefacts in different areas.

We conclude that key concepts such as memory, tradition, habit, identity and technology represent a thread that leads to a contemporary perception of the integration of these objects in daily life (Connerton 1999).

These items, which have become a part of our culture, carry affections and thus integrate our
unique identity, becoming humanising objects. They are important within our existence, as they connect us to the past, and convert into memories. According to the designer Francisco Providência (2001), their importance is determined neither by their material nor their functional value, but by their symbolic and affective value, because they exist within the base of our emotions.

It is possible to observe in emblematic design projects revaluations of common and Anonymous artefacts – projects that became referenced works not only by their utility and usability and by the skills they present but also by their innovation in the way they propose new solutions (Antonelli 2005: 3). However, they also become inescapable references for the meaning they acquire and for the metaphors they enclose, conjugating cohesively these two branches of the understanding of the artefact in a more integrated and sustainable final product.

The Italian designer Achille Castiglioni (2007) is the creator of a vast number of iconic works that reflect the inspiration of daily life, as it is possible to see in works like the Mezzadro stool (1957), applying a metal tractor seat used in early industrial agriculture in Italy; the Comodo support table (1988), inspired by the mechanics of a sewing box; or the Diabolo chandelier (1998), based on the toy with the same name.

With the perspective of enhancing a healthier relationship with daily artefacts, recognising the qualities and values of quotidian objects is essential to a new design paradigm (Munari 1993). Understanding the importance of the common, trivial, simple and almost omnipresent artefacts can lead to new solutions integrated into socio-cultural involvement (Brandes et al. 2009: 10).

**Collecting Portuguese anonymous artefacts**

The approach to the anonymous artefacts associated with national values and their analysis, retrieving the points of origin of their dissemination, intends to bring to awareness and promote the benefits of their study and reinterpretation.

In the current stage of the research we aim to establish the essential characteristics regarding the definition of the artefacts. We need to understand which variables will be useful to provide knowledge about Portuguese anonymous artefacts.

This process implies a previous definition of their cultural and developmental context. Considering the need to create a system to select and organise them, a number of criteria will be set in order to scrutinise them through a common analysis that will allow the recognition of different typologies, points of contact and points of difference.

Last year we had the chance to observe one example of an object organisation system in the exhibition *Treasures of Feira da Ladra: The beauty of anonymous design*, at the Design and Fashion Museum in Lisbon. In the exhibition we noticed how the curator David Usborne (2012) opted to arrange the objects in wide functional categories, emphasising mostly their aesthetic value. Although it represents a different approach from the purpose of this research, it constitutes a valid model for sorting these kinds of artefacts.

![Figure 1. Group of artefacts collected in the Portuguese street market by collector David Usborne – presented in the exhibition *Treasures of Feira da Ladra: The beauty of anonymous design*, Lisbon, 2012. Photography by Ana Afonso, 2012.](image-url)
Because this is an ongoing research, the data collection is still in progress. Since we are focusing on objects with significance from the viewpoint of Portuguese social behaviour, past or present, there are various sources for these artefacts, such as the national patent registry, or ethnographic museums (local and national), which also represent valuable resources of objects. These collections are scattered across the country and the selection of artefacts should consider their significance as a whole, but it is also necessary to regard specific regional meanings that may be important.

An artefact that represents this ongoing selection is the kitchen spatula, which became a part of our collective memory when it was associated with the Portuguese dictator Salazar.

Figure 2. Made out of wood and rubber, this kitchen utensil for scraping bowls is not a Portuguese exclusive. However, it achieved symbolic status in Portugal, where it received the nickname of Salazar, the dictator who ruled the country for 40 years and claimed the virtues of poverty. His propaganda machine insisted on using adjectives such as humble, frugal and economical to strengthen his image. But amongst the Portuguese people the Prime Minister was becoming more and more famous for his stinginess. The Salazar spatula is the best proof of this.

We hope this analysis will enlighten the intrinsic value of these objects within the community.

**Developing a revaluation process**

Starting from the growing platform of Portuguese anonymous artefacts, the project will proceed with the development of a process of revaluation of the anonymous, suggesting a model for object creation. Therefore, this research will draw conclusions from a series of workshops conducted in three different environments.

1. The first workshop will be based on a personal approach in co-operation with a Portuguese company towards the revaluation of an anonymous artefact. We intend to determine a design framework for the market that would be applied in the next two workshops. Known projects by influential designers such as Castiglioni or Munari, or selected projects by Naoto Fukasawa and Jasper Morrisson in their *Super Normal* exhibition (2007), will be used as inspiration for the development of this artefact.

2. In the second workshop, at the territory level, there will be a reflection by other design professionals concerning this issue. There have always been several Portuguese approaches to the matter of reuse and revaluation of artefacts linked with our national identity and culture. Although they do not directly focus on anonymous artefacts, they will be valuable as a starting point for the perception of the profession. We want to envision approaches that gather cultures and allow social integration and the optimisation of national resources towards knowledge and sustainability (Branco et al. 2003).

3. Finally, at the design academies level, a learning programme on the valorisation of Anonymous design will be built, as academies can play an important role in this approach of interpretation of patrimony. Different programmes will be oriented in different ways, because for each one different results should occur, partly dependent on the student's age and understanding of the discipline.

The results of these workshops will be documented and examined in order to draft a possible development model for the revaluation of Anonymous Portuguese artefacts, aiming at their valorisation for the market.

**Final considerations**

Castiglioni (2007) aimed to promote the designer’s social responsibility. When one develops a new product, one has responsibility for analysing if it is truly needed and only afterwards research the means and resources available for design and production. This ethical and sustainable methodology seeks designers whose energy is invested in redefining new approaches on design, rather than simply looking for new styles.

The personal transformations of our modern times are relevant for the perception of the future challenges of the design discipline, as they can connect globalisation tendencies with daily life contexts (Giddens 1998). It is also important to understand how common objects can generate trust...
between the users and their modern and global surroundings.

The appropriation of the identity of these artefacts is aimed at stopping the overwhelming process of creation, production, distribution, consumption and rejection of unnecessary objects, and thereby slowing the increase of waste in material culture (Providência 2001).

Throughout this project it has been possible to perceive the interest in this matter. Thus, it is expected that the workshops will result in a set of projects with the purpose of reusing meaningful forms and materials in order to create new artefacts. We will try to show the influence of objects in the user’s universe, to understand their mechanisms of attribution of meaning and feeling and to understand the processes of development and evolution of artefacts.

The valorisation of cultural heritage as a differentiating factor that we hold in high regard will become fundamental to the affirmation of community as unique and competitive in the global market (Almeida 2006: 45).

References
The paper explains three successful cases of the binomial Craft-Design in local and, in some cases, rural development. They are real experiences carried out by the government working with designers, artists, artisans and schools with the involvement of local authorities, residents and visitors.

The first case is “Oficis ingulars” (Special Trades), a project executed by the Catalan Government which recognizes some trades’ identity related to the area of origin. These special trades are related to territory, method and product. They depend on the geographical environment where extraction of raw materials, processing and making of the final product takes place.

These experiences have been collected in workshops where designers have been involved with local artisans. One of them is the Palm tree crafting, near Ebro Delta.

Wool is also one of the Catalan Pyrenees special trades. The surplus wool of local sheep called “xisquetes” from the Àssua valley is used for local crafts development and bio construction applications. The second one is a branding case, “Empremtes de Catalunya” (Traces of Catalonia), created to fill a need in the market: provide our visitors with a guaranteed image of Catalonia through crafts and design. Traces of Catalonia are quality crafted souvenirs, both traditional and contemporary, from the Catalan countryside, its customs, history, gastronomy and art.

This is a collection of objects with very different languages, from traditional pieces to more practical ones designed for everyday life. They not only spread our cultural heritage, but also give the opportunity to activate the craft and design sector.

The third case is the biennial conferences about “Joieria i Natura a Serraduy” (Nature and Jewellery at Serraduy). Serraduy (Isavena Valley) is a place of great geological and archaeological interest in the region of Aragon-Ribagorça: a “must” for Jewellery teachers and students who want to work in nature, with geological materials, and to experiment with creative proposals.
Gemma Amat and Gloria Bonet

Craft and Design in Local Development in Catalonia

Abstract

This paper explains some successful cases of craft-design collaborations in local and, in some cases, rural development. These are real government-sponsored projects that bring together designers, artists, artisans and schools and involve local authorities, residents and visitors. The first case is 'Oficis Singulars' (Unique Trades), a project by the Generalitat de Catalunya's Artesania Catalunya organisation that recognises the identity of certain trades that have close ties to the area from which they originated. The unique trades are listed by regions, processes and products according to where the raw materials are found, transformed, and the final products made. Different projects are presented and analysed. Experiences have been collected from the workshops, where designers have been involved with rural artisans. The second project is the creation of the 'Empremtes de Catalunya' (Marks of Catalonia) brand, which was created to fill a need in the market: provide visitors to Catalonia with a true image of our country through crafts and design. 'Empremtes de Catalunya' offers a range of quality traditional and contemporary handmade souvenirs that represent Catalan landscape, customs, history, cuisine and art. A third project consists of the biennial conferences on 'Joieria, Art i Natura a Serraduy' (Jewellery, Art and Nature in Serraduy). Serraduy (Isavena valley) is a place of great geological and archaeological interest in the region of Aragon-Ribagorça. The conferences are a 'must' for jewellery teachers and students who want to practise their art in nature, use geological materials and experiment with creative ideas.

Keywords

Crafts and design, sustainability, identity, local development, branding, tourism, education

Introduction

This article is a compilation of good practices carried out in Catalonia, a territory in north-eastern Spain that boasts Barcelona as its capital, where we found a number of very unique trades with historical ties to the territory. These practices have been exercises in the search for new languages, always starting with crafts within local tradition. Some of these projects have been carried out through public initiative, others private. While the shared objective is the development of crafts, they have had a primarily educative purpose, often failing to focus on economic objectives. Exhibiting and cataloguing these crafts is the way to show that with creativity, effort and above all rigour, a creative discipline like traditional crafts that needs to be reinvented may find a new form of expression and a market.

The first part of this paper corresponds to projects launched by Artesania Catalunya (the Generalitat de Catalunya organisation that looks after the interests of Catalan crafts) from 2006 to 2011. The fact that a government, sensitive to the country's values of heritage and identity, placed the management of this organisation in the hands of creative professionals rather than political managers led to the creation of two flagship projects for the craft sector: the 'Empremtes de Catalunya' (Marks of Catalonia) registered trademark for Catalan products, which serves as a guarantee of quality, as well as the 'Oficis Singulars' (Unique Trades) project, which identifies unique trades in Catalonia and increases the range of products the region produces.

The second part of this paper discusses the responsibility of schools that, like the Escola Massana, train future creatives, designers, artists and artisans and strive to preserve the uniqueness of trade workshops while reinventing and adapting them to each course of study.

The Escola Massana, a municipal art and design centre that relies on Barcelona's Education Consortium and is affiliated with the Universitat Autònoma de Barcelona, ensures comprehensive training of individuals in the relationship between art, design and trades and the T+I (tradition & innovation) formula, in which the tradition of local heritage becomes compatible with modern conceptual and technical innovations.
In terms of training, courses like the conferences on Jewellery, Art and Nature in Serraduy and the Wool Seminar (an Oficis Singulars-related project) are activities that take students out of the classroom and invite them to contribute to local development as a part of cultural, social and environmental responsibility.

**Unique trades: Palm crafts from the Terres de l’Ebre and wool from the Pyrenees**

These stories begin with a journey over every inch of Catalonia, recognising the value in the small things that are happening across the territory. This, combined with the responsibility of working for the crafts sector, led to the reactivation of the Areas of Craft Interests thanks to the efforts of the Oficis Singulars project in Catalonia.

The Oficis Singulars project was launched in 2010 to identify and promote a series of trades tied to specific parts of Catalonia. These are trades or products that are considered unique to the town or district from which they originated, either because it is where the raw materials are found, made or transformed, the place where the final products are made or a place with a history in the trade. With the main purpose of recovering specifically Catalanian trades, the need to find new languages and new products through collaborations between artists, designers and craftsmen emerged. Those trades still in practice in the region (trades that were practised in workshops and with existing production) began to be pinpointed on the map, resulting in a list of 15 trades scattered throughout Catalonia:

- Palm crafts from the Terres de l’Ebre
- Alabaster from Sarral
- Pottery from Breda and Miravet
- Black ceramics from Quart and Verdú
- Ceramics from La Bisbal and Esparraguera
- Wood burning from Sant Hilari de Sacalm
- Wood from La Sènia
- Leather from Vic and Igualada
- Wooden spoons from Tortellà
- Bobbin lace from Arenys and l’Arboç
- ‘Xisqueta’ wool from the Vall d’Àssua
- Wood and basketry from Pallars

- Salt from Cardona
- Wood-turning from the Vall de Ges
- Religious imagery from Olot

A documentation, exploration, dialogue and organisation phase followed that concluded in so-called ‘missions’ inside the region. These ‘missions’ represent the work of artists and designers (some from Catalonia and others who have moved) with artisans, working side by side to stimulate the trade and generate new product ideas in the workshops. Municipal authorities, schools and museums also participated to make this project a means to regain the credibility of some wasted or neglected economic activities and to bring to light the value of what had been cast aside before.

We will discuss two of these ‘missions’ – palm crafts from the Terres de l’Ebre and ‘Xisqueta’ wool from the Vall d’Àssua – as examples, because we believe that these are the two projects that will have a major impact on the territory, leading in turn to substantial local development and taking into account the small scale of the trades in question.

The launch of Oficis Singulars took shape in a pilot programme in the Terres de l’Ebre, an area home to the craft of fan palm plaiting (braiding or weaving in bands). Three municipalities from the Ebro Delta participated in the project: Mas de Barberans (the driving force behind the recuperation of this trade), Rasquera, and Reguers. The municipality of Perelló joined the project later.

The fan palm (*Chamaerops humilis*), known in Catalonia as the ‘pauma’, is the only palm species native to Europe. The plant is found across the Iberian Peninsula, North Africa, the Balearic Islands and Italy. The fan palm grows from sea level to an altitude of about 800 metres in Catalonia. Working with the plant was one of the main sources of income in the Terres de l’Ebre in the nineteenth century. The craft began to disappear in the 1950s, however, as rubber began to replace palm as the raw material used to produce large woven baskets.

The palms are harvested in July and August, when the blades are green, and after drying in the sun for twenty to thirty days the individual blades of each leaf are separated and cut from the central stem. Once soaked and dried the blades can be used for weaving. The woven strips are sewn with twine to form the shape and size of the resulting basket.
The basket weavers, almost all elderly women, are experts in the trade because it has always been an ancillary craft linked to the olive harvest. Bringing designers like Gerard Moliné to collaborate with artisans in developing new palm products was an experience in coexistence, respect and surprise, reflected in the positive attitude of all the artisans that collaborated. Moline, who held a series of workshops for adults and children, lived with them, and was part of their everyday activities, managed to bring new value to the craft and create, together with the artisans, a collection of contemporary products currently being sold, including at international fairs. This has led to the creation of professional associations and small craft production businesses.

The other significant Oficis singular project works with Xisqueta wool from the Vall d’Assua. The Vall d’Assua is one of the valleys in the Catalan Pyrenees where livestock farming, mainly sheep farms, has been largely conserved. Over 4,000 heads of sheep are herded to these mountains each summer, sharing the area with cow and horse herds. The ‘400 auvelles 400 meravelles’ (400 sheep 400 wonders) project is being carried out in this valley; the project aims to bring new value to the native Xisqueta wool for uses related to local crafts and sustainable building.

The fleece from the sheep used to be a highly-valued commodity. Each shearer was in charge of shearing 50 sheep and one peseta, normally paid in fleece, was paid for every sheep. Fifty years ago the value of a fleece was 60 pesetas, so a shearer would have to pay 10 pesetas extra in addition to his work if he wanted to take the fleece home.

The current value of these pieces is merely symbolic. A flock of 40 sheep can yield 400 kg of wool for an estimated retail price of 150 euros. In the case of the Vall d’Assua, all of the wool from the flocks is usually sold to one dealer from outside the region who exports the wool to Asian countries.

The ‘400 auvelles 400 meravelles’ project purchases a part of the wool produced during the shearing in June in order to use it in the valley. The wool is worked in two parallel projects. The first ties the wool to crafts: treating it and working with the wool with the valley’s own artisans and residents and at the same time holding workshops open to people in the region interested in learning traditional knitting and other wool-related crafts. The second ties wool to sustainable building by using wool scraps as insulation in ‘green’ buildings, helping at the same time to feed traditional knowledge.

Designers Gerard Moliné and Josep Mañà led the implementation of this Oficis singular project by organising work sessions with regional artisans, some of them newcomers. The experience resulted in some extraordinary indicators: 116 workshops, 23 designers and 17 town councils were involved and 146 products were created that sold for €25,000 (data from 2010).

The Escola Massana has organised a second seminar on wool for the 2012–13 course in which a group of students studying for the Advanced Technical Degree in Textile Arts will travel to the Vall d’Assua to visit textile workshops, see the sheep and learn more about the properties of this wool to implement it on elements of interior design.

‘Empremtes de Catalunya’: Crafts with identity

Strolling down Barcelona’s La Rambla is a must-do for the thousands of tourists who visit the city each year. La Rambla has ceased to be the domain of the city and its residents to become a place where shops and businesses sell souvenirs to tourists. Mexican sombreros, objects made out of a golden metal called ‘Toledo gold’, flamenco dolls and bulls are some of the items available that present a blurred regional identity; moreover, the souvenirs are made outside Catalonia’s borders.

Only in the best of cases, and almost by accident, might we stumble upon a miniature reproduction of Gaudi’s mosaic dragon that dominates the entrance of Park Guell. The journalist and writer Sergi Pamies derides these mass reproductions in an article in El País: ‘I imagine Gaudi entering the souvenir shops with a bazooka, firing indiscriminately’.

Proposing an alternative souvenir for tourists, one that is not made in China, is certainly an opportunity for the craft sector to find a new way to market its products. ‘Empremtes de Catalunya’ was launched as a response to that opportunity. Someone once said that the designer has a brand, the artist a signature and the artisan a mark, the mark that the artisan leaves after working with the material. ‘Empremtes de Catalunya’ is a brand of crafts made in Catalonia that speak to a Catalan identity with a true and guaranteed image of the country that rejects the clichés of kitsch bulls, paella and flamenco dancers.

After a study on Catalan iconography (the document is available in PDF, see bibliography), in conjunction with the Department of Tourism, twenty-five ‘families’ that make up the identity of past and present...
Catalonia were identified: rehistory, Iberian, Roman Empire, Romanesque, Gothic, Baroque, Romanticism, Modernism, Gaudi, Twentieth-century Arts, Literature, Cuisine, Popular Traditions and Culture, Sant Jordi, Castellers, Sports, Traditional and Popular Music, Lyrical Music, Nova Cançó, Landscape and Nature, Plants, Wildlife, Barcelona, Traditional Utensils and Unique Trades.

At the same time, the study provided data on the occurrence of the despised ‘souvenir’ and allowed us to redefine it as a trophy or as tangible evidence of a visit, even as a travel certificate. Its functional characteristics and requirements to be considered memorabilia were defined: representativeness, portability, economy, use, aesthetics, uniqueness and intelligibility. Different types of consumers within this larger target market we call ‘tourists’ (ethnic, artistic, popular, historic, urban and landscape) were also defined.

Once the ‘Emprems de Catalunya’ trademark was registered and its objectives defined a search began for existing products on the market that could be labelled under this umbrella brand. Meanwhile, invitations were extended to the crafts sector to generate new items to expand this collection of Catalan products. Each product (identified by a label that explains the relationship with Catalan iconography, authorship and origin) is documented and truly traditional proof of a visit to Catalonia.

Over 400 products form part of the ‘Emprems de Catalunya’ collection, available at a permanent sales point in the centre of Barcelona and with future plans for sale online. Other possible sales channels exist, including the CATS network, museum shops and hotels.

**Jewellery, Art and Nature in Serraduy**

The Jewellery, Art and Nature conferences in Serraduy are conferences on traditional casting techniques offered by Barcelona’s Escola Massana in Serraduy (Aragon) every two years. The participants are jewellery teachers and students, preferably from the Escola Massana but also from other centres in Spain.

Serraduy, an area in the Pyrenean foothills in the Ribagorça region of Aragon, has a very rich and unique paleontological history. Its economic activity is based on agriculture, rural tourism and cuisine, but because it’s located on a small, rocky outcrop the area also has great geological and paleontological significance. Only thirty-six people live in Serraduy, an area covering 22.60 km².

The jewellery department of the Escola Massana has organised these conferences since 2002, targeting students studying for an Advanced Technical Degree in Textile Arts with a carefully-designed programme that includes the development of techniques (such as metal casting, lost-wax casting and mould-making) and approaches to mineralogy (cutting and polishing stones), as well as ceramic firing along with kiln preparation) in facilities provided by the municipality.

One of the first activities undertaken by the students at the beginning of the seminar is the collection of invertebrate fossils that abound in Serraduy. Fossils are used as models to learn the different techniques that are carried out at the seminar: three metal-casting techniques and one ceramic-firing technique.

The preparation of furnaces for casting in the traditional Ashanti way allow the reproduction of forms borrowed from nature, the fossils, using different techniques: pressed earth, sepia skeleton, etc. The results are spectacular.

Five schools, 300 students and thirty teachers from three different regions (Catalonia, Aragon and Valencia) have participated in these conferences since they first started. The Escola Massana received a grant to promote and publish the results of the conferences in a travelling exhibition in 2013 that has visited six cities in Spain.

**Conclusion**

The experiences with the Oficis singulars project shows that artisans and designers working together on a common project is not something that is necessarily uncomfortable or with little chance of success. Dialogue, respect and common goals can reverse or, better yet, remove the hierarchies between the two, promoting mutual learning through teamwork.

The cases we have mentioned prove that smaller populations, often separated from globalised cities, can boast a deeply-rooted culture of effort among its inhabitants, the guarantee of a fruitful collaboration. In addition, many regional artisans are open to setting new goals, not only because they are searching for a new look at their work but also because of how the arrival of an external collaborator with professional experience that complements their own impacts their daily lives.

Secondly, it is also necessary to discuss the value of the authenticity of local traditions. Authenticity is
a highly-valued asset that is disappearing from our environment every day, engulfed by the uniformity that major retail chains bring. Rediscovering fragments of authenticity and participating in their vindication is one of the most rewarding feelings in all these stories.

These projects have helped to stimulate emotionally and economically-depressed regions and sectors, bringing new value to many of the trades and identities, that had been given up for lost, with exquisite sensitivity on the part of the parties involved, both in terms of respect for nature and environmental sustainability and the liability involved in these initiatives. Thus artisans, designers and the government work towards a common goal: making the region a reason for being.

The second case, Empremtes de Catalunya, shows a sales outlet that ties in with the previous case. The issue of distribution has to be addressed once the pieces made in collaboration between designers and artisans are completed. It would seem that marketing and craftsmanship would be like oil and water, but if it is the obstacle must be overcome. The Empremtes de Catalunya trademark and the opening of a sales point in the city centre respond to the need to sell crafts in a suitable environment. This branding exercise also serves to set handmade products apart from the low-quality products sold at street fairs, where the staging discredits the product up to 90 per cent of the time.

There is a need to be consistent in matters of image and control as far as possible the values that a brand projects. Thus, the inevitable physical support, like a sales point and bags or boxes for transport, has to match the quality of the product. As much as we work at it, nothing is ever good, beautiful and cheap at the same time, so it is better to convey a single idea loud and clear. There are brands that communicate an empirical value, others emotion, and some even ideologies. Empremtes de Catalunya is based on two key concepts: handmade and guaranteed Catalan.

The article concludes with an educational project, the Jewellery, Art and Nature in Serraduy conferences. Here we find the piece that completes the puzzle: the young artisans of the future. Social changes over the past fifteen years in Catalonia have affected the very essence of what it is to ‘be an artisan’. The number of people who know certain techniques or manual trades because they practise and produce these crafts either part-time, temporarily or seasonally is decreasing in our country and has been in a gradual decline over the last half century.

A quality craft sector with a future is impossible without adequate training. The schools that train future artisans, as the Escola Massana has over the years, have understood that a combination of disciplines is the key to success. Art, craft and design come together in these young professionals’ daily practices.

Richard Sennett argued that we can only achieve a more human material life if we better understand how things are produced. Fortunately, people are able to experience a deeper and longer-lasting emotional connection with craft items than industrially-manufactured products. Let’s take advantage of it! Objects that everyone believes are valuable are so because we like them irrationally, with all their imperfections.

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Ann Brown

Neocolonialism in Design for Development

“…until designers step back and re-examine the profession's language in terms of its neo-colonialist memes, they can talk all they want about saving the world and never get it right.”

David Stairs, founder of Designers Without Borders, recently wrote a provocative article titled *It's in the language dummy*. The article suggests that design professionals working with international development agendas, when explaining what it is they do, are revealing much more about their world view and unarticulated presuppositions than the language may at first appear to betray. Stairs’ closing comment, above, is the point of departure for this paper, which reads between the lines of the “design biz-speak” being used, to examine the real agenda of much of what we call Design for Development. Using discourse analysis as a method of analysis, set against existing written histories of Design for Development and United Nations commissions, this paper investigates the “hegemonic language” identified by Stairs in designers’ accounts of their practice.

Bruce Nussbaum sparked a lively debate in 2011, when he asked if the good-willed intentions of self-styled humanitarian designers could actually be seen negatively, “through post-colonial eyes, as colonialism?” In 2013, Stairs critiques an address by Tim Brown (Chief Executive and President of IDEO; see ideo.com, ideo.org, openideo.com) to the 2012 Clinton Global Initiative, finding that the language used reveals a worldview more entrenched in our colonial past than has commonly been acknowledged. We can analyse the language of Brown and others through various lenses - that of C.K. Prahalad (the cultivation of strategic business relationships with those in ‘developing’ nations); that of Edward Said (the Western paternalism identified in his classic *Orientalism* (1978)). We find a language suggesting a dominant power having the expertise to save the lesser from the undesirable fate that otherwise awaits them.

Some within the design sector are now questioning the terminology used in this mode of design. *Design and Development* is proposed by Krista Donaldson of Stanford University, who also questions whether ‘developing country’ is appropriate when referring to the lives of collective real people. Jeremy Nicholls, of the Social Return on Investment (SROI) Network, more recently questioned the design profession’s use of the word *impact*, suggesting it actually reinforces the “inequality of power” that we are seeking to redress.

This paper presents critical analysis of the promotional and public discourse of commercial design agencies and non-profit social enterprises working in this space, and identifies clear differences in the language typically used by each. It argues that this divergence in language reflects real differences in how these organisations actually operate in practice on the ground.

Finally, the paper presents case studies from emerging communities such as User Centred Design for International Development (UCD4D) and Human Computer Interface for Development (HCD4D), to examine the new conversations taking place around the inheritance, or avoidance, of post-colonial frameworks by designers seeking to work productively in the international development arena post-Papanek.

References:


... until designers step back and re-examine the profession's language in terms of its neo-colonialist memes, they can talk all they want about saving the world and never get it right. (Stairs 2013)

Introduction

Provoked by an article written in early April 2013 titled ‘It’s the language dummy’, this paper reflects on the above closing comment of the article by the founder of Designers Without Borders, David Stairs. Presented here are the initial stages of an investigation to identify instances of ‘design biz-speak’ as Stairs refers to it, with the aim of uncovering what it is about the language of the design profession that means designers may ‘never get it right’. The paper will ask: is Stairs correct in his premise? Does the language discussed here have the potential to return ‘us to the same sort of exploitative mindset, previously known as colonialism, that it took over a century to escape’ (Stairs, 2013)? The first section of the paper will put Design for Development into context, drawing on existing written histories and United Nations commissions. Using discourse analysis as a research method, the second section will critically reflect on how revealing the vocabulary and rhetoric of Design for Development is attempting to identify differences in the language used by commercial and non-commercial practices.

An increasing number of writers and commentators on design question if design practised for ‘the other’ is a new form of imperialism, and whether humanitarian design in particular is being perceived by hosting countries as a form of neo-colonialism. This paper will attempt to illustrate a narrative running alongside design practice, questioning the role designers might play in the development agenda. David Stairs’ article (see appendix A) suggests that if we look more critically at the language of the design profession, we may see something a little deeper. This paper will examine to what extent a certain type of language precedes a practice.

Development and design

This first section will outline the evolution of Design for Development as a mode of design practice, positioning it in the context of its relatively recent history, and setting it against the complex and longer history of the wider development agenda. It will also discuss alternative trajectories the design practice might have taken – and possibly could still take – informed by the views of those placing a critical lens on the practice as it stands today. The chapter will delve a little deeper into the numerous forms Design for Development takes and the varied terminology used across the field.

In the experience of the author, Design for Development as a term is less often used to describe a specific design discipline than it is to describe the concept of designers acting explicitly on international development agendas, namely towards the alleviation of poverty and its direct effects. This definition is how the term will be used within this paper. With an increasing amount of different terms appearing over the last decade to refer to slight variations on a theme, Design for Development will be used consistently in an attempt to reduce any misunderstanding. The paper is explicitly referring to design practised with the aim of tackling issues related to poverty, internationally, in nations still referred to in the 2013 Human Development Report by the United Nations as ‘developing’.

With disciplines such as Social Impact Design, Socially Responsible Design and Design for Social Change – and with newly emerging fields such as Human Computer Interaction for Development (HCI4D), amongst other subsets – we can see that the vast field of what has once referred to wholesale as Design for Development is evolving and diversifying. Following the 2012 Design and Social Impact Summit at the Rockefeller Center in New York, Public Interest Design, an online blog and resource, published a glossary of thirty-two different
The critique this paper is investigating is directed towards the language used in the sector rather than its overarching aims and objectives. Krista Donaldson, CEO of Stanford University’s D-Rev, ponders the phrase Design for Development, asking whether ‘design and development’ or even ‘development by design’ would be more appropriate phrasing, given the amount of projects that could be described as design for developing countries as opposed to design in developing countries (Donaldson 2008). In an article written for Ambidextrous, Stanford University’s journal of design, Donaldson muses over the finite des of the language of development, questioning the use of the word ‘developing’ when referring to the lives of real people. She asks: ‘What makes a society developed?’ and questions whose definition of developed we are working to. “Developing country” seems like a summation of two misnomers considering that the borders of most post-colonial countries are European map carvings with minimal thought to the local people.’ It is interesting to see a professional, who has worked prolific ally in development, questioning something as seemingly trivial as the difference between working for or working with. This, however, is not a new debate; it is a longstanding discussion that we can trace as far back as Victor Papanek in 1972, which will be discussed later.

Donaldson is not alone in raising the question of colonial overtones in the language of Design for Development. The impetus for this paper is fuelled by a well-documented and ongoing debate regarding the motivations of global, commercial design firms and how their tacit assumptions and unarticulated motivations may be revealed through the power dynamics in the language they use. Any activity associated with development agendas, broadly defined by Copper and Packard as the ‘processes of social change ... to transform national economies’, is bound to be contentious, for it ‘carries such enormous and variable analytical weight’ (Copper and Packard 1997: 155).

To frame Design for Development as a discipline within a meaningful context, research was conducted for this paper into its recent history. The origins can be traced back to various points ranging over fifty years depending on whose perspective and which definitions are using. The inexactness of the origin is unsurprising given the various different monikers and therefore connotations of Design for Development we see today. Research suggests it has a formal, documented history of forty years dating back to 1973, when the United Nations Industrial Development Organisation (UNIDO) met to discuss the possible role industrial design could play in developing countries. The design at this time was seen as ‘a tool for fostering development by designing products that could be manufactured locally’ (Bonsiepe, 1991: 260). This interest in the role of industrial design in development agendas became more concrete with the United Nations 1979 Ahmedabad Declaration on Industrial Design for Development, a document that Victor Margolin describes as urging ‘governments to create opportunities for design’ (Bonsiepe 1991: 260).

In a paper written in 2007 titled ‘Design for development: Towards a history’, Victor Margolin discusses how significantly the development agenda has moved on from the days where it was synonymous with the outdated post Second World War term ‘third world’. There are two UN sponsored reports cited as being particularly instrumental in shaping the development agenda, the first being Our Common Future, also known as the Brundtland Commission of 1987. In this report we see the introduction of the term ‘sustainable development’ and a move away ‘from the construction of large-scale industrial projects to ameliorating poverty’ (Margolin, 2007: 112). The second being Our Creative
Diversity, a World Commission on Culture and Development report published in 1995, where we saw additional emphasis placed on the social and cultural factors of development. Both of these are pivotal as they mark the steady progression towards more human-centred language. In 2013, we saw even greater strides towards human-centred language with a UN Human Development report entitled The Rise of the South: Human Progress in a Diverse World.

In briefly charting the history through official U reports, conferences and charts, Victor Margolin (1998: 88) forms a solid commentary on how a ‘culture of sustainability’ is being formed. The most crucial observation made from reading several of Margolin’s papers is a comment regarding changes in behaviour following on from changes in attitude. Although he is referring to changes in the attitude of society having an effect on the definition of these official reports, parallels can be drawn between this and what is understood as being David Stairs’ call for a change in attitudes on the ground, with the hope of changes in behaviour and practice to follow.

A common starting point when talking about Design for Development is the highly influential work of Victor Papanek from the early 1970s, namely, his seminal text Design for the Real World: Human Ecology and Social Change (2000 [1972]). However, Margolin suggests the work of Papanek may actually have acted to limit the scope and impact of Design for Development to the model we see many not-for-profits using today, that of single product interventions, and less systems-based thinking. Margolin suggests Papanek’s work was taken a steady and consistent route towards more human and culture centred language.

Papanek proposes four tiers of engagement for designers ‘working for the needs of under-developed and emergent countries’—to use Papanek’s original wording. These tiers can be summarised as being: (1) design for people from afar, whilst not in situ; (2) design for people whilst in situ; (3) train designers whilst in situ; and (4) train designers to train more designers whilst in situ, with the fourth tier described as being the most desirable (Papanek, 2000[1972]: 84). In his paper ‘Altruism as design methodology’, we see Stairs questioning the distance Margolin was willing to go in defining the ways in which designers could change the rhetoric into something concrete that would be useful to altruistic designers on the ground. It could be argued by those working in Social Impact consultancies in a domestic setting that that is in fact what Papanek did: provide a set of loose but guiding principles that have informed the way they work.

This chapter has briefly outlined some pivotal stages in the complex history of Design for Development, suggesting conversations that have taken place regarding the appropriate and potential role designers can play in development. The question of where designers fit in the wider picture is as old as the development agenda itself. We have seen substantial shifts in the language used in official reports, most notably by the United Nations and connected organisations and groups, a shift that has taken a steady and consistent route towards more human and culture centred language.

‘It’s the language dummy’

This section will ask the question: if language betrays our worldview, what is the language of Design for Development revealing? Examples will be presented to illustrate the type of language identified by David Stairs, and go on to introduce parallels between this Adiscussion and what Edward Said calls ‘Orientalism’. The chapter will close by outlining the progressive and transferable conversations being held amongst the Human Computer Interface for Development community, regarding post-colonial frameworks for design. It will attempt to answer the question: do the imperialist overtones identified belong exclusively to C.K. Prahalad’s The Fortune at the Bottom of the Pyramid (2006) model of Design for Development? If so, how does the language of the non-profit sector differ?

To rewind the story back to July 2010, Bruce Nussbaum sparked a controversial debate when he asked if his perceptions were correct; were the goodwill intentions of humanitarian designers being
perceived negatively ‘through post-colonial eyes as colonialism?’ (Nussbaum, 2010). In his paper titled ‘Is humanitarian design the new imperialism?’ posted on the Fast Company design blog (2010), Nussbaum asks if ‘our desire to help does more harm than good’ – a question that directly echoes an address Ivan Illich gave almost four decades earlier at the Conference on Inter-American Student Projects, where he questioned the unconscious hypocrisy of young would-be volunteers (Illich, 1968). Although the audience was not made up of design professionals and Illich did not refer directly to designers when listing those ‘who define their roles as service’, the speech has long been referred to by those critical of the very nature of Design for Development, a practice inextricably linked to the international aid agenda.

Illich’s famous speech ‘To hell with good intentions’ is as controversial today as it was in 1968. It is a critique of the dangers of paternalism inherent in international voluntary service, particularly by ‘vacationing do-gooders’ who it is said do more harm than good by dropping in on countries they know very little about, for a limited time, and with limited if any sustainable, positive impact on the lives of the people the programmes claim to be helping.

Stairs is calling for a change in the language used by designers when promoting their projects and talking with other designers about the work they do. From research conducted for this paper, an hypothesis was formulated: the language David Stairs is taking issue with is that of the commercial, market-driven model of Design for Development as opposed to what might be referred to as the non-profit sector model, although his closing line appears to be a call to the design profession as a whole.

Stairs’ article, ‘It’s the language dummy’, has focused the initial wider Nussbaum debate to language, citing specific examples he considers to have imperialist overtones, and refers directly to those using it. Although one could argue the controversy surrounding Design for Development has always been entwined with language, inseparable from it in the same way that culture is (Bardzell and Merritt, 2011), we see critical discussions often revolve around what designers call their practice, and whether or not it implies the use of the human-centred, participatory methods many in the industry have come to expect.

What designers call their practice is often under scrutiny, and the ‘design for versus design with’ discussion is an important and pivotal one, the origins of which are often credited to Victor Papanek’s four-tier model discussed earlier. However, it is refreshing to see Stairs pick apart public design discourse the way he does, rather than focusing on discipline titles as others have done before and this paper has done to this point. Whether it is Donaldson questioning if ‘development and design’ would be more appropriate phrasing, or Maria Popova in her article reacting to Nussbaum, questioning the anthropocentric nature of the term Humanitarian Design, suggesting it ‘fails to recognize … the complex ecosystem of humanity and nature, society and environment, which are always symbiotically linked to one another’s well-being’ (Popova, 2010).

This kind of discussion is healthy and vital if designers are to shift design culture to one of ‘sustainment’ (Fry, 2011: 4); performing a role outside and above that of consumer culture as Margolin advocates (Margolin, 1998: 83–92). Even the predominant term ‘sustainable development’ itself, the raison d’être for many a professional practice, has been etymologically dissected by Tony Fry who talks of a move towards the ‘creation of sustainment’ instead. Arguing that Sustainable Development is a ‘have your cake and eat it strategy’, a strategy he insists is ‘a debilitating contradiction that … tries, but fails, to conceal’ an awareness of our man-made environmental impact on one hand, whilst the other holds a commitment ‘to global economic expansion’ (Fry, 2011: 4).

The international design and innovation consultancy IDEO, bears the brunt of the aforementioned Stairs blog post. To better understand the location of the ‘land of hegemonic language’ (Stairs 2013) that he refers to, and what exactly is a ‘neo-colonialist meme’, the first port of call was the Dictionary for Human Geography (Gregory et al. 2009), for some context and definitions. The dictionary uses an Osterhammel (1997) definition to describe colonialism as ‘an enduring relationship of domination whereby the colonisers, in this context the non-native designers, ‘are convinced of their own superiority, pursue their own interests, and exercise power through a mixture of coercion, persuasion, conflict and collaboration’ (p. 94). Gregory et al. go on to comment on a feature of colonialism being a tendency of the West ‘to monopolise and dictate understanding of what counts as right, normal and true’. With these definitions in mind, this becomes more insightful when we look at the definition of hegemony as being a process of developing ‘the capacity to exercise control by means other than coercive force’ and as being the ‘dissemination of the values and cultural practices of the elite’ (Gregory, Derek et al, 2009: 327).
The Tim Brown address to the 2012 Clinton Global Initiative (2012) that David Stairs refers to directly uses overt ‘design-biz speak’ as Stairs calls it; there is not a great deal of reading between the lines required to see the point he is making. When Linda Tischler reported on the conference, the title ‘5 reasons global firms sh ould serve the developing world’ was used – again, no great need to decipher the meaning. The premise of the address is: ‘What’s in it for us?’ (Tischler 2012); when viewed through the strategic business lens of C.K. Prahalad, co-author of The Fortune at the Bottom of the Pyramid (2002), what Brown is presenting seems like a straightforward business transaction, albeit a controversial one. In the address, Brown refers to developing countries as ‘a lab for first world innovations’ and the process as ‘learning from the edge’, at this point one could say it becomes a little uncomfortable. If we move into a deeper analysis and view the language used through the lens of Orientalism, this is particularly the case with Brown’s seemingly flippant comment about applying a new banking model IDEO have generated in Jordan, an Arab country in the Middle-East, to markets in China, on the basis that their cultures ‘revolve around a family-centered financial system’ (Tischler, 2012).

Irani et al. describe this tendency to assume ‘individuals have a single cultural background’ as problematic to say the least (2010: 1311–20). Although they are writing with reference to Human Computer Interface for Development (HCI4D) in the face of contemporary patterns of globalisation, this observation rings true of how we have become accustomed to referring to ‘the other’ when we talk about development, a habit Irani et al. assert actually tells us more about ourselves than ‘the other’. It is certainly not uncommon to see phrases like ‘the poor’ when reading about design for development projects. John Thackara responds to a Fast Company article posted in the blogosphere fi estorm of 2011 – ‘Do designers actually exploit the poor while trying to do good?’, by commenting on exactly that; with the simple addition of the word ‘the’ we turn individuals into a ‘dehumanised marketing category’ (Thackara, 2012).

It becomes ever more interesting, when you take the observation Stairs makes, that terms like ‘thought leaders’, ‘change makers’ and even ‘design interventions’ and ‘social development projects’ have clear neo-colonial overtones, and realise that they are essentially used industry wide. Terms so synonymous with Design for Development, in fact, that one could argue they have become invisible.

One need only navigate to the homepage of Acumen Fund (2013) to read of how their next generation of redefined leaders are changing the way the world tackles poverty. If we turn this level of analysis on the most prominent actors, who receive high levels of praise and criticism in equal measure, IDEO, and their non-profit organisation IDEO.org, the results are surprising. Even more so when analysed in light of Edward Said’s work on a concept he refers to as Orientalism. This concept, with its history in imperial context, is relevant to the analysis of Design for Development discourse on many levels, as what Said presents as Orientalism is multi-faceted and highly transferable to this agenda.

If we take, without discrimination, the introductory paragraph from the IDEO.org website for example (see Figure 1), we can highlight the language Said refers to as features of Orientalism, revealing some of the colonial overtones David Stairs and Bruce Nussbaum have bought to our attention (shown in bold):

Join IDEO.org in our mission to bring human-centred design to the people who need it most — those facing poverty every day. We’re teaming up with nonprof its, social enterprises and foundations to create solutions to the world’s most dire poverty-related challenges. Imagine a world without poverty. Now let’s create it.

Through Human-Centred Design projects, we’re bringing stability, hope, and dignity to communities around the world that are wrestling with poverty. Along the way, we’re sharing what we learn and accomplish with everyone — so we’re all learning together. And through the IDEO.org Fellowship Program, we’re fostering a community of future leaders with expertise in design thinking, then letting them loose on the world. (IDEO.org, 2013)

The text shows clearly who the dominant power is – IDEO.org – as one might expect, given they are the innovation consultants. However, it also implies they are the party who are able to arrive at the less than ideal situation, with the skills and expertise to analyse and record information regarding the lives of the people in question, who, the passage infers are unstable, hopeless, undignified and in need of leadership. Implying there is no existing capacity for human-centred enterprise in the areas they are planning on working.
This is what Irani et al. refer to as ‘colonial tropes’, whereby certain groups are categorised as ‘in need of civilisation and development’ (Irani et al. 2010: 1312).

Figure 1 IDEO.org website introductory page. Image source: https://www.ideo.org/about

The use of the word ‘fostering’ is also interesting as this has all the paternalistic connotations that critics of development as far back as Ivan Illich refer to. Everything this passage proposes will happen in the future, will happen in one direction, that of the previous colonial power. Including the sentence regarding sharing: are they implying they will share in a mutual knowledge exchange, or that they will share in the knowledge they have acquired?

In a documentary on Orientalism, Edward Said explains a feature of the way we acquire knowledge as highly motivated and not at all innocent, it is objective and the end result of a process (Said, 2007). Said also discusses the dominant power relationship at play when one party, assuming the role of the expert, is able to acquire knowledge about the other party. Having a body of information that is not mutually held puts the dominant party in a powerful position of assumed superiority. If we continue and analyse the website of a Frog Design sponsored programme called ‘Design for the disadvantaged’ (see Figure 2), we are able to highlight a feature of colonialist language and Orientalism that Said discusses: that of using large abstract categories to explain people who are different. This is a trait we see throughout the Design for Development community and is something that has lately become a feature of the communities’ language; Maria Popova is in accordance with this statement in her 2010 paper ‘The language of design imperialism’. In this paper, Popova makes a rallying cry for the design community to ‘invent new ways of writing, talking and thinking about concepts of “humanitarian design” she points to a need for a reinvention of design language, one that does not homogenize entire cultures’ (Popova 2010).
The opposite end of the Design for Development spectrum is apparent in many respects in international not-for-profit organisations such as Maya Pedal and Motivation, the latter being an organisation 'who supports people with mobility disabilities around the world' (Motivation, 2013). The content and the language used in online material is in clear contrast to that of commercial design consultancies, they too are a group of designers and engineers (amongst other professionals) much the same as IDEO, who work across five continents and with groups of people equally as diverse and similar in number to that of IDEO. Yet their approach to explaining who they work with, for example, is to provide personal profiles of individuals, achieving a distinctly individual and a personal story behind the hard facts and figures of development. This makes good headway towards closing the empathy gap; it also avoids using taxonomic subgroups that invoke the idea of ‘here and there’, ‘us and them’. This is a danger Emily Pilloton refers to as being highlighted in the name of the Cooper-Hewitt exhibition ‘Design for the Other 90%’ (see Figure 3). Although well intentioned and well informed, this approach ’is rooted in an ‘us-versus-them’ mentality’ (Pilloton, 2009: 1–46).
Another discussion would be to construct a visual analysis of the semiotics of the promotional material of Design for Development, Figure 3 being a well-known example that demonstrates features of Orientalism in a visual format.

Figure 4 ‘One laptop per child’ website. Image source: http://students.purchase.edu/abigail.flynn organization.html

There are several burgeoning communities emerging from the depths of globalisation with their roots in the work of Victor Papanek and Donald Norman, notably User Centred Design for International Development (UCD4D), and Human Computer Interface for Development (HCD4D). They are of particular interest to this paper as they are in the midst of crucial conversations regarding the application of post-colonial frameworks for design. Irani et al. cite specific case studies; most relevant to this paper is the infamous ‘One laptop per child project’ (see Figure 4). The way in which Irani et al. critically analyse the project is insightful, highlighting how the project was predicated on many assumptions, the most notable being the overarching framing of developing world problems as being a ‘series of absences, specifically ... the personal computer’ (Irani et al. 2010: 1318). They state something seemingly obvious and yet ill considered; this model implies a commitment to individual ownership and, more specifically, individual ownership by a child – an arrangement alien to many of the communities the computers are intended for. There are many assumptions laden in this model that are evident from just this brief description alone. The paper calls for a dynamic model of culture, particularly where technology design is being adopted, as current taxonomic models view culture as ‘acquired and internal to the individual – “software for the mind” shared by people of the same nation’ (Irani et al. 2010: 1313). To begin addressing many of the issues faced by those working under the umbrella of HCI4D, this paper clearly suggests what is expressed in its introduction, a shift ‘from “development” to postcolonial discourse’.

Conclusion

This paper presents the early stages of wider reading on the subject of power-laden language and the impact it might have on the practice of humanitarian design. In conclusion, it is a challenge to navigate
through the dense and complex world of the ‘largely unresolved relationship between design and social responsibility – one that is constrained by politics and fraught with pitfalls’ (Bell, 2011: 100–6). The international, political and multifaceted nature of development with its concurrent and varied components renders the task of piecing together a coherent picture interesting.

It is impossible to separate the politics from the human motivations that inspire us to act, Tony Fry (2009, 2011) comments on how these two are inextricably linked for a reason. A conclusion that was also reached through an insight by Irani et al. is how important it is to remember when praising those in the non-profit sector that ‘no design practice takes place outside of a series of economic conditions that make it possible’ (Irani et al. 2010: 1311–20).

The work of Edward Said highlights the nuances of professional design language often invisible, yet clearly relevant to any discourse on colonial tropes and imperial overtones: an area of investigation the author would like to take further.

How do designers move forward, using The Bottom of the Pyramid approach; capitalising on the benefits this mindset can bring to all involved, but doing so in a way that is not disempowering, that is not offensive and that is not relying on stereotypes to engage people? Is it possible that by being more aware of the language we use, understanding more deeply and from different perspectives what that language betrays to others, we are able to in turn change the way we practise design, in fact – as Margolin cries out for – are we able to change design culture, together?

**References**


Designers are frequently talking about skills and aesthetics, practice and theory, and these are important topics. But when it comes to politics, man can they get it wrong! I suspect it has more to do with privilege and cultural blindness than purposeful discrimination. And yet …

In September Co. Design ran a piece highlighting Tim Brown’s address at the 2012 Clinton Global Initiative. This made perfect sense, since Linda Tischler of Fast Company Magazine was the other keynoter. Brown, the CEO of IDEO, talked about global firms serving the developing world through social impact projects in which he stated, “But by being embedded, we can get insights to ideas that may lead to products or services that that market may need.”

Now, you might think, “Yeah, sounds good to me. What’s wrong with helping less fortunate people and benefiting along the way? It’s a win-win.” And you might be right, but for the not-so-subtle recurrent domination memes salted throughout Brown’s presentation. For example, Brown talks about poverty alleviation as a matter of market development. But, while he admits developing world markets don’t always behave like those in the West, he fails to address the issue of the fantastic imbalances they have created in places like India, where 600,000,000 live in poverty yet, due to a combination of corruption and wealth concentration, the rich continue getting richer.

Another example, taken from IDEO’s work in Kenya, describes the development of a mini-brand by IDEO workers in the field as bet er than what someone back in San Francisco might have come up with. Yet branding and brand placement do not attack poverty at its root, but only at its leaves. And this, what Brown calls ‘embedding,’ is what used to be known as living abroad, and yes, it has always been the best way to get to know a place.

The trouble with this design biz-speak is that it returns us to the same sort of exploitative mindset, previously known as colonialism, that it took over a century to escape. This couldn’t be clearer than where Brown talks about using the developing world, that sad consortium of failed states and disadvantaged peoples, as “a lab for first world countries’ whose solutions ‘can often help industrialized countries rethink entrenched products or services.”

We’re squarely in the Land of Hegemonic Language here, where thought leaders and change makers run...
interventions with their social development projects
to save or, in this case, serve the poor from/into a
fate worse than themselves. Only, I don’t know of
any disadvantaged people, other than the privileged
elites running such countries, who would be fooled
by Brown’s doublespeak.

What IDEO hopes to do through its social initiatives,
so brazenly labelled with a dot org suffix, is to steal as
much as they can carry. Ivan Illich observed this years
ago when describing an academic from MIT shooting
pictures in the barrios of Mexico City to take them
home to an incubator. Ultimately, the idea was to
repurpose what he’d learned from the disadvantaged
about designing within severe constraints to try to
sell it back to them with a new patina.

I’m going to be presenting at AIGA’s BLUNT
conference in Norfolk, Virginia April 13th. There are a
lot of papers scheduled to be given by distinguished
designers and design educators about a variety of
topics ranging from critical theory to contemporary
practice. But until designers step back and re-
examine the profession’s language in terms of its
neocolonialist memes, they can talk all they want
about saving the world and never get it right.

Kingston University
Christine Gent

Who Turns the Toys of Channapatna? Indian turned wooden lac ware and the role of Fair Trade in the design and commercialisation of the craft.

The hand-turned toys of Channapatna, India, fall from the lathe semi-finished, their bright coloured lac finish is applied while on the lathe. This paper examines how commercialisation of a highly specialised craft impacts on a group of craftspeople. The once thriving toy shops that line the streets of Channapatna (on the road from Mysore to Bangalore) compete for the few remaining customers. Designs can be moulded and changed according to the demands of the global market, but this compromises the craft and affec ts the community.

Historically the main products were toys. These objects were bought, played with and then thrown away, too every day for museums. The research draws on participative ethnography field work in Channapatna and oral testimony interviews, along with product analysis. The history of the unique and skilled process of lac turnery is documented.

Published research on the consumption of craft items shows that they do not mainstream easily, due to the personal connections of craft made objects. As the lac ware of Channapatna hits the global market it can be seen that it leaves its craft's history hidden. These new markets result in other changes such as mechanisation, centralised production and fewer jobs. The transition from the hand to power lathe excludes women, unless they are proactively trained. The physical changes to the lac ware are distinctive. There is an apparent break with the craft side of the lac ware, particularly within the traditional ritual and ceremonial roles. Today there is a huge range of products including beads, nesting dolls, whistles, fridge magnets and Christmas decorations.

The role of Fair Trade and crafts has also been mapped out, along with developments with regard to the new integration of cultural identity into the principles, adopted in Mombasa in 2011. The new Fair Trade Organisation label, being trialled by the World Fair Trade Organisation in 2013, also has potential application to Fair Trade craft products. There are two Fair Trade Organisations working in Channapatna. They aim to maintain employment of women, use sustainable materials, and preserve culture, whilst at the same time fulfilling the major requirement to develop sales, so that good wages can be earned by the maximum number of people. This then brings the challenge of selling to mainstream markets where an anonymous, less personal product, has a broader appeal. Fair Trade Organisations have to develop sales to ensure not only the livelihoods of the people of Channapatna, but also the future viability of these beautiful historic and much forgotten toys.
The hand-turned wooden toys of Channapatna, India, fall from the lathe semi-finished – their bright coloured lac finish is applied while on the lathe. This paper examines how commercialisation of a highly specialised craft impacts on a group of craftspeople. The once thriving toy shops that line the streets of Channapatna (on the road from Mysore to Bangalore) compete for the few remaining customers. Designs can be moulded and changed according to the demands of the global market, but this could compromise the craft and affect the community. This paper examines commercialisation of this traditional craft in the developing world and the implications this has for Fair Trade.

Fair Trade is already recognised as playing an important role in sustainable development; it has been researched and documented in many different ways, including economic, geographical and historical approaches (Anderson 2009). By starting again and approaching the analysis from the object with a material culture approach – ‘the things’ themselves, their biographies, their life histories, along with their production and consumption (Atfield 2000: 11–42) – the toys of Channapatna start to reveal where some of the risks and challenges lie when mainstreaming a traditional craft for the commercial market.

In South India wooden lac toys are made exclusively in the Channapatna area, Karnataka, and in Etikoppakka, Andra Pradesh. These locations are defined by the craft; Channapatna is also called ‘Toy Town’, with a large banner proclaiming it as you enter the town. This paper focuses on the toys of Channapatna.

The research draws on participative ethnographic fieldwork in Channapatna and oral testimony interviews along with product analysis, conducted in January 2012. Testimonies included both young and old artisans, one of whom started work in the 1940s; the father of another artisan went to Japan in the 1960s. Also interviewed were representatives of two Fair Trade organisations: Shilpa and Maya Organic. Many of the toys shops of Channapatna were visited.

I worked with the toy makers of Etikoppakka in Andra Pradesh in the mid 1980s and then visited Etikoppakka and worked in Channapatna in 2012. This gave me a high level of access to speak to and then formally interview the artisans.

Toy making in Channapatna is part of the vast array of craft manufacture in India, which is often organised in clusters. Mr Sanjay Agarwal, the Development Commissioner for Handicrafts in India in 2007, acknowledges the presence of six million artisans in India, in 530 regional clusters. The production of toys in Channapatna is just one of these artisan cluster groups (Ranjan and Ranjan 2009).

The literature refers to a group called the “Chitragars” who were engaged in wood-turnery (Campbell 1991; FAO). In Channapatna today, although the Chithragararu are the ‘art makers on the products’, which may be the group who are being referred to, they are not necessarily wood turners. The name for the lac ware artisan is Aragubannada Karakushala Kelasagararu in Kannada (the local language of Karnataka).1

Today there are both Hindu and Muslims working on lac ware products. Some communities are mixed, and some, such as at Yelakeri, are only Hindu, while others, such as at Makhan, are only Muslim (Campbell 1991).

Different sources quote different numbers of artisans working in the lac ware in Channapatna. This may be because the lac ware artisans are often part of the informal sector, working from small workshops, and thus the exact demographics of the artisans involved in the craft are hard to determine exactly. Many of the producers work in their own small workshops (see Figure 1). The highly skilled artisans move from one workshop to another depending on the work (Ventatesh 2012).

Channapatna is located between Bangalore and Mysore, and the main road is lined with toy shops (see Figure 2). The toy shops visited for this research...
soft and not usable for any other thing, only for toys, people are not interested to use this wood. It is very explained: 'It is not giving good fire. Therefore village growing, the wood merchant estimated that he could wastelands in Channapatna. Because it is fast-

Tinctoria) to Katerpilar Toys. Ideal for turning, it is an ideal material for making toys and decorative items. The second specific raw material is the timber. The number of wooden turned lac toys in museums is low; they were toys for children to be played with and then thrown away. Even in the makers’ own homes the toys have not been kept. When one retired craftsman, Sharief Khan, who was born around 1930, was asked if he had kept any of the old pieces he had made he said ‘No, gone, history gone’ (Khan 2012). By piecing together the writings and the oral testimonies, this study retrieves some of this lost history.

Today the toys of Channapatna are still a highly specialised and skilled craft, controlled by the person at the lathe, with only simple tools and few aids to help. The craft itself is still defined not only by the skills but also by the indigenous raw materials. Firstly, the lac, a resinous substance produced by the female lac insect in the Indian forest. This is a distinct substance from lacquer used in China and Japan, which is a tree resin. There are pockets of artisans working in lac and wood all over India. Franco Brunello (1973) claims in The Art of Dyeing and History of Mankind that the word lac is derived from the word laksha and has the same meaning as the word lakh, meaning one hundred thousand, and refers to the enormous numbers of insects which make up the lac.

I observed that the price varies with the quality, which is turn is reflected in the colour, with the lighter the colour the higher the quality, and the more translucent it is (see Figure 3). The sticks of coloured lac are prepared by heating the seed lac over a small fire and mixing the powdered colour into the lac using two sticks.

The second specific raw material is the timber. Figure 4 shows the timber merchant Kendaya, who had just made a delivery of Hale wood (Wrightia Tinctoria) to Katerpilar Toys. Ideal for turning, it is an indigenous tree found in the forests and on village wastelands in Channapatna. Because it is fast-growing, the wood merchant estimated that he could cut his trees every seven to eight years. Venkatesh explained: ‘It is not giving good fire. Therefore village people are not interested to use this wood. It is very soft and not usable for any other thing, only for toys, not used for any other purpose, like furniture or anything like that’ (Venkatesh 2012).

Walter Jack, a British designer who worked in Channapatna in 1985, said: ‘I asked to see the timber store and I think I walked past without realising and they showed what really looked like a pile of twigs’. He went on to say: ‘if you took the wood that is in Channapatna to any wood worker within 100 miles in the UK they would say forget it, you cannot make anything out of that’ (Jack 2012). So the craft is also built around a local timber which is available and regenerates quickly.

As I observed, after drying, the bark of the wood is removed using an adze, or if the timber is square the corners are roughed off. Traditionally production would have been in the home on a bow lathe and by both men and women (Campbell 1991). Today production is mainly by men standing at a mechanical lathe driven by a series of belts from an engine. The wood is knocked into the chuck of the machine lathe using a small adze as a mallet. It is skillfully turned to size using a variety of handheld tools. Once it has been turned to its final smooth shape, a stick of solid coloured lac is pressed against the rapidly spinning wood on the lathe. Ranjan and Ranjan note, and I saw for myself, that the friction melts the lac and spreads it over the wood (see Figures 5 and 6), changing different coloured sticks when necessary for each colour applied.

Finally, for polishing the lac on the lathe, to achieve the hard bright finish the leaf of the crew pine Pandanus odoratissimus is used to burnish the lac to the high polish level. Where the lac is spread over the required area of the turned timber the screw pine leaf is pressed against the lac until it shines (see Figure 7). This process can be assisted, as I observed, with a little oil, or greased with a little human sweat. Walter Jack, describing the finish, aid: ‘it looks like a Rolls Royce finish’. The hard, highly polished finish, a credit to the artisan, is beautiful and seems contrary to the quick and natural process by which it is achieved.

The screw pine leaf, which adds the shine to the finished oys, is cut and purchased locally (see Figure 8). Where clumps of this sharp-leafed plant have become established it is allowed to continue to grow so that it can be harvested for this purpose. It is fast growing and abundant. After drying, it is soaked in water and the sharp spines are cut off. One leaf an last the toy maker all day. When the leaf is used to burnish the lac, a small amount of colour from the lac may be left on the leaf, in which case a new part of
the leaf is then used to avoid mixing the colour from the leaf with the new lac being burnished.

Finally, lines or grooves can be cut into the lac to expose the wood underneath and the burnished lac were separated from the lathe using a parting tool. If necessary, delicate hand-painting is applied over the lac to create features such as the eyes of dolls.

The history of the craft is not known exactly. The artisans themselves, and in publicity supporting their sales, claim that the craft was patronised by Tipu Sultan. At the time of his defeat by the British in 1799 the craftsmen were alleged to have dispersed and settled at Channapatna. It is likely that Tipu Sultan, the Sultan of Mysore from the death of his father in 1782 until his own death in 1799, would have had wood turners amongst the groups of artisans that were patronised by him. Many blogs and articles claim that Tipu Sultan brought the combination of the lac with the turned wood from Iran or Persia. Tipu's Tiger, a large wooden life-size toy depicting a tiger eating a British soldier, which was owned by Tipu Sultan and taken by the British at the time of his defeat, has had the original paint finish pain ed over many times, and so the original finish is n t known. Despite a strong oral history this research did not find written documents supporting the Tipu Sultan link and requires further research.

The first turned wooden figures may have had a sacred or religious role originally. Venkatesh reports that his father in the 1970s used to make 'some gods like Shiva, Shiva lingam, like some dolls, Indian dolls' (Venkatesh 2012). These traditional god figures still retain these long-standing sacred connections and are still made from lac ware today and sold in the shops around Channapatna (see Figure 9).

In 1904 the ruling prince of Mysore sent Mr Makik Iladad Mia Bavasemia to Japan to learn more about the craft, and on his return he introduced the hand lathes (Kalanjia 1996).

Sharief Khan was trained at the Industry School in 1942 for three years starting at the age of 12. He remembered that he started at 7.30 am and worked until 5.30 pm with an hour break for lunch and received 2 Rupees stipend a month. The Maharaja of Mysore took an active interest in the craft and Sharief Khan remembers meeting him and that he reviewed their work. The training school had its own sales system and after, finishing his raining, Khan continued to supply the Industry School.

After coming out from the school I made for orders, which I was given. Directly the school people gave me orders of what to make, whatever I learnt there like engine or aeroplane, those pieces I was making them in my own house and supplying to them. (Khan, 2012)

At the end of the War of Independence, Channapatna was making not only dolls and toys but also designs featuring aeroplanes and tanks. Sharief Khan remembers working on a large order of wooden tanks to be given as school prizes.

Ilay Cooper and John Gillow in the book Arts and Crafts of India (1996) describe urban based crafts that had catered for the British and the Indian elite and certain crafts that had become organised as export industries. The situation was to remain virtually unchanging throughout the 50s and 60s.

In Channapatna, the manufacture of toys and dolls is the description given here of an urban-based craft which remained virtually unchanged. Khan remembered that it was just after 1947 or '48 that the first shops started to sell the toys independently of the government agencies. He also said that the pieces were more intricate then. The Channapatna lac ware at the National Handicrafts and Handlooms Museum in New Delhi from the mid-twentieth century have more detail than the toys made today.

The American Jaki Chandani worked with the artisans of Channapatna in the '60s and '70s and opened the trade to the USA (Kalanjia 1996: 12). The All India Handicraft Board opened in 1977 and the first director brought in Japanese consultants, and Nizam Hujrath Masterji also travelled to Japan and returned with orders for nesting dolls (Khan 2012). The influence of the Japanese can still be seen in the dolls today (Figure 10).

In the 1970s enthusiastic westerners started to become importers of crafts at the same time as the rise of Bollywood and the decline of western influence on the local market for toys (Cooper and Gillow 1996: 23).

Today there are two Fair Trade organisations based in Channapatna today that seek to wholesale the wooden toys not purely for profit: hilpa, who sell through SIPA, and Maya Organic.

Two of the main ways of recognising Fair Trade are through Fairtrade International (previously called Fairtrade Labelling Organisation or FLO) and the
World Fair Trade Organisation (WFTO, previously called International Federation of Alternative Trade, IFAT). They agreed a joint charter of Fair Trade principles in 2009. The charter recognises that there are many products that can be Fair Trade and states that: ‘Clearly one mode of operation cannot address all the problems experienced in different product sectors (from coffee to crafts). In this way FLO, which is the best known organisation working in Fair Trade, recognises that there can be Fair Trade crafts, although they do not have a standard to recognise crafts and so do not have any crafts carrying the FLO label.

The charter also explains that there are two routes to market for Fair Trade products, which are also recognised in the EU Report of Fair Trade and Development (EU, 2006).

Firstly, product certification, for which there are standards for many commodities from tea to timber, from coffee to cocoa, and more being developed all the time. The compliance to the standard is audited and these products can then carry the Fair Trade label.

In order to do this the standard has to define what it applies to. In the case of a commodity, for example coffee, this is not difficult, but for a craft there many different forms and no one common definition. Consequently, to date, there is no FLO product standard for a Fair Trade craft.

The other method of recognition of Fair Trade is through the integrated supply chain where the products are made or produced and sold by organisations that have Fair Trade as a core value throughout the organisation. The organisations that specialise in this route can be members of the World Fair Trade Organisation (WFTO). In 2010, WFTO had 472 member organisations and individuals in seventy-four countries (WFTO, 2010). Here the consumer usually recognises the product as Fair Trade through the brand of the member organisation. For example, Traidcraft in 2012, who sell many Fair Trade crafts in the UK, reassured their customers that their crafts are Fair Trade through assurance in their own monitoring process.

It is significant that the role of craft work within Fair Trade is declining in the percentage of the Fair Trade goods sold. In percentages, the certified trade (not including crafts) is almost twelve times bigger than the non-certified trade, and while the non-certified (including crafts) grew by 6 per cent, the certified grew by almost 43 per cent in the same period (Keir 2007; DAWs 2011).

Another indicator of the declining role of crafts within Fair Trade is the level of research on craft compared to commodities such as food and coffee. For instance, The Fair Trade Institute aims to list all the Fair Trade publications from 1992 to today in print or in journals. In the early archives there are many references to craft work; however, recently there is increased focus on food and a clear decline in the inclusion of craft products.

This raises the question of whether craft work is still even relevant to Fair Trade production, or has this decline in interest arisen because the customer only wants to buy labelled products? Is the decline taking place because WFTO – the organisation working with craft work – has been badly governed in recent years, as stated in the Hivos and Cordaid report (2011)? Or is it because Fair Trade has never succeeded in defining formally what Fair Trade craft work is? Although these issues are not the subject of this essay, they are nevertheless of long-term importance and interest, requiring further research.

There is thus as yet, and significantly to this research, no formalised definition of Fair Trade craft product, although there is now a label in development to recognise one (WFTO, 2013). In 2013 the first dedicated Fair Trade Organisations were audited against the new World Fair Trade Organisation (WFTO) Fair Trade Guarantee System and will be able to label its product Fair Trade. A craft product made in Fair Trade conditions in the global South will now be able to have a credible label (WFTO AGM 2013). Although the two Fair Trade Organisations based in Channapatna are not yet externally audited, both Maya Organic and Shilpa are members of WFTO. Fair Trade aims to create employment to disadvantaged communities. It can sell exclusively in the local market, but often it does this by selling to overseas and sometimes mainstream markets. With these markets come constraints and changes to the craft.

Fair Trade has engaged with wooden lac toys since at least the 1980s. For example, in 1986 Oxfam bought a turned wooden lac necklace from Etikoppakk. How does the selling of a uniquely skilled craft to the western market impact on both the product and its producers? The World Fair Trade Organisation has ten Fair Trade principles, which should be followed by Organisations who are members (WFTO 2011). Principle Three is called ‘Fair Trading Practices’ and in
it WFTO recognise the role of design and state that the Fair Trade Organisation ‘avoids duplicating the designs of patterns of other organizations without permission.’

Shilpa has had regular design sessions, using both national and international designers. The designer needs to know not only the local craft they are working in detail, but also the commercial restraints that impact the final cost of the product as well as what market they are designing for. Katherine Ladd in ‘Consuming Goodness’ writes on the challenges of using western designers in developing countries, specifically in Africa. Ladd writes that it ‘requires a pragmatic and unpatronising acknowledgement of the values, hopes and desires of those who create the object’ (Ladd 2005).

The Hove Museum craft gallery signage states, in response to the question ‘What is Craft?’: ‘The process of making is a personal journey of self discovery and self expression’. But this may not be the perspective of the traditional crafts person. One of the themes of crafts is how the ideas are developed not as original new ideas but instead are generated out of the community. Gell in The Enchantment of Technology says that the Trobriand wood carver ‘does not seek to create a new type of canoe board, but a token of an existing type, so he is not seeking to be original’. Soetsu Yangagi describes the crafts person as pointing the way like a compass; as one piece is copied and developed by others ‘the object now no longer belongs to the work of the individual’ (1972).

As stated, the town of Channapatna is defined by its toys; the toys are everywhere, hence it is called Toy Town. When asked about design protection Ventakatesh, who works with Shilpa and SIPA, stated: ‘no, we don’t have any protection, we are happy to share with all the peoples, we are always thinking to keep all the peoples with us, we are not only separate people’. This is in contrast to what I observed in 2012 Maya Organic, where there were signs saying ‘no photography’.

In 2005 the Geographical Indicators registry granted a GI certificate in recognition of the tie of the locality to the unique skills and materials of the turned lac ware of Channapatna, but this is very little used or known (Manoj 2006), although it could be a useful tool for crafts (Ballyn 2003). The question is whether design protection is appropriate for a traditional craft, made in a community. Is it appropriate to a product which is at least and often mainly derived from the skills and experience of the community, where Fair Trade seeks to acknowledge its producers and work in partnership? Maybe the use of Geographical Indicators within Fair Trade needs to be further developed.

In Mombasa in May 2011 WFTO added the following sentence to its Principle 3: ‘Fair Trade recognizes, promotes and protects the cultural identity and traditional skills of small producers as reflected in their craft designs, food products and other related services.’ This works well in world shops where the identity of the producer is celebrated and advertised, but as the product enters the mainstream this is more difficult to maintain. Many Fair Trade craft-made products are bought as gifts and, as Gloria Hickey states, ‘to be successful as a gift those associations with craft would have to be shared by both giver and recipient’; in this case craft ‘is not a safe choice’ (Hickey, 1996), Glenn Adamson (2009) states with regard to crafts that ‘they send mixed messages they can be unselfconscious or pointedly reformist. They are cultural texts that require decoding … This is never a simple matter’. And so as the hand-turned wooden toys of Channapatna sell to a large market, their identify as both craft and nationality become more and more masked.

SIPA went to Italy and saw how popular football is there and came back with the idea to make football key rings, fridge magnets, etc. Bhupathy of Shilpa recalled how he and Kaleen sat down to develop these whistles after Ramasamy of SIPA came back from Italy realising how much everyone loves football. ‘In the beginning with that Ramasamy thought we sat and discussed whistle, key chain, fridge magnet, sharpener, all the things. Then we made the samples. Even though this painting he has to ask me how to do it. I gave him some little idea and then he succeeded to make it, and it sold in thousands’ (Kaleem, 2012).

WFTO Principle 6 requires that the organisation has ‘commitment to non-discrimination, gender equity and freedom of association’. In 1991 when Campbell researched the lac ware craft for FAO it was found that ‘more urban than rural women are involved, over 90% continue to work on hand lathes, most women continue to be in the household sector, women continue to produce traditional products required for local markets, women’s earnings are significantly lower than men’s and the number of women in lac-turnery is declining. The women lac ware producers of Channapatna traditionally made beads and simple items’. I observed that mechanization, resulting in larger orders and electrification, encourages the development of larger production units and small
to medium-size factories. These are replacing the household units where the women used to work. Without training to transfer their skills to the power lathe, women are being excluded from the new mechanised industry.

At Maya Organics they proactively train women in the use of the power lathe:

training for girls in lac ware – the people used to be scared of the machines and all. They don’t want to work, so slowly we started building the confidence and then we put them into the working place and start training, and now in our organisation there are more than 50% women working in the craft. (Bano, 2012)

This appears to support the position of WEIGO in that ‘women producers have experienced significant progress in meeting their practical and strategic needs through participating in collective forms of enterprise and linking to Fair Trade markets’ (Jones, 2011).

Producers of crafts in developing countries are mainly part of the informal sector ‘working in units that are not regulated by the government and do not receive social protection through their work’ (ILO, 2002). For example, the International Labour Organisation (ILO) in 2002 estimated that 93 per cent of employment in India was informal.

Craft work is a significant contributor to the Indian economy. It is estimated that it is 15 to 20 per cent of the total workforce and the market is around US$4.6 billion. The export of handicraft in 1996 was US$154 million and increases year on year – in 2000/1 it was US$434 (Government of India 2011). With such enormous implications it is not surprising to see that the Government of India wishes to have significant control, input and investment in this sector.

One issue that immediately arises once the toys have to fit global regulations is safety. In response to this, in 1995 the South India Producers Association (SIPA) held a workshop at Bangalore Design Institute on the use of natural dyes and wooden toys with three SIPA groups and forty-eight artisans taking part. Subsequently SIPA organised one more training in a HRED centre, Padappai (in the suburbs of Chennai), for the wooden toys along with Kalamkari, handloom fabric, palm leaf, and natural fibres. This was training in how to use locally made colours to colour the lac, returning to the traditional way of making colours.

Venkatesh when interviewed (2012) said:

You know that Shilpa has helped to give us some technical improvements in our craft ... who are expert in the products, so it required some child standards. Then we adapted our toys. That’s how we got our export orders ... and we get the colours, how to make the natural colours, from Shilpa.

Here he is referring to a workshop on ‘The Technique of application of Natural Dyes on Lacquerware Craft’, which was conducted in Shilpa with the direct help of SIPA for the benefit of artisans in 1995. The training was given by Roshan Kalapesi, who is the founder of Paramparika Karigar, an organisation that organises fairs around India and aims to preserve and promote the traditional arts and crafts of India. When I visited I observed that Shilpa achieved the non-toxic finish on the toys as required by the international market by using paint tested for international standards for toxicity mixed with the natural lac. The awareness has now changed. With the new colours so a new look has come to the toys – more translucent colours and more of the wood showing.

There are conflicting and contradictory roles created in the commercialisation of the craft. On the positive side, as the craft becomes more mainstream and gains larger orders it has potential to generate more income, and encourage the maintenance or generation of the crafts skills, but at the same time it both loses its traditional identity, and thus exposing itself to copying by other craftspeople, and may also compromise Fair Trade principles.

And so some significant changes and design developments can be tracked and attributed to both Government and Fair Trade Organisations in Channapatna. Copying is part of the craft tradition, and the use of Geographical Indicators is perhaps a more appropriate form of protection than design protection for traditional crafts.

If, on the other hand, the toy has more of the local identity and is hence more difficult to copy, the hand-finished appearance also makes it more difficult to sell, as discussed by Hickey. The craft item then has to connect to the consumer, which is difficult when the consumer and producer are in different countries, unless through a world shop which celebrates rather than hides the identity of the producer. Although the toys have now become popular in a wider market it has been at a cost. The process of moving to a global market has meant sacrificing aspects of the product’s
local identity and, in turn, products become easier to copy by other toy-making countries such as China.

Although the craft’s centralisation can lead to improved quality and capacity, it can also exclude women producers unless they are proactively trained. Fair Trade Organisations have made interventions such as training women and training in toy safety that have helped the craft. Daniel Miller states that ‘it is clear that one of the key struggles of modern life is to retain both a sense of authentic locality… and yet also lay claim to a cosmopolitanism that at some level may evoke right to a global status’. It is with these challenges and both the help and hindrance of two Fair Trade Organisations that the toymakers of Channapatna are developing their craft.

Notes

1 Information collected during field visit January 2012 and confirmed by email correspondence with Mr Bhupathy, 10/12/2012.


Figure 1. Many of the workshops are small and form part of the informal sector. Photograph by the author, January 2012.

Figure 2. The Channapatna shops are stacked from floor to ceiling with toys. Interior of Vinayaka Handicraft Emporium. Photograph by the author, January 2012.

Figure 3. The resin is secreted by the lac insect (Lacifer lacca), harvested in the forests of India, processed into discs of ‘seedlac’ and sold to the toy makers of Channapatna by the kilo. Photograph by the author, January 2012.

Figure 4. Kendaya, a wood merchant in the town of Channapatna, has been a merchant for 40 years. He is sitting on a newly delivered load of timber (Wrightia tinctoria), outside the production unit of B. Venkatesh. Note the trees are small, from 14 to 25 cm in diameter on average. Photograph by the author, January 2012.
Figure 5. The wood is shaped on the lathe using a turning chisel. The hand guides the chisel to shape the wood. The fast rotation of the machine lathe dictates the symmetrical rounded shapes, and it is the skill of the producer that shapes the wood. Photograph by the author, January 2012.

Figure 6. Applying the lac, the batti is held against the fast turning wood, where the friction melts the lac and sticks it to the wooden shape. At first the lac is rough and uneven. Photograph taken by the author at Shilpa Trust, January 2012.

Figure 7. The lac is burnished with the screw pine leaf. The pressure melts the lac. As soon as the lac is the desired thickness and shine, the leaf is moved onto the next area. I observed that the larger the diameter of the piece of wood being polished, the more difficult it is to burnish. Photograph by the author, January 2012.

Figure 8. The dry leaf is known locally as kevda or talegiri, also called screw pine – the sharp spines are removed before use. Photograph by the author at the workshop of B. Venkatesh, January 2012.

Figure 9. Traditional Hindu Vishnu figure on sale in Channapatna today. Also note the educational games on the right. Photograph by the author, January 2012.
Figure 10. Toys for sale in Vinayaka Handicraft Emporium, B. M Road, Channapatna. The dolls are for sale to the local Indian passing tourist. These dolls have a distinctly Japanese look to them. Photograph by the author, January 2012

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The Zimbabwean-born artist Daniel Halter turns towards traditional forms of craft such as soapstone sculptures and woven mats to uncover narratives of loss, displacement, and destruction experienced since Robert Mugabe has come to power. These forms of craft are traditionally seen as curios sold to tourists as a document of an authentically “African” experience, but in Halter’s deployment they capture the day-to-day struggles of Zimbabweans under the Mugabe regime. For example Halter makes woven mats that contain farming maps referring to government redistribution policies that led to famine interspersing them with Zimbabwean currency now valueless because of hyper-inflation. In the practice of crafting these works, Halter documents a loss of production represented in the maps and a decline of value represented in inflated currency. By using craft as a narrative tool, specifically invoking the curio and its disposable function, I argue that Halter narrates the politics of loss, reshaping the dialectic between Africa and the West, undermining a singular and ahistorical image of Africa traditionally encoded in these crafts.

The question of value becomes central to Halter’s work, conceptualizing a mode of exchange between Africa and the West. In a body of work surrounding Zimbabwe’s presence in British rave culture, Halter produces a series of soapstone sculptures, a traditional form of Shona craft in Zimbabwe, entitled *Stone Tablets/Bitter Pills* where he carves the form of ecstasy tablets now enlarged to the size of landmines. An accompanying piece, *Untitled (Zimbabwean Queen of the Rave)*, juxtaposes images of British youths dancing to Zimbabwean singer Rozalla’s mid-90’s hit single “Everybody’s Free (to feel good)” with protests in Zimbabwe.

In these works Halter frames craft production to consider how an image of Africanness is transmitted between Zimbabwe and the West, making an implicit critique of the image of Africa articulated through its craft production. Specifically, using ecstasy tablets, a hyper-inflated commodity in the U.K. (drawing association to the freeness referenced in Rozalla’s song), now crafted as a bitter pill in the form of a landmine, causes one to question who is actually free to feel good. To do so through the image of a hyper-inflated commodity returns to the bits of detritus collected in Halter’s woven mats, where it becomes clear that traditional guarantors of value in the form of money no longer function in present-day Zimbabwe.

Making use of Walter Benjamin’s treatment of the outmoded and the image of the chiffonier, or rag picker, as a witness to history, I argue that Halter’s work through the function of craft critiques the devalued form of the curio as a symbol of Africanness. At the same time Halter’s work constructs an implicit dialectical engagement between Western nations and African alterity, which repurposes these outmoded and discarded commodities and modes of production into something that again has value, preserving its status as art object, a document of loss, and a mode of remembrance.
Conceptions of experience: historical truth, expressed in the present, become one of the central themes of the German philosopher and literary critic Walter Benjamin's philosophical project (Benjamin and Osborne 1994: xi–xiii). Benjamin's work considers how the past continually remakes itself in the political and social specificities of the present. This concept is perhaps most clearly expressed in Benjamin's famed essay ‘The Work of Art in the Age of its Technological Reproducibility’, which reflects in part on the potential differing forms of media offer for new forms of experience. Film is particularly capable, in Benjamin's reading, to delve deeply into historical material; in ‘The Work of Art’ essay he uses the metaphor of a surgeon penetrating the patient to more fully experience truth than a magician is able to (Benjamin 2002a: 115–16). While it seems odd to begin an analysis of craft and art with the technological advances of cinema, the haptic and tactile modes of working that Benjamin advances in ‘The Work of Art’ merge with the work of the craftsman that equally engages Benjamin within his body of work. By considering the haptic potential for experience each domain offers us, craftwork quickly becomes the dialectical pair to the technological.

The Marxist literary critic Esther Leslie reads Benjamin's work, in particular his reflections on Nikolai Leskov in the essay ‘The Storyteller’, as understanding craft through its hapticity; craft's relationship to storytelling, linked by the haptic, conveys historical knowledge through the practical knowledge of craftwork and the journeys of the storyteller (Leslie 1997: 21). The storyteller as Benjamin understands the figure was both a traveller, the journeyman who moved around the world, and a craftsman. As the journeyman returns home to begin working as a craftsman, these craftsmen equally find their home as storytellers; Benjamin argues that the peasants and sailors who are master storytellers find their universality within the ‘artisan class’ (Benjamin 2002a: 144).

Through this marriage of crafting and storytelling, Leslie notes that Benjamin uses two key examples to link the two practices: the potter’s labour as aligned with the storyteller’s narrative, and the relationship between text and weaving (Leslie 1997: 22).

The latter metaphor emerges in Benjamin's reading of Proust, where Benjamin reminds his reader that the Latin term for text, textum, refers to something woven (Leslie 1997: 22). Rather than making a pronouncement on the ontology of craft production vis-à-vis art or industrialised production, I wish to stay within Leslie's reading of Benjamin and the metaphors Benjamin further evokes in his explorations of history, memory, and experience in the social transitions of 19th-century Paris that anchor The Arcades Project (a work whose themes strongly relate to Benjamin's larger body of work from the mid 1920s onwards). The Arcades Project is itself a textile of sorts: a bricolage of texts that construct a dialectical image of the birth of modernity. Through this network, craft in my reading becomes a critical force, a historical voice that Leslie describes thusly:

Crafted objects, specifically the pot, provide a model of authentic experience, the experience of a person imprinted onto the objects that he or she brings into being, and tapestry offers a model of authentic memory, the weave of past and present experience and utopian possibility ... Craft as a mode of activity translates into craft as a power, an obscure power, nestling in the imaginatively conceived object. (Leslie 1997: 29)

Taking Leslie's reading of craft as a text, or a woven web of historical narrative in the age of digital experience begins to merge with an equally important question in Benjamin's work: recapturing potential in the outmoded, those objects discarded or overlooked because of their purported valuelessness (such as old technologies in the age of the digital). Outmoded forms of visual production have a strong relationship to haptic modes of making. For example, Benjamin was interested in the work of the Dadaists who incorporated tickets, spools of cotton, and cigarette butts into their work, each of these objects acting as a trace or fingerprint of everyday experience; through this network, outmoded forms of working become linked with the haptic functions that craft represents (Benjamin 2005: 774; Leslie 1997: 26). Reading craft through Benjamin's work constructs it
not only as a historical voice but also a critical one in terms of its capability to produce new forms of social value in an era of capitalism.

Recapturing the discarded ephemera and fragments of lived experience, particularly through the work of craft, is at the core of the Zimbabwean-born artist Daniel Halter’s work, which interrogates the dichotomy between the mass-produced and the bespoke object, thusly reconceptualising value in traditional forms of African craft most commonly seen and consumed as curios. To use the curio as a commodified yet handmade work enables Halter to historicise the relationship between Africa and the West through craft, constructing a mode of history that represents how historical experience is shaped through the consumption of these goods.

Halter’s work is explicitly framed through craft and crafting: he frequently uses the curio represented in woven mats, traditional soapstone sculptures, tartan-printed woven plastic bags, and beadwork to engage with a series of political questions surrounding southern Africa. Most explicitly, his work explores the politics of Zimbabwean president Robert Mugabe’s remaking of the nation. Specifically, Halter refers to the hyperinflation of the Zimbabwean dollar and the repression of freedom under the Mugabe government. Halter’s use of craft becomes a mode of historical experience in the present following Benjamin’s treatment of craftwork and historical narrative.

Through traditional modes of African craftwork, Halter explicitly reframes the movement of globalised flows through its consideration of the outmoded as a form of value. Furthermore, this becomes a rich intertextual investigation working with traditional African crafts including weaving and Shona (the largest ethnic group in Zimbabwe) sculpture. Using these forms of crafting, Halter’s work becomes a critical language to re-examine the emplacement of peoples and cultures transnationally. Craft in its specificities, of en formed in the colonial encounter (as is the case with Kente cloth), constructs a model of experience that offers a nuanced consideration of the political materialities of Africa. This thinking runs counter to the perpetual stereotypes of the continent as a unitary whole and its existence as other to modernised western nations. As immigration alongside of the politics of Zimbabwe is a significant theme in Halter’s work, this use of craft documents the flows of people within the continent itself. Craft becomes a language within Halter’s oeuvre to critically examine the modes of production and consumption that tie Zimbabwe to western perceptions of Africa.

Halter’s Yes Boss II (2007) provides an image of craft turned towards a language of critique by representing the social tensions of Zimbabwe’s political geography. Yes Boss II is a hand-woven work crafted by interlacing a map depicting a farming region of Zimbabwe with shredded $1,000 Zimbabwean banknotes and gold thread, leaving the phrase ‘Yes Boss’ visible in the centre of the work. The woven image evokes a number of traditional West African ceremonial wraps that emerged when the British introduced silk to Africa. To give one example, its appearance resembles Kente cloth. This hybrid form of craft, rooted in colonial exchanges, is used in Yes Boss II to refer to two distinct aspects of Zimbabwe’s post-colonial realities: inflation, and resident Robert Mugabe’s land redistribution policies.

The redistribution of white-owned farmland evoked in Yes Boss II’s map of former farming plots preserves traces of loss that were erased in the image of political revolution and anti-colonial rhetoric. While initially purchased for fair prices, in 2000 Mugabe supporters forcibly seized approximately 14 million hectares of land, resulting in the beating and murder of white farm owners. Despite redistributing in the name of giving land to blacks, the captured land has largely gone to Mugabe supporters. Because of the small size of the parcels, nepotistic redistribution policies, and a lack of expertise of those who now own the land, agricultural production has declined dramatically and led to malnourishment in Zimbabwe (Smith 2010).

The second, and related, issue is the Zimbabwean dollar’s rapid inflation as the government printed the necessary currency to meet its needs, leading to estimated inflation of close to two trillion per cent a year and bread prices of nearly $10,000 for a single loaf (Berger 2008). In this endlessly expandable domain of inflation and the disposal of production, Yes Boss II is a specific, crafted object made from something that is itself endlessly disposable. Yes Boss II as a work of art – and art and craft are frequently considered in frameworks of economic value – is made of currency that is, in essence, without value. This pairing of disposability and the handmade gives the work an ironic quality, holding the two in a dialectical tension. Working through the network of associations the devalued currency represents also recalls the loss of value in agricultural output in Zimbabwe, as the appropriation...
of land led to declines in production. The drop in crop output is one factor that influenced the massive number of Zimbabweans and residents of a whole host of other African nations to relocate to South Africa, where Halter currently lives and works.

As a handmade object, referential to traditional forms of African craft, Yes Boss II imagines a politics of ‘Africanness’. Halter’s woven images do not just simply recall the loss of white farms, its ‘yes boss’ is suggestive of a farm labourer responding to the owner, documenting a trace of colonial power paradigms within the map’s image that confronts the failures of Mugabe’s land redistribution. It does not advocate a return to white control that is rendered in the criticisms invoked by the title but, rather, reveals the ideology of newness with which Mugabe has tried to remake Zimbabwe that has been catastrophic for both white and black Zimbabweans. It is impossible to return to a pre-colonial existence, and Mugabe’s appeals to do so are made for political gain, resulting in further losses of vital goods. Yes Boss II’s form highlights this dialectical problem: its weft of reproducible currency and warp of old farming maps suggest a crisis emerging from this situation of colonial power and the ideologies of black empowerment expressed in the land redistribution policies. Yes Boss II speaks to two modes of exploitation addressing the colonial relationship without giving in to simple ideologies of the new expressed in Mugabe’s politics. In this way Halter’s work looks to the wider network of Zimbabwe’s history as it is expressed in the present, making the textile a form of Benjaminian experience.

Halter repeatedly uses the textile as a main focal point of his work, as the theme of weaving that brings him in contact with Benjamin’s storyteller is worked on in a variety of ways. This further investigation uses fabric by appropriating tartan-printed woven plastic bags that immigrants coming into South Africa use to carry their belongings. The bag has appeared in Halter’s oeuvre as a garment, sculptural installations that make reference to the video game ‘Space Invaders’ and their display in a tattered and broken condition. Halter has traded new bags imprinted with a ‘Space Invaders’ logo for old ones from immigrants at markets in Cape Town and Pretoria, South Africa (Halter 2013). This body of work uses the textile in its literal and metaphorically implied historical abilities that, like Leslie’s reading of Benjamin, speak about the condition of immigrants in South Africa today. This body of work becomes a fabric that functions in the literary critic Michael Rothenberg’s work as a mode of multidirectional memory. Rothenberg defines multidirectional memory as a force that is ‘subject to ongoing negotiation, cross-referencing, and borrowing; as productive and not privative’ (Rothenberg, 2009: 3). If we consider the woven network of different modes of political expression that the textile engenders in Benjamin’s treatment of Proust and also present within Halter’s work, this kind of narration constructs a terrain of cross-referencing that treats these bags as textile and multidirectional memory – further treating the craft object as a device capable of writing history across temporal and geographical divides.

Kotoku twa a, na mmati adwo (2012) is one of the several tattered bags Halter uses in the series. Hung simply on the wall in its worn state, Halter has printed a phrase – ‘when the bag tears the shoulders get a rest’ – which references a work bearing the same title, When the Bag Tears the Shoulders Get a Rest (2010), that shows a torn bag wrecked under the weight of vast bundles of devalued Zimbabwean currency held within it. The bag works between the loss of value in the weight of the devalued currency and the mode of diaspora through the fabric of the bags that are used to transport the immigrant’s belongings. Halter reveals that, in Ghana, the bags are referred to as ‘Efis wura Sua M3’. Literally meaning ‘help me carry my bag’, these textiles make reference to the rapid expulsions of migrants in Ghana and Nigeria from the 1960s to the 1980s (Halter 2013).

The presence of this textile within Halter’s work treats the fabric as a visible trace of the dislocations of migrants throughout the continent. The movement of the work between craft as a form of handmade value and the fabric as a form of detritus merge as a dialectical pairing that narrates visions of history in the present. Halter’s work through the collection of this detritus becomes analogous to the rag picker, who carefully combs through the refuse of everyday life to locate treasures (Benjamin 2006: 108). This practice becomes aligned to the work of the artist within Benjamin’s analysis – in particular, Benjamin references Baudelaire’s poetry, thus making the rag picker and artist both witness to and storyteller of historical transformation and everyday experience (Benjamin 2006: 108–9).

These bags speak to memory and history through fabric, documenting the movement of peoples in Africa, constructing a specific language in Halter’s treatment. A further work in this series is entitled Ghana Must Go Quilt I (2011), the mocking title West African immigrants give these bags (Halter 2013).
Ghana Must Go Quilt I uses the same tartan textiles, but constructs patchwork quilt patterns with these bags. The tumbling block pattern Halter incorporates in Ghana Must Go Quilt I constructs a specific language, making reference to secret codes placed in quilt patterns to help slaves in the southern US, who were escaping slavery by fleeing o the north. The tumbling block pattern, Halter notes, communicated that ‘it was time for slaves escaping along the railways to pack up and go, that a conductor was in the area’ (Halter 2013). This form of navigation signalling the moment of exodus, and moving to a new life, literally encodes a language through the labour performed by craft.

However, if we consider how Halter uses this language, transporting the discourse of slaves moving through the Underground Railroad to the political movement of a diff er ent set of migrants from West Africa to South Africa, it renders the quilt a text that narrates the political situations of migrancy, diaspora and slavery simultaneously. Ghana Must Go Quilt I becomes a mode of Rothberg's multidirectional memory; it speaks to diff er ent moments of diaspora in Africa within one tightly woven text. Halter makes explicit references in this series of works, The Truth Lies Here, to 'amakwerekwere', a pejorative slang term in South Africa for migrants from other parts of the continent, and the phrase 'go home or die here', a threat lodged against these immigrants in South Africa's 2008 anti-immigrant riots.2 The craft thus speaks to the urgency of the present political situations, but does so in the form of discarded, valueless (in terms of the currency) but also outmoded objects. Halter's interrogations of political memory in southern Africa, woven together, take on a second series of multidirectional considerations, between the geographic models of nation-state and continent and, simultaneously, reframing the networks through which the curio as craft circulates, but considers further how these modes of transmission frame narratives of political formation in the other geography in which it resonates.

This theme, between Europe and Zimbabwe, also touched on in The Truth Lies Here, is considered through the relations between British rave culture and the popularity of Zimbabwean pop-singer Rozalla's rave hit 'Everybody's Free (To Feel Good)', which takes on a tragic meaning when it returns to Zimbabwe. In a residency at Glenfiddich distillery in Scotland, Halter produced Furry Boots ye Fae? (2010), a work featuring the artist clad in a Tartan kilt fashioned from woven bags and wearing a pair of furry boots popular in new-rave culture. Thus the two symbols of raving and exile speak to a language of expressing with one's feet, either in the form of dancing or in the process of emigrating from one's homeland. This interest in the relations between Europe and Zimbabwe explored through Rozalla's visibility also employ craft in the form of a curio, which in the age of the digital and mass-produced leads us back to the outmoded.

Halter's production of outmoded forms of visual culture turns towards the antiquated in its handmade form. His work belongs to a recent past (in opposition to the ancient, which is often modelled as eternal). Benjamin locates the outmoded in his short essay 'Paris, the Capital of the Nineteenth Century', a theme Benjamin would expand upon in The Arcades Project (Benjamin 2002a: 33). Benjamin's essay analyses Baron Von Haussmann's famed rebuilding process of Paris, where Haussmann undertook a project of widening the avenues, installing sewers, and breaking up old neighbourhoods (especially those of the communards). The widening of avenues gave rise to a new form of speculative culture intimately tied to the rise of capitalism and most visible in the construction of the arcades that fascinated Benjamin.

However, Haussmann's political tactics not only opened the spatial terrain of Paris to a new radically consumable form of capital (itself tied to the mass-produced), but it also made going to the barricades impossible, thus blocking forms of political dissent within the city's terrain (Benjamin 2002a: 42). Haussmann's refashioning of social space for conservative political ends highlights a similar refashioning in Mugabe's ideology of land redistribution in Zimbabwe, a theme Halter represents in his woven works. In reality, land redistribution becomes an ideological screen for nepotistic control and a violent repression of dissent. The government in each instance opens social spaces while using that openness to facilitate a repression of resistance to its sovereign power. Benjamin's reading of Haussmannisation understands art as being put into the service of technology, removing traces of the everyday imprinted in Parisian social space; instead, Benjamin tells us, the citizen becomes estranged from the city, no longer feeling at home and becoming increasingly aware of the city's new inhumanity (Benjamin 2002a: 41–2). The imprints, preserved in maps like Yes Boss II, that recount a similar experience for Zimbabwean citizens under Mugabe are further preserved in this dialectic between Europe and Zimbabwe that was also explored through the form of the curio.
This relationship between the West and Africa is explored in Halter’s video Untitled (Zimbabwean Queen of the Rave) (2005). The video features Rozalla’s song and images of British youths dancing at raves juxtaposed with pictures of riots and protests in Zimbabwe that are met with force by the police: precisely the same expression of dissent neutralised by similar tactics that Haussmannisation enabled in the streets of Paris. Both of these scenes are portrayed as dances, with people moving to the beat of the song that references the countercultural event of the rave but also invokes dancing through the toyi-toyi, a form of dance common in protests in both Zimbabwe and South Africa. Together these events raise the question of who is free to ‘feel good’. Largely fuelled by ecstasy and other drugs, rave culture has been framed as a marginal and transgressive space in Britain, whereas the revolution for access to democratic representation, food, and land is met with violence. Few are free to ‘feel good’ in Zimbabwe as the access to safety and sustainability is controlled by Mugabe’s regime.

A related project, evoking the legacies of rave culture, frames a clearer relationship to craft. Halter’s Stone Tablets/Bitter Pills (2005) features soapstone sculptures (a Shona art form in Zimbabwe) upon which images such as a star, a skull and crossbones, the eagle (a national symbol of Zimbabwe), or the Mercedes-Benz logo commonly found on ecstasy tablets are carved. Unlike the pills themselves, these sculptures are about the size of a landmine (Williamson 2010). The allusion to consumptiveness (that is, as sculptures of things one ingests) is evocative of tourists on safari purchasing these curios. Markets found throughout Africa sell curios, such as soapstone sculptures, in endless numbers to tourists willing to buy them. These items lose some of their cultural impact upon their return to the West: it is debatable if those who purchase a mask, Basotho blanket, or Shona sculpture engage with their intended meaning. Instead, they most likely return to the western mantle as symbols of singular ‘Africaness’ despite both weaving and soapstone carving having developed from colonial encounters. Thus the act of consumption freezes history within these objects.

Likewise, Rozalla becomes a singular image of Zimbabwe in a world of consumptive 90s drug culture. This discord within Halter’s imagery reveals the paradoxes that arise as kids in Britain dance in fields and other venues which have largely been co-opted by business ventures, while at the same time dispossession and violence rages in its former colony’s move to redistribute land. To ‘take’ culturally becomes sinister – the pill is no longer the guarantor of a ‘good night’ but a landmine: it holds the potential to destroy or maim. The ecstasy tablet as an image of excess and consumption turns the discussion back towards the rates of inflation and saturation. (In the UK ecstasy tablets for most of the past decade were incredibly cheap and pills could be bought for a little over £1; see Owen 2006.) This market saturation, like the inflation of currency in Zimbabwe, has brought prices down, bringing one back to the conflict hailed by Halter’s project: in the UK capitalism and democracy make it ‘free’ to feel good. The opposite is true for those in Zimbabwe, where the endless reproduction of money has priced Zimbabweans out of basic goods and services. The bitter pill left for Africans to consume is surely lacking any sustenance.

Halter’s appropriation of traditional craft forms makes use of the outmoded but also calls attention to the fla our-of-the-month reproducibility of pop stars such as Rozalla and the culture of cheap drug consumption that accompanies it. This reproducibility and consumption within rave culture highlights the disposability of capitalism’s desire to continually make things new, severing it from any use value or everyday function (Benjamin 2002: 41). Handmade crafts, as Leslie’s reading reminds us, brings with them a history, thus providing a new form of experience through the work of craft in an era of late capital. The curio itself becomes a model that bridges this domain. Sold in massive quantities at curio markets and yet handmade, they become symbols of a synthetic consumption of Africanness. This consumption, much like the consumption of ecstasy as infini ely reproduced form, brings to bear endless disposability in capitalist economies.

Western nations also endured mass inflation in Europe and the United States during the Great Depression of the 1930s. Halter enters into this question of refi ation, experienced through a loss of value, asking: when everything is endlessly expandable, how do people find orth in the work they produce? In Zimbabwe, the spiralling number of zeros attached to the dollar took on a life of its own, a function seen in the endlessly expanding set of zeros that are also used in Dadaist filmma er Hans Richter’s 1927 film Inflation. The welling volume of zeros, a visual manifestation of inflation that results in a loss of value, expressed in both artists’ work, examines the estrangement of the labourer from the value of their work as it yields less ability to provide sustenance, security, or stability. Mass production and the fl ctuation of value change the imprints.
of social relations upon these commodities when production becomes defined by money.

Halter appropriates the discarded or devalued, remaking it as a form of cultural critique (Leslie 1997: 29). This appropriation brings Halter’s work into conversation with another Dadaist figure, in the appropriation of the everyday seen in the collages of discarded train tickets and other detritus explored in Kurt Schwitters’ Merz works. Like Halter, Schwitters crafts his collages making explicit reference to value; the term ‘merz’ refers to the German for commerce. Furthermore, Halter and Schwitters turn to a form of witness and historical narrative again fired through Benjamin’s image of the rag picker whose labour rendered him witness to the historical transformations of Paris. In this way the work of crafting returns to the hapticity intimately tied to Benjamin’s search for modes of historical experience. Halter’s haptic labour of crafting speaks to the history of dispossession and loss in Zimbabwe and the politics of immigration that impact so many people’s reality in Africa.

Through Halter’s appropriation, the Zimbabwean dollar is no longer tied to the swirling zeros that undercut its ability to provide basic goods for survival, nor does the Ecstasy tablet remain an endlessly consumed ‘good night’. Instead, Halter’s specificity in loss of farming land preserves traces of the human narratives of farms and farm labour – the historical specificities of immigration that impact so many people’s reality in Africa. Production, through this conscious turn towards craft, gives the previously disposable loss in maps, curio craft, and even inflation money a sense of agency and value in narrating Zimbabwe’s violence and dispossession.

As curios, Halter’s sculptures, textiles, and woven maps change the notion of these relationships. Not only is it the intent of specificity and craft to counter the mass circulation of these items as curios and to revalue those peoples and histories that have been devalued, but to change how we think about these items. Halter’s work makes traditional craft part of a political network, thus imbuing their production with a sense of agency.

Halter’s repurposing of handmade craft objects preserves traces of past histories of loss and dispossession in Zimbabwe under Mugabe, and the lived realities of the dispersal of people from these contexts. To conclude, Halter’s Mealie Pip (2008), an engraved maize kernel (a major staple of southern African diets) bearing the phrase ‘When the belly is full, the brain starts to think’, strikes at the crux of his work. The work provides the image of sustenance (and material production through its reference to farming) now fired as a kernel of thought as well. Thus Mealie Pip highlights the lack of sustenance inherent in Zimbabweans’ life, but like his larger body of work insists that materiality, fired in my reading through the haptic, allows an intellectual and political consciousness to emerge from the material encounters the work of art offers us.

Notes

1. Benjamin famously uses a metaphor of blasting to refer to the potential to shake off the weight of inherited tradition in the present (Benjamin 2002b: 475).

2. Halter further notes in a related work, One Dollar, that in 2009 it took 300 trillion Zimbabwean dollars to exchange for one US dollar on the black market. The work is a similar form of weaving using 300 trillion dollars worth of 50 billion Zimbabwean dollar bank notes.


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This presentation will focus on the future of craft neighbourhoods in Istanbul and discuss their potential and threats today, and present Made in ŞiŞhane Project which is an alternative design practice for safeguarding the craft neighbourhoods. One of the subjects of the main agenda in Istanbul, where urban transformation processes are being lived rapidly, is whether to carry the dynamics and unique practices of the craft neighbourhoods into the future or not, or how to carry them. Due to the existence of such areas, we are able to discuss the unique act of making, design and craft relations and identity that evolve from their togetherness. Within such areas of the city, many creative products become alive through dialogue and interaction between designer and craftsmen. Craft neighbourhoods which are a strong part of the social, cultural, economic and spatial structure of Istanbul located in the city centre, even though still very much alive as part of the intangible heritage of the city, are currently facing the threat of evacuation.

İşihan District which is one of the craft neighbourhoods is a 100-year-old lighting production and commerce centre of Istanbul. Being located in the city centre, it faces some threats such as city policies which plan to remove small-scale production from the city centre; state led gentrification process and speculated real estate prices in last ten years. Craft and design processes which are knitted with the local community and everyday life practices in ŞiŞhane have ad hoc, non-hierarchical, flexible, interactive and unmediated characteristics. The invisible net that connects craftsmen to each other and to the city is at the heart of a production process that relies on constant interaction between all kinds of factors.

In this model, a production process becomes a production route or journey which is special, unique and directed by the designer in the neighbourhood. The craftsmen, who produce in the district, using their traditional skills and machines, can adapt to new demands and techniques, and supply customized objects and they can also collaborate with each other for the big orders. Face-to-face design practice is that it allows for personal expression at various stages of production. The craftsman is not only someone who executes but is an active contributor to the product's design.

It is important to redefine craft neighbourhood’s essential role in its changing urban context. For these reasons, Made in ŞiŞhane Project as an activist project organizes creative actions/events in order to contribute to the sustainability of these craft neighbourhoods versus the top down processes since 2006. The Project enriches the craft networks with the participation of designers, artists, architects and academia. Creative people become mediators to evaluate the possibilities for sustainable future developments. Made in Şişane Project asks: How can design have a positive role in the sustainable development of a craft neighbourhood? What kind of potentiality do these neighbourhoods have for the designers?

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Introduction

The craft neighbourhoods which have been located within the historic centre of Istanbul and have continued their existence for many years embody dynamic practices and relations that give the city its character. They have cultural, economic, social, creative and pedagogic values which still have big potentiality for a sustainable future of the city. Due to the existence of such areas, we are able to discuss design and production conditions that are specific to Istanbul. Despite their full importance and all the potentials they sustain, these districts face threats such as city policies which plan to remove small-scale production from the city centre to the periphery, economic crisis and speculated real estate prices in the last ten years. The process of urban transformation and all the new laws and plans following it accelerate these processes. Urban transformation processes threaten not only the built environment but also the social, economic, and cultural structures of the city. The vision and decisions which will utilise the potentials sustained within these districts and which will transform these potentials to become a part of the city’s development dynamics are not being produced. On the contrary, this type of production faces the pressure of evacuation as it is claimed to be harmful for the city or to be incompatible with the currently proposed functions.

It is important to redefine the craft neighbourhood’s essential role in its changing urban context. If this potential is valued and developed, these districts can go through an urban development process which evolves from their inner dynamics. This paper will focus on the future of craft neighbourhoods in Istanbul and discuss their potentials and threats today. It will also present the Made in Şişhane project, which is an alternative design practice for safeguarding the craft neighbourhoods.

Şişhane District as a lighting centre of Istanbul

Şişhane is one of the craft neighbourhoods of Istanbul, and it is the almost 100-year-old lighting production and commerce centre of the city. It is a small but extremely dense district which is close to the landmark Galata Tower.

The district referred to as Galata and Pera and also including Şişhane – previously a Byzantium neighbourhood – gained its real prominence during the Genoese period and maintained this after the city fell into the hands of the Ottoman Empire. As a result of increasing diplomatic relations with the Western states, embassy buildings were built in the district, which later turned into the Ottoman state’s major ‘customs station’ from the nineteenth century onwards, especially with the increase of the hegemonic position of the West that was going through industrialisation. This wasn’t simply an entry point for the goods, but also a door for many of the ‘first time’ of our modern life that entered into Turkey and expanded from there (Belge 2000).

In Bankalar Street, that was one of the main axes of the district during the early twentieth century, the technology importers and technical equipment companies started gaining prominence over the banking and finance companies that were the defining elements until then. From meeting a limited number of demands from only a few companies, with the increase of demand for technology the market expanded significantly from the 1920s – its area and range increased, as a result of which the shops specialised to a lesser extent and were replaced by electricians, electronics shops and various other small-scale technology enterprises.

Asli Kiyak Ingin

Made in Şişhane Project as an Alternative Design Practice for Safeguarding the Craft Neighbourhoods in Istanbul
This process expanded to lesser known areas of the street, spilling over to Okçu Musa Street and towards Şişhane. Hence, with these transformations the street and the district started to revive from its waning fortunes after its old illustrious days (Eldem 2000).

Aside from its characteristics that result from being a historical port, commerce and finance centre, Galata also has a profound effect on the fields of electronics and lighting. The need for new technology in society made electrical and lighting shops and workshops much more important during the mid twentieth century. The district became a kind of Silicon Valley during this period. Şişhane continued to keep its place as the centre of lighting in Istanbul and even in Turkey till the beginning of 2000. The district enabled both the development of big industrial companies and the existence of small workshops. It has also continued to be the largest market of lighting.

![The District from the Galata Tower. Photo by Galata Fotoğrafhanesi Academy of Photography](image)

**Figure 1. The District from the Galata Tower. Photo by Galata Fotoğrafhanesi Academy of Photography**

**Structure of the craft neighbourhood**

1. **Scale**
   Craft-based production has a different scale and characteristics than mass production. Compared to industrial zones, craft neighbourhoods embody social, cultural and spatial relationships in addition to economic relationships. Within large scale and mass production all the operations, including storage, happen on the same premises, whereas within the districts based on craft the production process happens as an open system which works through a network of different workshops and shops in the neighbourhood. In this type of district special customised production is done, depending on needs and orders. Here is a flexible model of production that responds to different demands of quantity and quality. This type of production would be instrumental for designers in various ways, such as flexible production which is customer oriented and project based, the possibility to produce from a prototype to big order and an interactive working environment.

2. **Network**
   Şişhane craft neighbourhood has a strong network which has its own logic and economic, cultural, social and spatial relations. The craft-based production and the multi-actors network and its cluster system of Şişhane provide as well an eco-system of an organism of sharing. Şişhane covers all steps in the lighting business and production, with different options of material and workshop. Through the existing network in the district, a variety of workshops, materials and products are accessible within walking distance. The district which has penetrated into the city works...
like a big factory which has the potential of a flexible, multi-option production. The different production phases of a product are completed by different workshops in the district where working together and cooperating is predominant. Sharing common moulds, materials and workshops in the network creates a common language style. As well as economic relations, the social and cultural relations between the workshops ensure the sustenance of this network.

The most important characteristic of the craft-based production is its survival due to this network, since it produces through this network. That is, in order to produce, it needs the other workshops, raw material and semi-product shops, and lighting shops. Each workshop positions and generates its existence through this network, its interrelations and location. The movement in the district – which is generally perceived as chaotic – is in fact a sign of an important meaningful communication and connection between the actors of the craft network. The invisible network that connects craftsmen to each other and to the city is at the heart of a production process.

3. Clustering

Figure 2. Elements of the craft neighbourhood. Drawing by Aslı Kiyak İngin

which relies on constant interaction between all kinds of actors. The network is also used effectively by designers, artists, architects, project developers, end-users, etc.

In Şişhane, the workshops and shops coexist differently, as horizontal and vertical clusters. Similar shops and workshops settle next to each other (Figure 2). They are competitors but also colleagues and friends of each other. On streets (horizontal clustering) and in large commercial buildings called han (vertical clustering) certain production and trade branches have been clustered. So a synergy that will leave a mark in the city's memory and a common market environment has been created, and this is easily accessible and readable by the users of this district.

 Certain companies and stores have clustered on different streets. For example, pantographers on Yüksek Kaldırım, lathers and hardware stores on Perşembe Pazan, music instrument producers and recording studios on Galip Dede Caddesi, decorative lighting, chandelier and lampshade producers on Mektep Caddesi, technical lighting companies and stores on Bankalar Caddesi. In horizontal clustering, lighting stores which are located on the same street are competitors of each other but they are also co-workers. If needed, they can direct the customer to each other. In hans where vertical clustering has been formed, there are businesses which complete each other's function. For example, in Dörtler Han where lampshade producers and shops are located, on the entrance floor the e is a tea shop and also stores which have small production corners. On upper floors, where only lampshade production workshops and wire workshops are located, there is an internal structuring and levelling.

4. Lighting shops

Many lighting shops which are located in Şişhane have focused on different lighting types: decorative, technical, architectural, industrial, outdoors, etc. These shops vary; some of them have their own trademark and production, and some of them sell export products. In addition, there are also shops which sell semi-product lighting materials in the district. There is an organic relationship between the
lighting shops and workshops. Workshops produce for these shops and can also make changes to the product if the customers who visit these stores request it. In fact, these types of changes can often be resolved quite rapidly while having a cup of tea and a chat. This interview with a master shows their relation and the importance of it:

In Şişhane, the customer comes and wants to buy at once the product that he sees and likes. Its height needs to be decreased or it needs to be repaired. For this kind of thing he doesn't want to come again next week to get it. He sits, drinks coffee or tea. Since the ateliers are close by, that repair is done within an hour or two and it is given to the customer. Therefore, there should be an atelier close to the store, below or above it. If the ateliers are moved out of Şişhane, then it would also be difficult for the stores. (Kıyak İngin 2011: 24)

This organic relationship between the stores and the workshops had started decreasing at the beginning of 2000. One of the reasons was due to economic developments on a global scale; the stores had begun to increase the import of Far Eastern products instead of the local production.

5. Workshops

There are different kinds of production material-based workshops in Şişhane and its environs. They are metal, acrylic, lampshade, wire, turner, press, wooden, montage, chandelier, glass, advertisement, pantograph, painting, etc. Workshops can also be classified as:

- Ones that started as a workshop, transformed into institutionalised companies and that have shifted their production to outside the city,
- Companies that have shops and workshops in Şişhane,
- Workshops that are mostly producing for architects, designers, shops and other lighting companies,
- Workshops doing intermediary operations,
- Workshops that sell semi-finished products and lighting materials. (Kıyak İngin 2006)

They are mostly focused on the production process rather than product sale. They don't have their own collection, catalogue and web page because they generally produce on order and demand. They have a corner in their workshop to exhibit some past work or a box which collects the photographs of their old work to give an idea of their craftsmanship quality and ability. They use the traditional system which relies on recommendation, guidance and the fact of being clustered in the neighbourhood instead of the contemporary marketing systems. And they mostly work with their customers, who are also their collaborators over the long term.

![Figure 3. A metal and montage workshop in the neighbourhood. Photo by Arif Yaman](image)

Workshops mostly focus on a small number of pieces and customer/user-based production. Workshops don't need a warehouse; they produce without stock, and they can supply the material from the neighbourhood when they need it. They use the simple and old techniques and machines (Figure 3). They sustain the local and traditional knowledge and knowhow of the production and craftsmanship from generation to generation. The master is also owner of the workshop, which is mostly a family business with only a few people working together. The following interview shows the family scale from the craftsman's point of view:

My mum and dad work together. Me too since my childhood ... still we are together. They stay at the other workshop in the front street. We are separate since two years but we come and go together to work. Our houses are also close to each other. My dad is mostly with the customers, he follows the work that's outside. Mostly he intervenes when we are overloaded. My mum mostly deals with accounts but when there is a mass order, if we are overloaded, she also helps bits and pieces. (Turgut)

**Threats to the craft neighbourhood**

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The multi-layered and rich-patterned structure of the district is at the threshold of important changes and threads within the framework of current and future policies. As a result of today's changing macro-economic policies, which identify tourism and the construction sector as a preferred development and urban renewal tool, Istanbul is also being influenced by these changes.

Being located in the city centre, Şişhane faces threats such as city policies which plan to remove small-scale production from the city centre. The decentralisation of production, though partial, has become the current agenda due to the Master Development Plan to protect the Historic Peninsula, scaled 1/5000, dated 2005. Şişhane and its surrounding area has been also designated as ‘Trade-Service-Tourism’ areas according to the Beyoğlu Development Plan, scaled 1/1000, which was approved at the end of 2010. The decision states that the production operations which have increased in the area over the last years damage the historic texture of the area, so the decentralisation of production has been decided upon. Over the past ten years, by various institutions like the Istanbul Chamber of Commerce and local administrations, during meetings with craftsmen and representatives of NGOs it has been stated in many ways that the workshops should be removed from their current locations. An interview with a master shows us the situation:

Last year, the mayor called all ateliers and shop owners. He said that if he becomes mayor for another term, all will be hotels and pensions here. There isn’t anybody or any institution to protect the manufacturers. Where would a manufacturer go? (Kıyak İngin 2011: 29)

Another threat is the gentrification process which increases day by day in the region. The district has become fashionable in the last few years. As a consequence, real estate prices have increased dramatically. Most of the workshops and shops around the Galata Tower have had to leave their location. It becomes difficult for the workshops to survive by themselves when they leave their district, network and market. An interview with a master shows us this process:

Serdar’s Ekrem Street was full of chandelier manufacturers. Now fashion designers have come. The chandelier companies that are left there also need to move out; they can’t survive on their own. (Kıyak İngin 2011: 29)

Another threat that has affected the district is the expansion of goods from the Far East. The shifting of world production to the Far East and the consequent threats of cheap goods and production has put pressure on the technical lighting manufacturers since the end of the 1990s and on the decorative lighting sector since the 2000s. Thus, this situation has paved the way for the closure of many workshops and forced shop-owning workshops to import and sell Far Eastern goods. On this subject, neither the state nor the professional organisations for the local economy and industry have had a significant policy.

The master/apprentice system has almost disappeared. It also creates a big threat for transforming the knowledge and sustaining the craft network for the future. The following interview excerpt shows the importance of this system.

In the past, when Şişhane was mentioned chandelier makers came to mind, here it was like a school. Apprentices working for each master were like their master’s students ...

Many of our masters disappeared and raising new masters will take a long time. Nobody comes through the door and tells me to teach his child anymore. Why doesn’t he? Because there is no future, it is not clear whether he would be able to make a living. There is no patience as it used to exist in the past, whereas we’ve always been patient. (Kıyak İngin 2011: 21)

**Potentials of the craft neighbourhood**

The potentials of the small-scale production areas are not utilised sufficiently and as of yet these areas have not been able to become a part of or a subject of the visions related either with the city or with design, industry, tourism and the academy. The craft neighbourhoods have cultural, economic, creative, social and pedagogic value which have to be sustained and safeguarded for the next generations.

First of all, one of the important values of the craft neighbourhood is a cultural one. The craft network is a part of the intangible cultural heritage. The craft system based on manual labour, transferred from generation to generation through the relationship of master and apprentice, should be preserved in accordance with the Convention for the Safeguarding of the Intangible Cultural Heritage to which Turkey became a party state in 2006. Decisions such as to enable the traditional productions to compete, to increase their value; to enliven the traditional
production as an abstract heritage in the Historic Peninsula; to regenerate the master and apprentice system in fields of traditional production have been taken in the Management Plan of İstanbul Historic Peninsula (2011). There are knowhow, stories and relations which the craftsman has and transfers to the next generation by the master/apprentice system. The following interviews show the meaning of intangible heritage by the local craftsman:

... When I decided to open up a shop I wanted to be on my master’s street, by his side just to learn some new things from him. He used to do some work for the Masis Company. Three to four years ago I found an ash-tray he made. I use it from time to time when I am in high spirits. I worked with the artisan Onnik for seven years without realising how the time passed ... (Aharon) [Figure 4]

Figure 4. Ash-tray of Master Artin. Photo by Aslı Kıyak İngin

... Producing chandeliers is a work that requires effort and patience and one must take pleasure in doing it. There are times when I come across a chandelier that I made thirty years ago. They come saying, ‘I brought this for repair; its lamp socket is not working.’ At that moment, I say, ‘I have done such valuable work, they used it for thirty years and now they have come to me again’ ... With years of experience, you learn certain practices. Even before the client tells me, I know all the details of the work and I do it. (Kıyak İngin 2011: 23)

The second important value is the creative one. The craftsmen lose their power because of Far Eastern goods and current city policies, but collaboration with designers can provide them with a new vision and work field. Also, it is not that easy for designers to find a place in the market with their own products and labels. Such districts can create an opportunity for them. The district provides designers with the opportunity of producing and selling their own products and creating their own labels.

There is a vast opportunity of materials, production forms and workshops in the area. Within this field, it is possible to produce a limited number of different products in a short time and within walking distance. Within such areas of the city, many creative products come alive through dialogue and interaction between designer and producer. Togetherness of craft and design processes has ad hoc, non-hierarchical, flexible, interactive and unmediated characteristics. In this model, a production process becomes a production route or journey which is special, unique and directed by the designer in the neighbourhood. Face-to-face design practice allows for personal expression at various stages of production. The craftsmen who produce in the district, using their traditional skills and machines, can adapt to new demands and techniques, and supply customised and unique objects.

The craftsmen are easy to have a dialogue with – they are open to communication, flexible and practical. Such dialogue and an open working environment amongst the designers, customers and craftsmen is something very hard to find in large-scale industries. The craftsman is not only someone who executes but is an active contributor to the product’s design. Design and production processes work together and a product is shaped by a designer’s idea and sketches and a craftsman’s ability and knowhow [Figure 5]. There is an unsigned agreement between the designer and the craftsman:

Figure 5. A common work between designer and craftsman, More than Design Workshop. Photo by Aslı Kıyak İngin
For the past five years, I don't do mass production for the market. I work with architects on per-project basis. They see the meticulousness and cleanliness of the work, they appreciate this. The biggest desire of an artisan is to receive appreciation for his work...

When a designer comes to us, we start to work together. He/she can see everything we do from the beginning of the production till the end of it and even intervene in it. (Kıyak İngin 2011: 25)

The craft network is also knitted with the local community and everyday life practices in Şişhane. A third value is the socio-economic one. Workshops, taken on their own, correspond to a very small scale operation. However, due to their co-existence and their functioning together while relating to a common production network, they are also representatives on a large and regional scale as well. Workshops generally occupy very small places and are integrated into the existing buildings in Şişhane. They can survive with a small amount of production, but they can also deal with a big order by sharing the production with the other workshops. This potential is expressed by a local craftsman during an interview:

... In general, lighting is an item which is left to the end. It always has an urgency and tightness. According to the workload, you can also call in the other relatives. Or among the shopkeeper friends, you can receive help by passing work to each other. When you receive a mass order, you can also have them do some amount of the work. (Turgut)

Another value of the craft neighbourhood is its ability to be a method for pedagogy. A craft neighbourhood which is in the city centre and close to several educational intuitions has an opportunity for design and related education systems where there is a lack of experience of material, making and creating in its field. The last value is creating the unique experience in the urban context. It could have an essential role for an alternative vision of tourism which is not consumption oriented and which could be a creative and productive one.

**Made in Şişhane Project**

1. **Motivations, aims, questions**

At a time when both city policies and design practices are changing rapidly to accommodate new global orders, it is important to understand the intimate relationship between craft, culture, economic activity and urban development, and to redefine its essential role in its new context. At this point, Made in Şişhane Project is developed with the motivation of urgent need for a new argument and vision that are based on bottom-up approaches for the future of the craft neighbourhood instead of the top-down process.

Made in Sishane is an activist project which has organised creative actions-events in order to contribute to the sustainability of these craft neighbourhoods since 2006. There is a need for creating bottom-up approaches and listening to the local. The project focuses on the Sishane-Galata craft neighbourhood and enriches the craft networks with the participation of designers, artists, architects and academia.

Made in Şişhane project first of all aims to get a better understanding of the networks in Şişhane and make the craft network more visible and reveal its local knowledge and creative potential. The project also tries to change the production image from copy and mass production to a creative and flexible one. It hopes to create an awareness of the importance and new roles of the craft neighbourhoods for the future. Secondly, it enriches the production networks with the participation of designers, artists and architects and also agents of tourism, culture and education. Creative people become mediators to evaluate the possibilities for sustainable future developments and give testament to its intangible heritage.

Made in Şişhane Project asks: How can design have a positive role in the sustainable development of a craft neighbourhood? What kind of potentiality do these neighbourhoods have for the designers? Is it possible to establish any dialogue between the field of tourism, culture and education with craft neighbourhood?

The Made in Şişhane project is developed for showing the importance of the regional scale and whole network and revealing and emphasising a common and valuable identity which come from making and craft ability. The project focuses not only on the product but also on the processes and routes in the urban context, the stories behind the product, the relations between the craft and design actors and the local knowledge of the neighbourhood. And it focuses on the common benefits and support of the whole network instead.
of any one specific workshop. Since 2006, the project has been organising various events in order to

- Make visible the existing relations between design and craft,
- Support the sustainability of this system,
- Support the whole system instead of one workshop,
- Change the negative image of the district with copy and mass production,
- Promote craft-based production,
- Search for creative and sustainable transformation ways for the craft tradition,
- Knit together more relations between the craft network and other actors from the fields of design, tourism, education and culture.

2. Actions of the Project
Made in Şişhane Project organises a series of actions which focus on a bottom-up effect and support local actors to reach their aims, showing an alternative vision and creating a sustainable future for craft neighbourhoods. First of all, the project creates and reveals the local knowledge of the craft neighbourhood through preparing papers, organising workshops and exhibitions, conducting interviews and analysis, giving courses, and publishing a book on Made in Sishane, with small-scale production and design, and realised in a participatory way, taking the contribution of different actors, making photograph archives and documentary films, sharing and collaborating with similar districts.

Secondly, the project tries to change the existing perception of the craft neighbourhoods and make the network and existing relations between designers and craftsmen visible. For this reason the first event, which was a design exhibition and panel discussion, was realised during the Istanbul Design Week in 2006. Big trucks in the park next to the old Galata Bridge were used as an exhibition place. The aim of the first action was not only to exhibit the products but also the product routes which show the network in the district and also to emphasise the existing relations between designer and craft neighbourhood [Figure 5a-b], working with the designers, artists and architects who are still working with the Şişhane craft network. After conducting interviews with the designers, big maps which show the process of the production routes in the district were created and used behind each product which has different routes and connections in the district.

Figure 6a-b. Map of the product routes in the neighbourhood. First exhibition which took place during the Design Biennial.
The third action was to enlarge the possibilities of the neighbourhood and network. After the first exhibition event, the project continued to think about and test the idea of the project and made several small workshops with the business and design sector and academy. During this process one more question was added to the manifesto: Could we develop a new tourism which is creative and productive instead of the current consumption-oriented one?

Collaborating with the Dutch artist Teike Asselbergs and sponsored by the Consulate-General of the Kingdom of the Netherlands, a second main action was organised, Dutch Design Made in Şişhane, in 2009. Dutch designers who didn't know the district and Turkish language were invited to work with the craftsman in Şişhane. They were introduced to the project and craft network and then started to work with the workshops and develop a design idea and finally it as a product in a few days. Afterward, final products and a documentary film were exhibited in the Dutch Chapel [Figure 7a-b]. Additionally, the Dutch trade minister visited some workshops and shops in the neighbourhood. This visit created an important representation and recognition of the craft neighbourhood by an upper administrative level.

Figure 7a-b. Introduction of the Dutch designers to the Şişhane Craft Network and exhibition of Dutch Design Made in Şişhane.

The next main action of the project was to continue to enlarge the network with a larger participation of designers and students. As a part of the 1st Istanbul Design Biennial, Made in Şişhane Project collaborated with Design Quartier Ehrenfeld and organised a workshop named More Than Design with almost thirty Turkish-German students and six professional German designers. They made up six teams to work in the field or creating design solutions/objects for six locations. The products designed together and produced specifically for the selected locations in the district were exhibited in the same venues with videos, stickers and information describing the process (2012)[Figure 8a-b]. In this event it was argued that the design and production process produced a new experience of togetherness. And craft and design relations were made visible by using the exact locations and micro-applications. It created new relations between other actors and craft networks in the neighbourhoods.

Figure 8a-b. More than Design Workshop, the process and result from one of the teams. Photo from Made in Şişhane Archive
Made in Sishane also exhibited its manifesto of crafting neighbourhood and unmediated design with the participation of an Indian group, URBZ, in an exhibition during the First Istanbul Design Biennial. It showed the invisible role of craftsmen and their importance for the city and design field. The stories of the craftsmen and their relations with the designer and their neighbourhood were supported by some objects, semi-finished products, photos, posters and video interviews in the installation.

Last but not least, the craft neighbourhood and knowhow of the workshops have been matched with design education. Several workshops have been realized for a part of the education system. One of them is The Material Diary, which was the studio project for the second year design students at Istanbul Bilgi University in 2013. The students became apprentices and worked in the workshops as a part of the studio. Being in relation with the craft process, they observed and understood it from inside and represented their experience within different mediums (2013) [Figure 9a-b]. By this action, the design education system has tried to be part of the craft network with its unique knowhow and experience. Students became a part of the real and everyday life of the craft and design process.

Figure 9a-b. Design Studio, ‘The Material Diary’. Photo by Gizem Alemdar from the blog

Made in Sishane Project has realised and still continues to create actions to foster a bottom-up approach and it tries to intervene in the existing transformation process. The project believes in the importance of participation at the local level and creating micro-acts as part of urban development. All its actions are realised creatively and an emphasis is placed on learning from the experience. The project opens a discussion about safeguarding the craft neighbourhood and what methods can be used, and it also searches for new design approaches which are related to the development of the craft neighbourhood and its processes.

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Craftsmanly Methods of Change: A category-based approach towards craft

Categories shape change and in turn are shaped by change. But unlike design, the relationship between multiple categories in craft is held constant by the community worldview which determines and limits the acceptability of variation and change in an artefact by the members. It is at the worldview acceptable common intersection points of the multiple ways of categorisation that Benarasi craftsmen are able to produce and change a Khilona (Benarasi wooden toy). Understanding change in artefacts through and between community accepted categories instead of studying them in isolation apart from their natural groupings facilitates the decoding of change as acceptable/unacceptable or typical/un-typical rather than original/new or innovative/traditional. The former distinctions of acceptability and typicality are essential for designing artefacts that are culturally relevant to a community in a globalized context. Therefore, this study presents a category-based method of change to elucidate craftsmanly methods for designing artefacts for acceptability as well as novelty in the absence or lack of explicit means of information transfer.

Here, thinking was elicited indirectly through the decisions of the craftsmen embodied in the typical members of the community held categories captured through the Benarasi lexicon - that is the Khilona itself. Features of the precedents of 40 Khilonas and the Khilona under analysis were compared in detail. The relationship between the precedent and the Khilona revealed the sources and kind of change and the deviation determined the extent of change within the same category, between two categories, in the fuzzy boundaries of a category or with an un-situated artefact as found relevant.

Apart from improvisation, the method of induced or wilful assimilation of non-Benarasi features was found to be the largest source of change in the production of Benarasi Khilonas.

The process of assimilation was complete when (a) the Khilona was consistently sold in the market, (b) the craftsmanly thinking of making was horizontally transferred from craftsman to craftsman for upgradation and from craftsman to apprentice for learning, (c) the Khilona was included in the traditional categorisation and (d) was christened in the local language by the community. For instance the assimilated East European pecking toy is called Chugti chidiya in Benaras.

It was further deduced from the feature analysis of artefacts that the method of Assistive assimilation of three practices - 1) Non-community artefact or Client order 2) Craft practice and 3) Assistive trigger for assimilating 1 & 2 often brought about change that bordered close to innovation in Benarasi Khilonas. Here, the assistive trigger facilitated the assimilation of the features of the client order with that of the craft practice through a new meaning, material or manufacturing technique wilfully introduced by the craftsman.

As the hold of the worldview governed ‘myths, taboos and traditions’ reduced, categories became increasingly flexible, permitting event disruptive change to occur and be accepted in their fuzzy boundaries. Here, fuzzy boundaries seem to be a potential space for acceptance and occurrence of un-acceptable change, in an otherwise worldview governed craft practice.
1. Introduction

In the fall of 2008, I was exploring wooden artefacts produced by Banarasi craftsmen for the collection of an upcoming craft museum. Amidst the hustle and bustle of Banaras, a range of brightly coloured, often small wooden representations of deities, common people and animals, moving toys and wall hangings could be seen in the famous local market at Vishwanath Gali. All shops displayed a similar variety, quality and price range of wooden artefacts. The origins of neither the designs nor the designer were known to anyone. Upon further probing, the shopkeepers directed me to the Karkhanas where these artefacts were being produced by young as well as old craftsmen in the same material and technology. When questioned, the craftsmen were also unaware of the origin of the artefacts or their makers. But, all craftsmen knew how to make them.

An ethnographic study (Patil and Athavankar 2012) further revealed that in the Banarasi community every craftsman specializes in a single skill set, making all craftsmen mutually dependent on each other for completing a product. The craftsmen very often do not follow a hierarchy where a few lead the others. For any given order by the client, the craftsmen associate with each other according to the skills required for the order, such as that of carving, assembling templates or turning on the lathe machine, followed by painting. Every member of the group completes a task and hands over the artefact to the next craftsman. In case any changes are made to the artefact, the next craftsman is expected to coherently complement the alterations with his skill in the absence of a single decision maker and a centralized plan. This increased my curiosity regarding the collective disposition of the community members which facilitated coherent inferences or consensus of decisions of making a design amongst multiple members of the group. How do multiple members separately conceptualize different parts of an artefact in the absence of a single decision maker lacking explicit knowledge transfer and yet attain coherence in the final product?

Consensus in decision making of multiple minds in the absence of a common plan implies the presence of a shared set of implicit underlying principles or perceptions between all members of the community which informs the explicit practice of making a toy. Perceptions of a community determine the appearance, function and meaning of the objects of their world and the world in general. Therefore, the artefact and its maker are said to be dependent on their worldview which guides material actions, mental constructs and value systems. Changes in the worldview affect why we design things and processes, which in turn affects what and how we design (Wahl and Baxter 2008: 72). Therefore, worldview often becomes the framework of generating, sustaining and applying knowledge. Put more emphatically, the worldview of a community or an individual is the strongest determining factor in solving a design problem (Rittel and Webber 1973: 166).

Worldview is a powerful expression of how a culture sees the world, and makes it visible. A new material culture redefines what it is to see, and what there is to see (Alpers, in Latour 1986: 9–10). Gabora (2004: 125) further suggests that worldview takes shape through the influence of many others, though some, such as those of parents and teachers, will predominate. It is initially learned by children from their parents, close relatives and teachers but over the course of a lifetime constantly changes as new ideas are acquired, filtered and assimilated with existing information before being applied.
and retained. As the worldview changes so does the situation in which an artefact is produced and consumed. More importantly for this study, a well-refined worldview also includes information about features and rules about how and when to acquire them and their extent of possible transformation for an artefact (Eerkens and Lipo 2007: 250–3). Features and rules can further throw light on how decisions are taken by craftsmen in a given context.

But it has been felt by Moalosi et al. (2008: 175) that current design approaches with their standards, rules and guidelines fall short with respect to issues related to the cultural context. Lack of a concrete theoretical and cultural framework for designers has resulted in emulating the western design concepts regardless of the local context. Similarly, Lee (2004: 19) observes that most topics in cultural design are still only limited to identifying aesthetic stereotypes such as shape or colour. A similar gap in understanding the craft thinking of the craft communities of India has also been observed. Even though the manufacturing details of most crafts are well archived in India, the much needed information on the unwritten standards, rules and guidelines on the design and use of these artefacts has not been sufficiently analysed. This information on features and rules contained in a refined worldview can throw light on the decision making of craftsmen.

But the tacit nature of the worldview, the knowledge of which is often embodied in everyday actions, rituals or beliefs rather than made explicit in written or oral principles is difficult to elucidate. It is a well-known fact that Indian craftsmen are unable to verbally articulate, write or draw concepts and explain their thinking. Moreover, there are differences in my worldview and that of the craftsman, which makes it even more important to analyse the thinking of the craftsmen as an insider rather than through the influence of the worldview of the researcher. Is it possible to capture craft thinking embodied in the worldview in the absence or lack of explicit means of externalizing craft knowledge?

2. Language and the shape of the world

Artefacts are conceptualised, constructed and communicated in language. In a community, language coordinates the perceptions and actions of its speakers while enacting their conception of the artefacts that they use. The meanings that artefacts acquire in use are often framed in the language of a particular community well before they are actually used by people as social or cultural artefacts. In a community, language coordinates the perceptions and actions of its speakers while enacting their conceptions of the artefacts that they use. The meanings that artefacts acquire in use are often framed in the language of a particular community well before they are actually used by people as social or cultural artefacts. Therefore, the meanings of artefacts in language denote how artefacts come to live in the narratives of their speakers, in effect making the artefacts available or unavailable for use. Thus, the fate of all artefacts is decided in language (Krippendorf, 2006: 148–9).

Underhill (2009: 99) has elaborated the thoughts of Humboldt explaining that the world is processed in the mind through language. The worldview of individuals is shaped by their language. For Humboldt, worldview resides in language. A language not only shapes the worldview, but also brings the world into being.

Boroditsky (2009, 2011) supports the writings of the American linguists Edward Sapir and Benjamin Lee Whorf to claim that different languages may impart different cognitive skills, attempting to establish evidence to prove that speakers of different tongues may also think differently. She considers language as central to our experience of being a human being. In an interesting study of the Kuuk Thayorres, Boroditsky showed that one’s native language plays an important role in shaping habitual thoughts such as our perception of colours, objects and space, and also of time, thus concluding that the languages we speak profoundly shape the way we think and see the world. Speakers of different languages also differ in how they describe events, and as a result how well they can remember who did what. English speakers tend to phrase things in terms of a person/people doing the thing. Speakers of Japanese or Spanish, in contrast, are less likely to mention the agent when describing an accidental event. In Spanish one might say ‘Se rompió el florero’, which translates as ‘the vase broke’ or ‘the vase broke itself.’ Thus the agent or the author of the action remains unknown in such a conversation whereas in English the authorship is clearly established. This insight has an interesting correlation with this study of Banarasi artefacts. In Banaras, all craftsmen making a wooden toy irrespective of its source of origin or ideation state ‘Humhiye to banaye hain’ (we have made this). If prodded further to know the original author of the artefact, the craftsmen simply say that they do not know, but still lay claim to the artefact. However, the word ‘Humhiye’ in Northern India embodies both a singular as well as a plural person, In English

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this would mean, that the word ‘Humhiye’ denotes ‘I’ and ‘we’ simultaneously, therefore instead of saying ‘I made this’, a Banarasi craftsman literally says ‘we made this’ while essentially connoting a singular self. The absence of a name or memory of the original author combined with the use of the first person plural pronoun by all members for different instances of the same artefact connotes that every artefact is equally owned and shared by all. Thus, the community ownership is manifested in the individual agency in the Banarasi language.

If this is so, can the Banarasi language shed some light on the Banarasi worldview? This paper attempts to study the language of the Banarasi craftsmen from dictionaries and encyclopaedias, as well as oral transcriptions of formal and informal interviews with eight craftsmen, eight consumers and fifteen shopkeepers. Besides Banarasi Hindi (the language spoken in Banaras), Sanskrit (an ancient Indian language) and English (the language influencing the Banarasi vocabulary in recent times), vocabulary was also analysed. Despite the fact that the worldview encompasses all aspects of the community life, this study concentrated and is limited only to the context in which a Banarasi artefact is produced and consumed. This is discussed in the forthcoming sections.

3. From a Khilona to a toy: an etymological overview

The Dutch historian Huizinga has written extensively on the notion of play – so much so that his 1938 book is titled Homo Ludens (man the player). He says that every language in forming its idea and expression of play has found a different word to describe it. Words define and perhaps limit the use of an idea. In the plethora of understandings of what play could possibly mean, Huizinga summarised it as an intrinsic activity that exists for its own sake, outside of ordinary life. This status of play and its consciousness outside the ordinary life of the player is similar to the Indian concept of Leela. It is God’s spontaneous and joyous expression of a purposeless world (Aleaz, 2004: 4–5). Leela means divine play: God plays the world into being outside of himself. Similarly Rasleela (rasa means aesthetics and leela means act/play, therefore rasleela means play of aesthetics) is also considered a divine sport played by Lord Krishna with his escort Radha and other Gopis (milkmaids) on the occasion of Janmashtmi (Hindu festival which celebrates the birth of Lord Krishna) on the banks of the river Yamuna in Vrindavan. Therefore, it is often said by the Banarasi community and also Hindus in general that God is playing his Leela. Huizinga, who was also proficient in Sanskrit, speaks of two more verbal roots for the play concept in Sanskrit. Kridati denotes play of animals, children and adults. Divayati connotes gambling, dicing and also joking, jesting or mocking another.

Kridati and Kridanaka (literally a ‘plaything’ or a ‘toy’) share the same root, i.e. Krida; Krida denotes play and is also a root for many other kinds of activities ranging from dalliance to an artificial hill of pleasure (Macdonell, 1979: 77). Sastri (2003) divided the Sanskrit word Krida in his Sanskrit to English dictionary into two sets. He speaks about Krida that is performed by Samanyajan or the common folk, which is similar to the idea of play with a ball, sport or pastime jokes. Along with this, he also mentions twenty-two other kinds of Krida that are practised by the Vilasijan or elite folk as mentioned in the ancient Sanskrit text Saraswati kanthabharana. These twenty-two kinds of adult play were largely played by women according to the seasons of the Hindu calendar. These plays were associated with religion, festivals and the seasons with a wide variety of activities ranging from fasting to playfully hitting each other with flowers, playing Holi and bathing and boating during the summertime in the river. The adults were an important participant in this meaning of Krida, unlike the play for Samanyajan, which included children. The adult play required very limited artefacts such as the ones mentioned in Table 1, row 1, and instead had a strong component of pretend play (see rows 6 and 11).
<table>
<thead>
<tr>
<th>Type of Play</th>
<th>Play</th>
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| 1. Games    | Aandolan Chaturth: playing on swings during rainy season  
              Under the *shamal* tree women play blindfolded games |
| 2. Ritual   | Asthami Chandrak: In the month of *Chaith* women break their fast after making an offering to the moon  
              Madanotsav: On the eve of *holi*, prayers are offered to *Kamdev* |
| 3. Feasting | Sweets are kept under the rays of the full moon of *Sharad poornima* for the whole night and eaten in the morning  
              Abhyushkhadika: Raw or roasted green peas from the farm are eaten  
              Ikshukhadika: Freshly cut sugarcane is eaten. |
| 4. Dalliance| Chutbhaijika: Plucked flowers of the mango tree are offered to *Kamdev* and then used to decorate the hair.  
              Chutlatika: With the stems of a plant women hit each other and tell their lover’s name  
              Biskhadika: Lovers pluck the lotus from the ponds and eat it together  
              Kautuk: Wanton curiosity  
              Griha: Pleasure house  
              Kanana: Pleasure grove |
| 5. Leisure  | Kanda chaturthi: Women spread barley on the floor and sleep on it  
              Pushpakyachika: Women pluck the flowers of the *Maulisiri* tree in a wine cup.  
              Kasara: Pleasure pond  
              Parvat: Artificial pleasure hill. |
| 6. Pretend play | Ashokottasika: Rich women dress up and theatrically hit the *Ashoka* tree in a bid to make it grow higher.  
              Navratra: After the first rain, girls play pretend marriages on the lawn  
              Kopa: Feigned anger for fun |
| 7. Adornment | Suvasantak: Welcoming the spring with yellow clothes and flowers |
| 8. Sports   | Toyakrida: Swim in the river during summer |
| 9. Celebration | Yaksharatra: To celebrate *Diwal* – a Hindu festival  
              Udakshevadika: To throw water on each other with a water gun in the festival of *holi* |
| 10. Spectatorship | Preksha: To watch a play with the family |
| 11. Jest    | Kadambayuddha: In the rainy season using the stalks of tender sugarcane or flowers  
              friends hit each other playfully  
              Bhutmattruka: One friend cajoles the other friends in a group  
              Kapitavya: Jesting imitation of a monkey  
              Kaushal: Art of jesting |

Table 1 Kinds of play expressed in Sanskrit.
But Sanskrit is not used in common parlance any more nor does a category of adult play along with its twenty-two manifestations as they do not exist in India in general or Banaras in particular today. Sanskrit was replaced by Hindi and Urdu in day to day communication in the colonial days and, after independence, Hindi was declared the national language of India. In Hindi, toys are known as Khilona a derivative of the word Khel which means ‘to play’. Khel includes some meanings that are close to the Sanskrit words mentioned before, for instance Leela or the categories of adult play mentioned in the Saraswati kanthabharana such as rituals and ceremonies. The Sanskrit words are not used any more but their meaning is still visible in the activities considered as play in Hindi. Bahari (2006) refers to these meanings of Khel and Khilona in his dictionary.

Khel – masculine
1– Activities done for relaxation and pleasure
2– Kartasha (a trick for instance acrobats in a fair
3– Tamasha a show, an exhibition, stunts for instance the monkey man, a dance performance or acrobats
4– Abhinay (acting), performance for instance a Nautanki (popular folk theatre performance), or Vidushak (Jester)
5– Leela (spectacle, game show for instance killing of Ravana in Ramleela (a dramatic folk performance of the life of Lord Ram) or Nagnathiya (a theatrical enactment of the story of Krishna killing the serpent Kailya mardan)

Khilona– female
1– Objects of play such as a wooden toy
2– Objects of entertainment
3– Very cheap objects

Although the Hindi meaning of play and toy is narrower than the Sanskrit term Krida, it emphasises the child as an important user of the Khilona while also referring to its ludic character. The artefact takes a significant role in these definitions as it is characterised by various attributes such as ‘wooden toy, cheap and entertaining’. The adult in this meaning becomes either a participant in creating an object or a spectator of performances such as the Nautankis. But unlike the Saraswati kanthabharana, no specific adult play is mentioned here. According to this set of meanings, Khel refers not only to sports such as Gilli danda (a game with a stick and a ball) or Kushti (wrestling) but also to performances and representation of stories. Huizinga (1950) describes representation as a function of play. Tamasha, Abhinay, Leela and Kartab are all representations of performances, very often of a story. For instance, Nautankis in Northern India enacted during RamLeela are amateur folk theatres with elaborate sets narrating the life of Lord Rama. Nagnathiya in Banaras is the theatre representation of the child Krishna dancing on a serpent’s head performed in the river Ganga itself. These religious performances are also called Leela, which involves Abhinay of actors but Aleaz (2004) defines it from its Sanskrit meaning mentioned before. These religious performances or dramatizations are theatrically staged, played by ‘actors’ unlike the divine play of the supreme referred to in Sanskrit. This understanding of Khel as a folk and religious extension of performance and display broadens the number and kinds of artefacts that can be accepted in extension as a Khilona. Some of the objects such as elephants, kings and queens allow children to engage in pretend marriages, processions and other celebrations (Roopnarine et al. 1994: 19–24). These toys, used for both pleasure and education as well as performing rituals, are not similar to the wooden toys made for children to play with that perform a ludic function alone. The meaning of Khilona here embodies an enculturative mechanism. That is through Khelna or play, children learn societal roles, norms and values (Schwartzman 1978). The Banaras toys are a good instance of enculturative Khel and Khilona. Here, children may rely equally on stories as a medium of play as well as a stimulant for their imagination (Roopnarine et al. 1994: 23). In Banaras, stories and storytelling are an important part of life. The myths and stories woven around the gods written in the Puranas and the epics like Ramayana and Mahabharata form the main source of representations in Khilonas – especially the statues.

Khilonas are representations of stories

Extract 1: Jeeravati Devi, a local resident of Banaras
These stories are read in various holy texts or heard in the numerous Paaths, Pravachans or Katha-kathan by the Pandits or other scholars. Stories are also told in the performances staged during the various Melas or fairs of Banaras. Even the representation of all statues of deities is based on the descriptions of them in such texts. Therefore, Vishnu and Krishna have blue bodies, the eyes of all living beings are Kamalnayani or lotus-like, Brahma is shown with three heads while Ravana has ten. Statues of gods are made as couples and not as individuals, such as Radha–Krishna, Shiva–Parvati or Vishnu–Laxmi. This also holds true for the vehicles or the Vahanas assigned to every god – Lord Ganesh on the rat, Lord Shiva on the Nandi, or Lord Kartikeya on the peacock. All these cues of
representing a god either visually or symbolically draw their roots from the stories narrated in the holy texts and popularly recited in the Banarasi culture at home or in a path.

Humans live in story. Humans explain through story. Humans explore their world through story. Humans design their worlds as stories. Individuals are born into the stories until they die. Similarly what one knows of an artefact is the stories one has heard one tell of it. The artefacts that people surround themselves with mean the very roles they play in the stories in which they occur. (Krippendorf 2006: 169–71)

Parents in Banaras believe that Khilonas, seeped in customs and religion, teach children not only beautiful stories but also infuse them with values. Banarasi Khilonas enact stories on tableaux or Jhanki made in every house during festivals. Jhanki is a Leela playfully created by mortal humans instead of the gods. It is a temporarily real world of its own in which a sacred performance is played, performed or created (Aleaz, 2004). Most statues of deities, especially those of Lord Krishna, have become an element of decoration for enacting a story, handled by children and adults during the festival of Janmashtmi, which is the celebration of the birth of Lord Krishna. Stories of Krishna dancing with the Gopis, Putna vadh, Vasudev with the baby Krishna sheltered by a serpent are mostly enacted through wooden Khilonas in Banaras (see Extract 2 and Figure 1)

1) Children help their parents during the festivals in displaying episodes of mythical stories. Here Khelna is an activity not just between child–object, child–child but also child and adult where the child and adult can be both a participant and a spectator.

Extract 2:
Seema Agarwal, housewife residing in Vishwanath Gali, Banaras

Seema: Look at this. This is the Dandiya Raas (a form of dance in which Lord Krishna dances with his Gopis). This is a big boat. In this, Lord Krishna and Radha will go for a ride in the Ganga.

Author: Where is the Sakha in this?

Seema: The Sakha is not here now. The Sakhi is playing Dandiya with the god (note the use of the word Khelna or play here. Dandiya is a dance form but it is not performed but played by the Sakhi with the god). And this tree here is also made of wood. This here is a peacock (Sakha and Sakhi are friends of Krishna).

Author: What is this wooden tree called?

Seema: This is called a tree only. It is the Kadam tree on which the god used to play (note the use of the word Khelna, to play, here. The tree is displayed because it has a significant role in the play of the god. It is the site of play for the god). And here is a boat, a cow. This is the god. It is such a beautiful statue. This is a jail here – a small jail where the god was born.

(a) Krishna lifting Mount Govardhan
(b) Vishnu's siesta
(c) Gwalan carrying a milk pot
(d) Krishna and Radha in a baby boat ride on Ganga
(e) Jhanki
(f) Vasudev carrying Krishna under a snake hood
(g) Krishna stealing clothes of Gopis
(h) Kaliya mardan

Figure 1 Scenes of a Jhanki from a Banarasi household during Janmashtmi.
Most Khilonas used for Janmashtmi are removed on Chatti – the sixth day after a child is born. It is on this day that a child is given a name. After Chatti, Khilonas are neatly packed and stored for the next year. These wooden statues of deities are considered as objects of play and not as sacriﬁce because the rituals of their Sthapana or installation in the temple have not been performed. These statues are handled with respect, as they do not serve a ludic purpose alone (see Extract 3). If the statues break or are disﬁ red for some reason, it is believed that they have become Khandit or defiled and are therefore inauspicious. The Khandit statues are given away to the river Ganga. This is not the case with the objects of decoration or ludic play, which are simply thrown away if they break. Dongerkey (1954) says that a child playing with toys representing religious personalities or characters learns to handle them with great care because of the reverence and respect that they evoke in his mind. The child’s destructive tendency can be checked by religious subject matter:

These Khilonas are meant for decoration but they are also given respect. We are careful not to touch them with our feet or that they are not lying around on the ﬂ oo . The plastic toys can be easily given to the children. (Dongerkey 1954: pp. 64-6)

Extract 3: Jeeravati Devi, housewife residing in Gadolia, Banaras
These ritualistic Khilonas used during many festivals diﬀ er from each other according to the story and the festival being celebrated in Banaras. Aleaz (2004) relates religious festival with play because both are above ordinary life; mirth and joy sometimes dominate in both. They are limited to time and place and combine strict rules with genuine freedom. During Ramleela, various masks of gods and goddesses are worn by children, who play around the streets enacting the story of the triumph of good or evil with bows, arrows and swords made of bamboo or wood. This Abhinay being played on the streets is ‘outside ordinary life’, enacted within a physical and temporal boundary according to the rules of the mythical story. Here, the story is played by actors rather than statues with the help of Khilonas like the bow and arrow.

As the festivals change, so does the production of Khilonas, making forms of play seasonal in Banaras. The local market does not have clay Khilonas of animal ﬁ ures after July as Jammashtmi is celebrated in the month of Magh, i.e. August. During Diwali, generally Khilonas made of clay are sold. In Nagpanchhami, clay Khilonas of the snake charmer along with the Sugga (parrot) and the pigeon are seen in the market.

Although, as mentioned earlier, the category of adult play mentioned in the Saraswati kanthabharana no longer exists, it is interesting to observe vestiges of ritual (Ashtamichandrak, Madanostav), dalliance (Chutbhajika, Chulatika, Biskhadika, Kautuk, Griha, Kanana) and celebration (Yaksharatrika, Udakshevadika ) in a symbolic form in Banarasi ceremonies of the adults. No Hindi equivalent of these Sanskrit terms is found in the vocabulary but the symbolic gestures are enacted in the ceremonies nevertheless. For instance, in the celebration of marriage, the newly wed bride is presented with Khilonas in the ritual of Bharai. Bharai is an auspicious offering or a gift. A set of Band-baja (music players) along with other Khilonas like a Chusni (dummy) and Jhunjhuna (rattle) are included in this ritual as a symbol of fertility. The wooden Sindora (a small box to store vermillion or sindoor, which a married women applies on her forehead as a marital symbol) is also given as a gift, wrapped and tied in a red muslin cloth. A Gudda (male doll) is specially ofﬁ ed as a sign of the birth of the ﬁ rst son. Recently, Samdhthi Ka Khilona (an erotic toy) has also become a part of this ritual for fun and laughter. Interestingly, this covert play used to tease and embarrass the bride is similar to the adult category of dalliance mentioned before. But such instances are rare and not expressed in any speciﬁ c word in the vocabulary (see Extract 4).

Extract 4: Seema Agarwal, housewife residing in Vishwanath Gali, Banaras

Seema: These toys are sent by the in-laws to the bride’s family, which we call Hathpudi. In the Hathpudi, apart from sarees and jewellery, there are also toys.

Seema’s father in law: And the doll also goes at this time. But this doll is a male doll. After the marriage during the night this ritual is carried out.

Seema: This ritual is called Bharai. In this ritual all toys are put in the lap of the bride and then she is sent off to her new home.

Seema’s father in law: In order to have the first child as a son, the male doll is given. Everything is sent – sweets.
Author: So what are the kinds of toys sent to the girl? One is the male doll.
Seeema: They are all related to the children. There is one special toy called the Samdhi ka Khilona. There is a spring inside the cylinder from which something pops out. That’s a fun kind of a toy. Then there are toys like the rattle.

Apart from the Vilasijan, the Saraswati kanthabharana also referred to the play for Samanyajan, which featured children as a dominant user apart from the common adult folks. The Sanskrit word Kridanaka also refers to an object intended for a child. Play for the Samanyajan unlike that of the Vilasijan was ludic in nature and often did not have religious or moral intentions attached to it. Although not much has been written about play and children in Indian literature of the past, there are many other sources that imply its existence in its social and cultural life. Remnants of toys such as the bullock cart were found at the Harappa and Mohenjodaro sites. In the temple panels of Amravati dating back to the second and third centuries AD, Rahul is shown with a toy horse and a toy elephant, while another panel has a two-wheeled cart, a horse and children holding balls and rattles in their hands. The cart has a roof and a semi-solid type of wheel with spokes. The horse pulling the four-wheeled cart is led by one of the children with a string (Dongerkey, 1954: 38–42). There are also miniature paintings that have documented the sale and play of toys for children with a ludic intention alone such as rattles, push and pull toys, spinning tops, etc. (see Figure 2).

Figure 2 Toys depicted in old Indian paintings.

This ludic nature of the toy became prominent with the wide acceptance of the English word ‘toy’. As stated earlier, owing to the remnant of the British Raj, though unfamiliar to Indian culture, the English language is still widely spoken. Many English words have entered the vernacular language. For instance, ‘decoration’, ‘fun-type’ or ‘specially’ are borrowed from English and used without any change in Hindi by the Banarasi residents.

Interestingly, similar to the Sanskrit word Krida, the English word ‘toy’ also connoted more meanings of play than just a ludic one in its past usage. ‘Toy’ comes from the Middle English (1100–1450) ‘toye’. It referred to ‘amorous
play’ till about 1700s. This could even be broadened to include dalliance and fondling. It is interesting to note that the word ‘toy’ was largely associated for at least six to seven centuries with adult pleasure. By the 1500s, the meaning of the word ‘toy’ shifted in the realm of the child to a ‘piece of fun or entertainment’ (1500), ‘thing of little value, trifl’ (1520s), ‘thing for a child to play with’ (1580s). By the seventeenth century, the toy attained the ludic meaning, which is currently in usage: ‘something to play with, especially as intended for use by a child’ (Oxford Dictionary 1966: 934; Longman Dictionary 1984: 1590).

Referring to the Oxford Dictionary, Kyburz (1994) discusses the western sense of a toy as a material object for children or others to play with, contrived for amusement rather than practical utility. This meaning of ‘toy’ has found wide acceptance amongst both western and eastern urban consumers evident in the global toy and games market bereft of any cultural notions. Likewise in Banaras too, the English meaning of the word ‘toy’ in the ludic sense for children has been accepted but some of the older meanings of Khilonas have not been discontinued altogether. Today, children help their parents during the festivals in making the tableaux of mythical stories but have also gradually shifted from ritualistic traditional Khilonas to modern plastic and soft toys in everyday life relegating the traditional meanings of Khelna or play to specific time, place and occasion alone. The word Khilona itself has also acquired ludic adjectives such as objects of play, entertainment artefacts that are often very cheap as mentioned in the definition of Bahari above. This ludic connotation of play is also visible in some of the Banarasi Khilonas. These Khilonas are not similar to the ritual statues used in the Banarasi festivals and ceremonies. Khilonas that are made for ludic purpose alone are often miniaturised simplified representations of reality with bright colours. Some examples include the Helicopter, Lattu, Chugti chidiya (pecking toy), Hilanta (a single pecking animal), Russian nested dolls, Sukhi parivar (a Banarasi nested doll), a set of musicians, animals, birds and others (see Figure 3).

Figure 3 Khilonas for children to play with.

Edutainment toys that aid children to cope with their schoolwork are conspicuous by their lack or complete absence of Banarasi toys. This may be because Banarasi Khilonas largely serve an ‘enculturative role’ rather than an educational one as discussed earlier. A few toys such as Chusni (dummies), Jhunjhuna (rattles) and walkers associated with the physical growth of the child have been replaced by cheap plastic equivalents.

To sum up, over time many attributes of the meaning of Krida, Kridanaka, Khel and Khilona in both Sanskrit and Hindi have ceased to be a part of daily conversations such as the Sanskrit understanding of adult play. On the other hand, some parts of the older lexicon and its meanings have also been retained. For instance, the representative nature of play through performances, Leela and rituals still form an integral part of the Banarasi lexicon and practices. However, the ludic meaning of the Khilona has been held common by all three languages – Sanskrit, Hindi and English. Despite the widespread use of English and the westernization of the Indian lifestyle, the English word ‘toy’ has not completely replaced the vernacular vocabulary and its meanings but its
growing influence also cannot be disregarded. This influence is evident in the proliferating use of Barbie dolls, Lego or computer games and their burgeoning sales, which is nevertheless strictly demarcated by the local Haats, Melas and shops that sell wooden toys. The change in the Banarasi user preferences and the worldview towards ludic play is a result of not just market dynamics but also that of the media.

As discussed here, some meanings have been retained over time in the lexicon while others have been assimilated or become redundant. As meanings died in Banaras so did their physical manifestations, as evidenced by the absence of the performative, amorous and ritualistic role of the adults in the Krida of the Vilasijan. The semantic change of the notion of play demonstrated by the narrowing down of its meaning from Sanskrit to Hindi and then on to English has overlaps, alterations, replacement and elimination of notions of play and toys as represented in the Venn diagram in Figure 4. Circle 1 encloses the Sanskrit words of play and play objects. Circle 2 encloses Hindi words and Circle 3 encloses words in English. In Circle 1, all words denoting adult play are no longer in use and therefore do not overlap with either Circle 2 or 3. On the other hand, the Samanyajan krida, Leela and Kapitava is shared with the Hindi lexicon in Circle 2. Nautanki and Acrobatics is exclusive to Circle 2 but it shares its growing emphasis on child as the primary user of play with Circle 3. Circle 3 on the other hand also has many words that are limited to it alone such as edutainment or educative toys. The only meaning shared by all the three languages is that of ludic play as evident in the overlapping of the three circles in the centre.

Figure 4 Venn diagram of changing Banarasi lexicon of play and play objects.

The change towards the modern western meaning of ‘toy’ autonomous of the cultural situation of its consumption is yet to completely replace the Banarasi notion of Khel and Khilona, which is specific to its worldview and expressed verbally in its vocabulary and notions apart from its distinct physical manifestations in the wooden artefacts. Most Banarasi Khilotas even today are related to the cultural experience of the children, and toy makers thus exclude it from the western worldview of the ludic notion of play alone. This culture-specific meaning of ‘toy’ as extended to rituals and ceremonies, their seasonality and local craftsmanship of materials found close by broaden the definition of ‘toy’ of Banaras from ludic experience alone to a cultural representation. As the cultural meaning of ‘toy’ is contextually specific to Banaras as manifested in its language.
and its artefacts, unless otherwise specified, the Banarasi toys from here on will be referred to as Banarasi Khilona to distinguish them from their English counterpart.

4. Conclusion

Design by the traditional community-practised crafts is deeply rooted in its worldview. Artefacts are shaped by a vocabulary and the worldview but these too are shaped by the artefacts. Even though the worldview is not written or coded in any tangible manner, members of a community largely share and follow it.

**Vocabulary reflects the proper member of a group of artefacts:** vernacular vocabularies help in understanding the notion of a proper toy for a community. Some meanings are retained over time in the lexicon while others get assimilated or become redundant. In the study of the Banarasi khilona, the semantic meaning narrowed down over time from divine play to ludic, the semantic meaning Banarasi khilona study of the others get assimilated or become redundant. In the meanings are retained over time in the lexicon while changes in vocabulary reflect changes in the worldview: vernacular vocabularies help in understanding the proper member of a group of artefacts. Artefacts are shaped by a vocabulary and the worldview but these too are shaped by the artefacts. Even though the worldview is not written or coded in any tangible manner, members of a community largely share and follow it.

**As words die, so do their physical manifestations:** changes in vocabulary reflect changes in the worldview of the khilona as words are added, eliminated or evolve. For instance, the category of adult play which featured twenty-two meanings of play is no longer a part of the Banarasi worldview. The lack or absence of words denoting the twenty-two meanings of play are also reflected in the lack of physical manifestations in Khilonas or rituals to express the same, today.

**Method of elucidating design decisions through language as well as artefacts:** in the paucity of explicit forms of elicitation of craft knowledge, the local Banarasi lexicon used in common parlance within the Karkhana became a veritable source of cues to capture the worldview of the Banarasi Khilona makers. Although language is a common tool of elicitation in many areas of studies, in Indian crafts it has been rarely used due to a lack of verbal articulation by craftsmen. This study has elucidated a method of analysis of lexicon related to the artefact from a vernacular language. The success of the method questions the limitation of language in reflecting tacit knowledge and provides possible future directions for the study of craft practices. This could be specifically observed in the Banarasi lexicon through the nouns that denote the artefact, process and meaning. The timeline of various words used to denote the same artefact or use, further revealed a pattern of change not only in the conception of an artefact but also in its physical manifestation, as seen in the changing Banarasi vocabulary from Kridanaka, Khilona to a toy.

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1970-1990 was a period of renaissance for the crafts in the UK and North America. The creation of national organisations and infrastructures to support craft, and define its identity, played a crucial role. It is often assumed that Scottish craft history followed a trajectory similar to that of the rest of Britain during this time. My research challenges this interpretation, positing that because Scotland had its own funding bodies for the crafts, it had different financial and ideological outcomes. Whereas England and Wales witnessed the promotion of the craftsperson as ‘artist’, Scottish funding agencies encouraged Scottish craft as small business activity. Scottish agencies aspired not only to create a craft industry that would be commercially and culturally sustainable, but also to maintain standards of quality, innovation and cultural integrity.

This paper will provide a case study of how national organisations can act as cultural intermediaries in the commodification of craft objects, by shaping their identity and ideology, and consider how craft objects acquire new meanings when commodified. It will draw upon primary research from the Scottish Craft Centre (1949-90) archive. Established in 1949 to preserve, develop and promote studio craft in Scotland, the Scottish Craft Centre (SCC) was the only Scottish enterprise to receive annual support from the government in the 1970s. Based in Edinburgh, the SCC operated as a locus for craft practitioners and consumers.

Its remit was to provide a showcase for the best of Scottish craft and to stimulate quality craftsmanship nationally. The SCC organised exhibitions throughout Scotland, and promoted and maintained standards of both traditional and contemporary Scottish craft. Its archive provides a unique record of craft activity and cultural values in Scotland at the end of the twentieth century.

The paper will argue that a clear thread of influence can be drawn between craft cultural policy and craft practice in Scotland during the period of 1970-1990. It will substantiate how Scottish cultural agencies played a defining role in promoting craft as a small business activity, and attempted to market Scottish craft as a culturally sustainable product. As a case study, the research will provide insight into how cultural policy and strategy can determine the course of craft production and consumption, and will consider whether lessons can be applied to contemporary practice and policy.
A case study of the Scottish Craft Centre (1970–1990)

Andrea Peach


It is acknowledged by design historians that the 1970s were a time when the crafts in Britain flourished (Harrod 1999; Lucie-Smith 1981). The reasons for this renaissance are complex, and can be attributed to a variety of causal factors, one being the creation of specific government organisations to fund and promote craft practice. The aim of this paper is to analyse the Scottish craft context during this craft revival, by examining the Scottish Craft Centre (1949–90). The Scottish Craft Centre was the only Scottish enterprise to receive financial support from the government in the 1970s, and operated as a national hub for craft activity until the latter half of the twentieth century (Joint Crafts Committee 1976). Its remit was to provide a showcase for the best of Scottish craft and to stimulate quality craftsmanship nationally (Brief Memorandum of Opposition to Scottish Craft Centre Chairman's Report 1977). Somewhat surprisingly, its history has remained largely un-documented. Design historians writing about cultural organisations of the 1970s have instead focused mainly on the activities of the Crafts Advisory Committee, now the Crafts Council. The Crafts Advisory Committee was also a state-backed, central organisation with responsibility for the crafts; however, its remit was specific to England and Wales. This research posits that because Scotland had its own cultural organisation for the crafts, namely the Scottish Craft Centre, it had its own particular concerns and outcomes – practical and ideological. Although this research is located nationally, it has wider cultural applications for the design historian and theorist. As a case study, the research will provide insight into how cultural policy and strategy can impact upon the production and consumption of craft, and provide lessons that can be applied to contemporary practice and policy.

This paper forms part of a PhD project on the subject of Scottish craft in the late twentieth century and draws upon the Scottish Craft Centre archive at the National Library of Scotland in Edinburgh. The Scottish Craft Centre archive is substantial, consisting of over 650 files, and includes detailed minutes, correspondence, accounts, photographs and papers relating to the Centre. It provides a rich body of evidence documenting the Scottish craft ‘scene’ of the mid-to-late twentieth century. For this paper, I have relied upon minutes from meetings, as well as policy documents and memoranda, to tell the story. Rather than attempt a comprehensive history of the Centre in this paper, I have instead chosen to focus on a few key themes, which had a specific impact upon the Centre’s existence, and which provide an opportunity to analyse the importance of the Scottish Craft Centre in a wider critical context.

The Scottish Craft Centre was established in 1949, as a non-profit charitable organisation based in Edinburgh, and was in operation until 1990. Its initial aim was to preserve and develop Scotland’s heritage in fine workmanship and design (Scottish Craft Centre 1985). It operated primarily as a membership organisation, and took its inspiration from the Craft Centre of Britain, founded in London a year earlier. As with the Craft Centre of Great Britain, the Scottish Craft Centre answered the call of Scottish craftspeople for a formally recognised professional platform from which to promote the best of their work (Scottish Craft Centre 1986). In 1976 its membership numbered 597, and consisted of makers, as well as corporate and associate members. At this time, members were elected by the Scottish Craft Centre’s council, and the membership selection procedure was rigorous, involving the submission of examples of work and evidence of the makers’ background and training (Joint Crafts Committee 1976).

The 1970s were a unique period in time for the crafts in Britain, when they benefited from unprecedented amounts of government support in terms of funding and ideological attention. This was largely the result of the policies and influence of the government’s paymaster general, Lord Eccles, who had a personal interest in the crafts. His success in securing substantial amounts of state money for their development and encouragement in the 1970s contributed to an overall increase in interest and activity throughout the sector, described as the ‘craft revival’. The Scottish Craft Centre benefited from this influx of government cash and was the only craft agency in Scotland to be granted government
funding in the 1970s, which it received through the Scottish Development Agency. Being a membership organisation, it was down to the Scottish Craft Centre’s council to decide how best to allocate the funds. However, strategic decisions were overseen by the Scottish Development Agency’s board, and its balance sheets were scrutinised. Although the Centre derived a small percentage of its income from subscriptions, donations and sales, its existence was largely at the mercy of the state and prevailing economic trends. This relationship was the source, at times, of considerable tension and conflict of interest, as the creative aspirations of Scottish Craft Centre members did not always tally with the financial preoccupations of its state sponsors.

The original terms of the Scottish Craft Centre’s constitution in 1949 stipulated that it should provide a worthy showcase for the best of Scotland’s crafts, through the exhibition and sale of members’ work. It was initially stressed that the crafts must also demonstrate practical links with industry, and that the Centre’s members should provide industry with skills to assist in the production of prototypes for developing products. This practical and forward-thinking aspiration, which reflected the ideology of the Council of Industrial Design at the time, was however flawed; industry showed little interest in the operations of the Centre and it was very difficult to demonstrate, in any tangible form, the Centre’s benefit to industry (Scottish Craft Centre 1986). In reality, the Centre acted more as a glorified retail outlet for members.

One of the advantages of becoming a member of the Centre was that you could sell your work in its shop, with a percentage of the profit going to the Centre. The Scottish Development Agency encouraged this, and as funding began to dry up towards the late 1970s and early 1980s, became adamant that its grant would only be renewed if the Centre could demonstrate an ability to become self-financing through the sales of its members’ work. The linking of consumerism and cultural artefacts, in this case, the selling of craft objects to support a cultural institution such as the Scottish Craft Centre, could theoretically present positive outcomes for both maker and seller. In actual terms, however, as was the case of the Scottish Craft Centre, there were major discrepancies between the kind of objects the institution aspired to sell, the objects that were actually on sale, and the objects that the consumer ultimately wanted to buy.

It was never intended by members that the Centre would simply be a shop. Instead it was hoped that the selling and exhibiting of objects would have a more elevating role to play in terms of educating the public. The Scottish Craft Centre chairman wrote in 1977 that the primary motivation for the creation of the Scottish Craft Centre was the belief the crafts formed an essential part of the culture of Great Britain, but that ‘possession was probably the surest way of cultivating a true appreciation’ (Draft of Statement by Chairman at the Scottish Crafts Centre Annual General Meeting 1977). Possession, in this context, was presumed to imbue the consumer with craft connoisseurship and taste. It was further argued that in order for craftsmen to realise their potential, they required a supply of discriminating and demanding clients, and the only way to achieve this was to establish a reputation for quality. This was, however, easier said than done. Although the overall preoccupation at the Crafts Centre was now on selling, there was the caveat of selling quality craft products to a discerning customer. Unfortunately the Centre struggled on both counts. As the minutes of the Centre indicate, members could not be relied upon to provide the Centre with a continuous supply of quality objects to sell. Consumers were generally not impressed by what was on offer, or worse, were interested in objects that the Centre preferred not to be associated with, such as hobby-craft and souvenirs. All these factors led to an unfortunate self-perpetuating situation that was the reverse to that which the Centre had originally aspired.

In some ways the Scottish Craft Centre can be considered a victim of its early successes. Whereas in its nascent years it enjoyed the status of being the only retail outlet for the crafts in Edinburgh, the craft renaissance of the 1970s led to a rapid proliferation of specialist independent craft galleries in its vicinity, where consumers now had a variety of the best work to choose from. As a non-profit organisation, the Centre operated a ‘sale or return policy’, which meant that members only received payment for their work if and when it eventually sold. This policy, although initially acceptable to Centre members, was now perceived as economically unattractive to makers, particularly when more competitive galleries were willing to pay them upfront for their work. Increasing pressure from the Scottish Development Association to improve sales or have their grant withdrawn meant that the Centre had to tread a very thin line between becoming more commercially orientated but continuing to maintain the high standards of product and presentation to which they aspired.

Minutes of meetings and letters throughout this period document members’ concerns about the...
quality of the objects being sold in the Scottish Craft Centre shop. It transpired that many members were now electing to place their ‘best’ objects with more specialist galleries, leaving their lesser work to the Scottish Craft Centre. One member asked:

What exactly does it mean to say ‘I am a member of the Scottish Crafts Centre’? Does it mean that ‘I have a line of goods accepted but, of course, I have another cheap line which I also sell’ or does membership mean ‘I am a good all around craftsman and everything I do is done well and soundly’? (Panel Report 1974)

Even its chairman was forced to admit: ‘Over the years a fair amount of poor work had crept in, and it was difficult to steer a course which, in eliminating this, might empty the shelves’ (Panel Report 1960).

The Centre’s president, Lord Haig, was dismayed to note that despite some beautiful objects being available, and the consuming public apparently showing interest, the Centre was still not financially self-sufficient. As this due to a lack of appreciation on the part of the consuming public, or to the limited range of quality products on offer? Haig indicated that the reasons were far more deep-rooted:

… our financial profligacy seems to go rather deeper and indicate a situation in which the handicraftsmen is at variance with the machine-minded civilisation in which we live. … The idiom of the present generation is away from the detailed ornament, the beautifully engraved glass, the finely wrought iron. The modern idiom is expressed through modern techniques of plastic and concrete; beautifully shaped stone is now largely cut; and unless the handicraftsman is able to come to terms with the modern idiom, he is out too. (Minute of Annual General Meeting 1962)

Haig wrote compellingly about visiting Edinburgh College of Art and seeing a fine display of glass engraving that had a Jackson Pollock touch about it’ (Minute of Annual General Meeting 1962). But it was evident that young craftspeople were not gravitating towards the Scottish Crafts Centre. The perception was that it lacked contemporary vigour and modernity, and therefore struggled to attract the newer, younger members it needed. The Centre’s physical location, Acheson House, was certainly a contributing factor to this perception. Acheson House, a sixteenth-century property situated on Edinburgh’s Royal Mile, was leased to the Scottish Craft Centre in 1949 from Lord David Stuart, a member of the aristocratic Bute family (Cummings 1997: 68). Although the Centre owed its existence to a government grant, from its inception it had strong connections with the Edinburgh elite and Scottish nobility. Its founding chairman, John Noble, was the son of the first aronet of Ardkinglas, and its president, Lord Haig, was a descendant of the Scottish Clan Haig, dating back to the twelfth century. Early membership lists from the Centre indicate an abundance of similarly titled individuals. Many of these founding members were not actually craft practitioners but simply had a love for Scottish craft and a passion for preserving Scottish cultural heritage. Although much of the Centre’s early success was down to the enthusiasm and conviction of these early members, many who worked as volunteers, its reputation for elitism and ‘stuffiness’ was to prove a limiting factor in its achieving longevity.

Design historian Elizabeth Cummings notes that it was significant that Edinburgh was chosen over Glasgow as the location for this government-funded national showcase (Cummings 1997: 68). Despite Glasgow being a commercial centre in its own right, Edinburgh had the advantage in terms of its links to aristocracy and cultural capital, which appeared to be an essential part of the Scottish Craft Centre’s early identity. Cummings describes ‘the cult of tradition’ (Cummings 1997: 66) as something which exemplified British and particularly Scottish, craft after the Second World War. In this context, the Scottish Craft Centre was an exemplar. In her article ‘Living Tradition or Invented Identity’ she illustrates how crafts people in Scotland ‘celebrated past achievement’ rather than future potential. Modernism in this instance ‘symbolised not a positive future but an abandonment of heritage’ (Cummings 1997: 66).

Cultural historian Christopher Frayling in his essay ‘Forever Ambridge’ discusses Britain’s uncomfortable relationship with technology and subsequent yearning for a bygone era, which he argues is why Britain continues to mythologise the craftsperson (Frayling 2011). In particular, the minutes of the Scottish Craft Centre provide evidence of concerns about the Centre being run ‘by an Edinburgh clique’ (Panel Report 1974), and being ‘not representative of the total scene of Scottish crafts’ (Minute of Annual General Meeting 1980). An accusation often levelled at the Centre was that it was too traditional, something that chairman John Noble was keen to refute, arguing that ‘Surely the aim should be to keep the balance between old and new in a living organisation’ (Minute of Annual General Meeting 1964).
In many ways, Acheson House can be see as the physical embodiment of the Scottish Craft Centre’s core values, and the battle to balance old and new was a constant source of tension amongst its members. The Centre’s brochure of 1985 described the sixteenth-century property as ‘one of the most unique and beautiful houses in Edinburgh’s Royal Mile’ (Scottish Craft Centre 1985). The objects housed within Acheson House aspired to be the equivalent, in terms of quality, workmanship and timeless beauty, to the property itself. For older members, Acheson House, with its historic interior of flags one floors and timbered ceilings, was something to be cherished. Seemingly impervious to the demands of the outside world, the Centre was a haven to those who wished to escape from late-twentieth-century modernity. Promoted as a historic landmark along the Royal Mile, it was also popular with tourists, who came to the Centre looking for Scottish souvenirs.

However, by the 1970s it was clear that the ancient interior did not project the sort of image required for a forward-thinking crafts organisation. Parallels were made with London establishments, such as the British Craft Centre, the Victoria and Albert Museum and the Design Centre, which all had contemporary craft shops but, unlike the Scottish Craft Centre, had consciously abandoned the precious image traditionally associated with the crafts (Scottish Craft Centre 1982). As Scottish Craft Centre vice president Robert Clark complained in an investment and development proposal for the Centre: ‘At the outset Acheson House was eminently suited to the existing, somewhat staid, practices of the day, but they no longer apply … the Centre must move with the times’ (Scottish Craft Centre 1986).

The Scottish Craft Centre’s council was not oblivious to these tensions, and when it became apparent in the 1980s that government funding for the Centre was at risk, due to its inability to demonstrate self-sufficiency, it commissioned several marketing studies on how to make the Centre more commercially viable. The external consensus was that Acheson House was a liability to the organisation. Although attractive, it suggested an art gallery or museum, rather than a serious retail operation, giving a ‘look but do not touch/buy’ impression. It was strongly recommended that the Centre either seek new premises (Marketing Proposal for Scottish Crafts Centre 1983) or, if this was not possible, clad all the inner areas to neutralise the visual impact of the historic interior (Scottish Craft Centre 1982). Although attempts were made to seek new premises, the subject of leaving Acheson House proved highly emotive for members, and no satisfactory consensus was reached. Efforts were instead made to revamp the interior on a limited budget, and the Centre remained in its original premises until its demise in 1990.

As with many cultural organisations, the Scottish Craft Centre was reliant upon state funding, and in its final years found itself in particularly bleak financial circumstances. Despite emphasising its mission to ‘seek to maintain and improve the standard of design and workmanship’ (Scottish Craft Centre 1976), late 1970s inflation had rendered the Centre extremely vulnerable, and it was forced to make increasingly drastic economies. Plans to reinvigorate sales through an ambitious exhibition programme had to be severely cut back, losing the one activity that its chairman stated ‘clearly marked the Craft Centre as being a retail outlet with a difference’ (Draft of Statement by Chairman 1977). When the Scottish Development Agency halved their grant to the Centre in 1989, it was left with a deficit that rendered it bankrupt (Minute of Council Meeting 1989). By August the following year, after forty-one years in business, Scotland’s only national showcase for the crafts was left with no other option than to close (Minute of Council Meeting 1990).

This paper set out to examine a largely undocumented period in Scottish craft history and see if any lessons might be applied to contemporary craft practice and policy. The 1970s were a unique period in time for the crafts in Britain, when they enjoyed an unprecedented amount of state-backed support in terms of funding and ideological attention. Scotland benefited from this, through money allocated to the Scottish Craft Centre. However, although the craft revival of the 1970s presented opportunities for the craft community across Britain, the Scottish Craft Centre was not fully able to capitalise on this. Indeed, this research demonstrates that despite intentions to create a national showcase for the best of Scottish crafts, the creative aspirations of the Scottish Craft Centre were often at odds with the financial demands of the cultural agencies providing the funding, as well as the aspirations of its members. This is essentially a story about the conflict between the commodification of craft and cultural policy, demonstrating that cultural artefacts, such as craft, when treated purely as commodities, can present the maker and the seller with difficult compromises. In the case of the Scottish Craft Centre, the desire to promote original, high-quality work was not always compatible with the necessity of producing something that would easily sell.
This research has also touched upon an issue that is not only specific to Scottish craft but may be applied to cultural commodities generally, which is the difficulty in balancing the desire to safeguard heritage with the aspiration to embrace modernity. In the case of the Scottish Craft Centre, much of its original impetus came from wanting to promote craft as a means of preserving tradition, but this led to an identity which was more often associated with privilege and elitism, and failed to attract a younger, more contemporary membership that was so crucial to its long-term survival. An inability to ‘move with the times’ meant that the Scottish Craft Centre lost valuable business to more specialist retail outlets, which spotted opportunities presented by the 1970s craft revival that the Centre had missed. Because it struggled with an identity that was perceived by many as old-fashioned and reactionary, it was reduced to selling the kind of objects that many of its members did not want to be associated with, such as souvenirs or nostalgic forms of hobby-craft. Its ambition of educating the public in terms of appreciating quality Scottish craftsmanship was therefore never fully realised.

Twenty-three years later we again find ourselves in the midst of a craft revival, but the outlook in terms of Scottish craft and its relationship with cultural organisations is very different. Since 2008, Scottish craft is both nationally and internationally represented by Craft Scotland, a registered charity funded by the national agency for the arts and creative industries, Creative Scotland. Craft Scotland’s aim to ‘unite, inspire and champion Scottish craft’ (www.craftscotland.org) is primarily achieved through an online platform, which brings together makers, galleries, retailers and educational institutions. By making use of new media, Craft Scotland has freed itself from the constraints of physical location that hindered the Scottish Craft Centre. Its presence is contemporary and dynamic, rather than traditional or backward looking, appealing to students as well as established makers. Rather than finding itself at the rear of the craft revival, as the Scottish Craft Centre did in the 1970s, Craft Scotland instead appears confident that they are in the vanguard by ‘placing ourselves at the front of a global craft revolution’ (www.craftscotland.org).

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Published texts


Qassim Saad & Caroline Shoushanian

Exploring Models of Design Thinking in Egypt

Whether it's an anxiety about identity loss, a fear of the speed of development of new technologies, or guilt over imperialist cultural influence, craft-based initiatives have been seen by many foreign-aid providers as an appropriate way to support developing nations. This practice is based on many attempts at utilising conventional design practices, and trying to apply them to industrial activities where the purpose is the production of material objects, by improving the production quality of crafts through the direct involvement of designers.

Many aid programmes have continually offered their support to handcraft sectors and/or local low-technology oriented manufacturing enterprises. The main objective behind many of those attempts is improving the quality of living conditions for the wider vitality craft sectors in developing countries. In this context, aid programmes view conventional design capacities as a form of new knowledge that can be directed towards the improvement of the quality and industrial classification of local products, thus rendering them economically viable for export to international markets. Design practices are directly utilised to enhance these economic growth strategies.

This phenomenon pushed the movement towards addressing ‘Design for Development’ (late 1970s) which is concerned with constructing the discourse of design by drawing upon the development milieu of a specific context (the ways in which development programmes in ‘developing countries’ are enhanced by the application of design principles and strategies). As such the practice of design may focus upon the economically-weaker sections of society and may look to propose product and service solutions to improve quality of life. This dominant logic of economic rationalism did not help design practices to become an energetic feature in the development policies of developing countries.

New models continue to develop and aim at further involvement of design practices and applications that would lead to the fulfilment of the demand or better quality production of material objects in developing countries. Handcraft sectors were the first targets of these models, but the model is being increasingly applied to other fields of industrial production and also service design. This process is empowered in some countries by a new paradigm of thinking that addressed the designer as a change-maker, postulating that “design can help raise the quality of life within economic planning and that the designer can become an agent of progress” (Ahmedabad Declaration, 1979).

Egypt is one of the unique examples of developing nations with a craft tradition that is deeply rooted in its socio-cultural and economical systems. This fact has supported Egypt in receiving design-oriented foreign development aid for decades. International and Non-governmental organisations have promoted the value of providing assistance towards the enhanced development of the wider craft production sectors, and their contributions have followed in terms of monetary support through both foreign aid and local organisations.

This study will explore and analytically discuss this stream of design thinking in Egypt, with the intention to:

- Create a conceptual framework linking the many factors involved in addressing the role of design in this socio-cultural practice.
- Present a model of new practices initiated by a group of Egyptian product designers aiming at a better understanding of the role of design and designer in supporting this topic in Egypt.
Qassim Saad and Caroline Shoushanian
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Abstract
Whether it's an anxiety about identity loss, a fear of the speed of development of new technologies, or guilt over imperialist cultural influence, craft-based initiatives have been seen by many foreign aid providers as an appropriate way to support developing nations. This practice is based on many attempts at utilising conventional design practices, and trying to apply them to industrial activities where the purpose is the production of material objects, by improving the production quality of crafts through the direct involvement of designers.

New models continue to develop, aiming at introducing design practices to produce better quality material objects in developing countries. Handcraft sectors were the first targets of these models, but the model is being increasingly applied to other fields of industrial production and also service design. This process is empowered in some countries by a new paradigm of thinking that addresses the designer as a change-maker, postulating that ‘design can help raise the quality of life within economic planning and that the designer can become an agent of progress’ (Ahmedabad Declaration 1979).

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1. Design in Egypt: Context and futuristic vision
1.1. Exploring design thinking in developing countries

Design thinking has been underutilised in many traditional attempts to achieve economic growth in developing countries. ‘Design for Development’ is concerned with constructing the discourse of design by drawing upon the development milieu of a specific context (the ways in which development programmes in ‘developing countries’ are enhanced by the application of design principles and strategies). As such, the practice of design may focus upon the economically weaker sections of society and look to propose product and service solutions to improve quality of life.

Wide attempts have involved utilising conventional design capacities and applying them to industrial activities such as the production of artificial objects, whilst targeting handcraft sectors and/or local low-technology and small industrial enterprises. This dominant logic of economic rationalism did not help design practices to become an energetic feature in the development policies of developing countries. Industrialisation was promoted as the only solution to prevailing social problems.

Within its historical context the social responsibility and what is required of designers in this area have dominated the ‘Design for Development’ movement since it first emerged after the Second World War (Figure 1). However, addressing major attempts to raise social concerns to a position of greater visibility within design for development was the Ahmedabad Declaration in the late 1970s, which argued for the respectful maintenance of traditions and the recognition of local knowledge to support
the process of implementing design practices within development strategies in developing countries. This was articulated in the form of a number of principles that developing countries were encouraged to engage with as they crafted their development policies.

Figure 1. Mapping the history of ‘Design for Development’

1.2. Design thinking and the paradigm of capability approaches

The human development report stated since the 1990s the shifting in the means of development from economic growth as a unified direction and ultimate goal into a human-led process, with the potential to empower people to live according to their needs and interests. The way to realise these goals is through ‘building human capabilities – the range of things that people can do or be in life’ (www.hdr.undp.org). These capabilities are wide-ranging, from the enjoyment of long healthy lives, to accessing resources that increase living standards and facilitate effective participation politically and socially in the life of the community. These capabilities enrich our experiences in dealing with choices and opportunities in our lives.

Practically, this framework evaluates the impact of social policies on people’s capabilities, it asks about these policies’ effectiveness in managing resources for society to enjoy good health, sufficient food, access to quality education, political participation and community integration. In such a context the philosophy of capability approaches differentiates between ‘wellbeing’ and ‘welfare’. Welfare is the association between materiality and income, its level based on an evaluation of the utilitarian and excluding the non-utilitarian. For Sen, ‘the non-utility information that is excluded by utilitarianism could
be a person's additional physical needs due to being physically disabled, but also social or moral issues such as the principle that men and women should be paid the same wage for the same work' (Robeyns 2005: 97).

Common practices of presenting the means of wellbeing in society take the form of making commodities available, structuring social and cultural institutions and so forth. No doubt, materiality requires addressing, and it relates to welfare instead of wellbeing. However, the capability approaches make a firm distinction between goods and services as means on the one side, and the functioning of those items on the other side. The functional properties are described as the main objective to achieve in the process of creating a design, like a communication device: the main function is to maintain communication between people over distances and around obstacles in a convenient and effective way. Robeyns identified the factors influencing the relationship between objects and their functions, and their roles in limiting the functioning of an object under specific circumstances. The factors are:

- The personal conversion factors (e.g. metabolism, physical condition, reading skills and intelligence); these factors influence the ability to utilise the functions of the object. In our example of a communication device, it's the effective communication channels.
- The social conversion factors (e.g. public policies, social norms, discriminating practices, gender roles, societal hierarchies or power relations).
- The environmental conversion factors (e.g. climate or geographical location).

What makes this theory of capability approaches interesting within this topic of design relates to the concept of wellbeing from the perspective of non-material things, which opposes the theory of welfare and materialism. In which case, should design discourse keep promoting design practices in the framework of welfare? Or should they follow the current design study focus on humans and promote wellbeing as their main objective? Answering these questions requires multidisciplinary thinking to find the right position between the objectives of economic competitiveness and the extended roles of cultural and social norms in the design process, to produce a new wave of human-centred design practices.

Design is the ‘liberal art ... a discipline of thinking that may be shared to some degree by all men and women in their daily lives’ (Buchanan 1996: 6). Clearly this definition is empowering, incorporating artefacts, ideas and working hypotheses that aim to enrich human experience in various ways.

1.3. Design and social innovation

A good society is one which allows people to be heard, to have a say in their future, and choices in life ... [They] value an atmosphere of community responsibility and an environment of security. For them, social wellbeing includes that sense of belonging that affirms their dignity and identity and allows them to function in their everyday roles. (Ministry of Social Development 2008: P4)

Increasing awareness of the importance of sustainability in design has posed a challenge to commercial design activities driven by marketing. Proponents of sustainable practice have proposed new approaches that offer an enhanced role for design in social innovation. Paradoxically, the contemporary era of globalisation and mass communications has actually fostered a large degree of localisation, reshaping, transforming and strengthening the local practices of many societies in the developing world (Thompson 1996). These aspects dominate society's practices in many developing countries. Egypt is a great example of this wave of cultural influences. Egyptians are regional leaders in adapting these aspects and merging them with Arab contemporary culture.

Much contemporary design theory is focused on developing methods that enable creative platforms to arise from which design can target the needs and demands of society, particularly in the form of services and solutions to social problems. This movement in design studies represents an alternative path to the one often taken by designers, driven by market demands and dealing in physical products. Its proponents argue that designers should redirect their efforts towards social innovation, where demand is not created by consumers, ‘but by an active decision on the part of a “social entrepreneur” to prototype a new way of being and doing’ (McEoin 2009). Social and community groups can in fact play an effective role in the development of innovation, guiding their knowledge of what is required to make new systems work in their local contexts. Designers, in turn, may work with local communities as facilitators, and even as leaders of societal institutions utilising their...
technical expertise and knowledge of how systems operate to create systems that function well. Achieving the goal of improving quality of life for the coming generations requires that designers turn their attention toward developing social systems such as education, health care and social security, as they will be the main industrial activities of the future. In order for this to be achieved, specific approaches must be developed for design in the context of social innovation that can facilitate the creation of socially responsible systems and networks. The transition to a sustainable world, however, will be a complex process – precisely the kind of ill-defined nature of social problems. As optimistically framed by Manzini, ‘The transition towards sustainability will be very far from being a linear evolution ... but human beings will learn to live in a sustainable way’ (Manzini n.d.: 2).

1.4. Design thinking and social innovation

Social innovation is a fairly new concept in design thinking, consisting of the utilisation of multidisciplinary design approaches for finding solutions to social needs. These approaches are informed by an understanding of the many elements of social systems and their interconnections. The designer’s role in this new context is ‘new, different and fascinating’, it requires that designers think in a creative, innovative way, ‘generating ideas, visualising concepts, refining an creating scenarios for participatory engagement between design process and the users’. However, finding the final solution for the problem is not the sole responsibility of the designer. Rather, the designer will act as an ‘operator who acts within a more complex network of actors’ (Manzini 2005: 8).

The role of the socially innovative designer in detail identifies our major responsibilities, based on the following conceptual model:

- **Explore**: A thorough investigation of the social system’s problems, to uncover priorities and system/s that will encourage initiation of the restructuring process.
- **Create**: Analysis, identification, and direction of strategies to be based on socio-cultural practices and heritage traditions, as well as the wider diversity in this society. This phase complements futuristic visions for better alternative systems.
- **Interact**: Collective co-operation and willingness to adjust. This covers a range of activities relating to the economy, society, the environment, technology and so forth.
- **Support the structure**: Encouraging people to adapt and to play a role in supporting the new systems.

In this conceptual model (Figure 2), design will play an active role in defining the purpose of this new system, and creating the media to present it. Such a role is based on design’s nature as an appropriate intellectual and cultural practice which will lead the transitional process through:

1. Separating components, changing correlations, and producing new structures;
2. Visualising and communicating new structures.

Within this context, design will use its supremacy in analysis to rearrange the structure of functions in the existing system and create new structures. However, the designer will initiate this process based on their ability to synthesise and imagine new relationships between the components of social systems.

**Figure 2. Conceptual model for design in social innovation**
2. Design in Egypt: An overview of contexts and practices

2.1. Applied arts education in Egypt

The Faculty of Applied Arts (FAA) was one of the first at empts in Egypt and the region to establish and accommodate a modern style in teaching Arts and Crafts at the higher education level in Egypt. The FAA promotes itself as the model of a design institution in the Arab region, offering fourteen different design disciplines through study programmes at both graduate and post-graduate levels, structured to utilise the rich local traditions of both ‘Arts and Crafts’ methods and applications in teaching and research practices. The main objective of FAA study programmes emphasises student skill development through practical applications and insights that strengthen the creation of visual objects that are designed to be aesthetically appealing through the application of elements and principles of surface treatments and local traditional style of ornamentations. The main objective is reviving and developing Egyptian craftsmanship and skills, through modern teaching practices of these local traditional methods and principles of making, to sustain the needs and fulfill the demands of new waves of modern educated makers. The FAA applies teaching methods developed through mixing the two main resources of local traditional skills and craftsmanship as well as the traditional Bauhaus methods of applied arts, crafts, and engineering.

FAA outcomes demonstrate student skills in visualisation and making of new objects. This important applied arts education institution keeps moving forward, neglecting the extreme changes in the context of design education that are occurring at local, regional, and international levels. Nevertheless, the FAA is still the main resource for many design schools in the Arab region, offering expertise and teaching faculty for the design higher education institutions in many of these countries. This fact demonstrates the reality behind the outdated position in design and design education contexts in many of these regional design institutions.

2.2. Design-based crafts

Egypt has been a recipient of foreign developmental aid programmes for decades. Organisations have continually seen the value of supporting the development of different industrial sectors within Egypt and their contributions have followed in terms of monetary support through foreign aid organisations and local organisations. The programmes listed below represent the most prominent and active initiatives. Among those who choose to promote their achievements are the USAID-funded Aid to Artisans programme, Yadawee, the Industry Modernisation Centre DEEP program and Menn Baladha.

Aid to Artisans (ATA) is a clear example of an international working group that aims to support low-income artisans to develop and strengthen their capabilities to generate income and support craft traditions. ATA programmes can be used to represent a class of developmental aid that focuses on external funding and expertise in design and marketing to produce products in a developing country with the aim of being sold in the country where the funding originated. ATA provides business development training, as well as foreign designer support, to give them the best shot at a sustainable global export business.

On dealing with the artisans that were involved in the ATA initiative, it is observed that the capability approach the programme aims to provide falls short of creating real change or sustainable development in the design and business skills of the craftspeople. One example from Egypt is the Abdeen Pottery Workshop in Old Cairo's Fustat district. After the Aid to Artisans intervention ended, Ashraf Abdeen, the owner, and his brother Mohamed Abdeen opted to leave the pottery business and work part time at a governmental institution. When asked about their decision, Ashraf states that he could have stayed full time at the workshop, but he would have had to let most of his staff go because there wouldn't have been enough business to keep them on his payroll. He reports that they had partnered with ATA for a job, which he had completed, and that was that.

At the conclusion of the programme that runs for three years in each country, the artisans were found to have returned to their government jobs because the orders had stopped and thus their income had diminished again to its earlier state.

The approach used by the ATA succeeded in providing them with short-term business that sustained them for a while (welfare focus), but failed to create sustainable change. The artisans returned to their previous state because they could not autonomously replicate the effect that the TA foreign team had created. Moreover, the sharp fall in profit made for inevitable disappointment on the part of the craftspeople, leading to a distrust and avoidance of foreign support providers and similar sounding initiatives altogether.
Another critical aspect of this focus is that it is based on export markets. Export markets are ephemeral; they don’t last, and with them the viability of designing for export markets. In *Designers Meet Artisans* (2005), the author argues that the only way to create self-sufficient economies is if craftspeople could return to their original function of producing for local markets. This not only makes sense economically, because it eliminates shipping and transport costs and difficulties, but it could be argued that it also helps preserve the cultural values and traditions that would be lost in the process of translating traditional objects into more contemporary ones, that prove more desirable to European and American tastes.

### 2.3. Applications promoting craft-oriented design practices

#### 2.3.1. Yadawee

In terms of foreign funding, Yadawee has the least, most infrequent, spare amount. It has developed a network of skilled craftspeople who work underneath its umbrella to produce a wide array of products which, if designed well, could act as a strong local market opportunity waiting to be tapped and introduced to design-conscious local and regional buyers.

Yadawee falls short of that goal for a few reasons:

First: It has yet to acknowledge the possibility that a local market could be a sustainable future direction for its products, and thus it keeps targeting an already highly saturated and design-aware export market.

Second: Yadawee is not interested in a design thinking approach, and thus they follow the model of their predecessors. Their products are designed not by a designer but by a design technician – thus the design portion of the process comes at the end of the product development process, not as an early exploratory function or practice.

The lack of exploration leads to very little creative interaction happening between Yadawee and its team of makers. The makers are not targeted by any developmental initiative; they do not benefit much beyond the extra income. On analysing Yadawee it would appear that it has a lot of opportunities and strengths that set it apart (it is locally based, it has a developed network and production process, it has experience in a variety of product sectors). However, its weakness is that its working model is not based on these strengths, but it is based on foreign developmental aid models that are short-term, externally focused with little exploration and little interest in the social wellbeing and capability building of their targets.

In conclusion, Yadawee is strongly rooted locally, with a trustworthy operations network, but it doesn’t operate that way. Yadawee has many opportunities to differentiate itself from competitors, by hiring local designers, infusing the local and regional market, providing a range of useful and designed products as well as sustainably benefitting the makers that work with it, thus creating a bond of trust and loyalty. Yadawee could be targeting the wellbeing of its partners (craftspeople, designers, clients) but instead it is targeting their temporary welfare, thinking like a short-term service provider when it should be in it for the long haul.

#### 2.3.1. The Industrial Modernisation Centre (IMC)

The IMC is an Egyptian organisation that aims to ‘create an enabling environment in which the private sector can lead growth and make Egyptian industries leapfrog into global competitiveness’ ([www.imc-egypt.org](http://www.imc-egypt.org)). They are supported by foreign aid programmes from the EU and other developed countries. The IMC launched the Development of Ethic Egyptian Products (DEEP) ‘to integrate Egyptian contemporary traditional arts and crafts in the international supply chain and develop branded consumable products’ ([www.imc-egypt.org](http://www.imc-egypt.org)). The IMC then organised a series of workshops, where they invited select designers to work with established crafts workshops on designing products. The products were then exhibited with the objective of attracting buyers from the export market. Potential buyers were invited and flown in to come and view the exhibition. Unfortunately, no orders were placed and that was the end of the project.

In a lecture on the crafts industry in Egypt, Hisham el Gazzar, founder of Yadawee, relates the cause of this failure to the mismanagement of the product development process. He posits that the project was unsuccessful because it wasn’t planned well to begin with. El Gazzar contrasts the DEEP case with that of a similar Jordanian initiative. In the case of the Jordanian initiative, a realisation that they couldn’t compete with the export market due to an unfavourable exchange rate led them to focus on the local market, which is made up of local businesses, hotels and restaurants. In El Gazzar’s opinion, the Jordanian initiative did well
in heading to those local clients, and designing and producing what these businesses needed. It was successful because the product planning process was more holistic and methodological. El Gazzar also speculates that a similar product development process would have helped the DEEP project yield better outcomes. A holistic design process with an overview of the context we’re designing in and the outcomes we are trying to achieve is thus advisable. Taking into account the production capacities of the craftspeople, searching for a viable target market, producing samples, packaging, a coherent business plan and a marketing plan could have resulted in more enthusiasm and initiative from the buyers’ side and could have sustained the benefit to the craftspeople.

Through reading the description on the DEEP IMC website, one can see that the reasoning behind the initiative is well thought out and that a lot was done in terms of pre-project planning. However, from observing the process undertaken by the IMC in their DEEP project it would seem that the focus on the front end of the process has resulted in little follow through and no planning for sustainability. Clearly the concept that design could help craftspeople survive and thrive in a globalised world drove the development of the project and initiated a phase of reflection on what the project could become, but little was done to differentiate it from past attempts or learn from failed trials.

2.4. Scope of new practices

2.4.1. Menn Baladha

Design problems will only be resolved in the local context, not by outsiders coming in for a stopover visit. (Fathers 2003)

Menn Baladha is a start-up design consultancy located in Cairo. It aims at ‘introducing design to the crafts industry in the Egyptian market’, promoting ‘a designers’ way of bringing attention to the craft industry’. They posit that nowadays the craftsperson neither understands nor associates with the customer; they don’t speak the same language, literally or metaphorically. Menn Baladha bases its efforts on connecting craftspeople with their markets, by developing the craftsmanship, and changing the perception of craft production in the market. Their aim is to create a well-balanced and mutually beneficial long term relationship between designer and artisan.

As a local business that employs local designers, Menn Baladha’s initiatives are less transient and short lived. They have a long-term orientation and involvement. This set-up tends to be more productive and reliable for all parties involved. As a result of this long-term orientation, there is more trust between craftsperson and designer.

The communication gaps and problems are gradually reduced. The better the relationship between craftsperson and designer, the higher the tendency of the craftsperson to build and develop skill, capacity and experience, as the craftsperson is more open to the experience and approaches it with more flexibility and agility. This results in an enhanced feeling of ownership on both sides, a clearer vision about where the project is headed and a higher likelihood that problems will be resolved.

The major difference between Menn Baladha and existing market options is that the former are charity-oriented organisations, while Menn Baladha positions itself in the higher-end consumer products sector of the market. Menn Baladha’s market offering is value in the form of aesthetically superior, thoughtful and user-centred design products. They use design methods to re-imagine the experience of buying crafts, including aesthetics, packaging, stories, function and any other experiential aspects they see as relevant.

Menn Baladha was started following an exploratory study of the Egyptian craft market, to make use of an observed need in the market, for quality, contemporary Egyptian-made products. They started out by exploring and observing the craftsperson’s working context, trying to identify potential areas where design solutions could be developed. They then offered tools to develop precision, accuracy, or to enhance creativity and market viability. The Menn Baladha process is built heavily around the relationship between the designers and the craftsperson, to create a personal, long-term and sustainable commitment that’s hard to copy.

2.4.3. Model

While the programmes mentioned above have achieved great strides and created a generation of business and design-aware class of craft workers, students and intellectuals, when it comes to certain developmental measures they remain unsatisfactory. From the previous attempts we can outline some evaluative criteria to be used as a measure and predictor of success in design-based developmental initiatives.
2.4.3.1. Sustainability
The first measure is how sustainable the development programs are. It makes sense that short interventions achieve short-term outcomes and that remote design results in unfavourable and unsustainable effects. Sustainability should be a focus in the design of developmental structures and system.

One way to achieve sustainability in design for development initiatives is to target local markets, by exploring their needs, designing with them in mind and marketing the products specifically to them. It should be kept in mind that most of the time these markets do not yet exist, or they don’t present themselves as explicitly as other saturated and unsustainable ones, like export markets. In these cases, following exploratory study, the job of the designer would be to establish new markets, addressing issues like market trends and tastes, the perception of the origin of the craft as well as marketing, distribution chains and sales concerns.

Thus, a critical part of design intervention involves making the connections, encouraging the questioning of assumed notions of ‘superior’ and ‘inferior’, and of ‘modern’ and ‘traditional’, studying the tastes and preferences of local people and encouraging the continued use of indigenous and local craft products.

Another way to ensure a design initiative is sustainable is through utilising local designers. With no rush to return to their day jobs, these designers can focus on creating long-term change that supports their design careers and sustains the craftspeople’s practices.

2.4.3.2. Exploration through interaction
To have a chance at successfully meeting its target market’s needs, any sort of design activity must be informed by exploration and interaction with the stakeholders. Design in the development context is no different.

To avoid assumptions and imprecise expectations, designers in new and unfamiliar contexts should commit to exploration of the new context, through interacting with it, with the locals and with their environment. Exploring the context by interacting with it instead of exploration from afar protects designers from falling into the trap of an ill-defined problem. Ill-defined problems lead to redundant exploration and trials at solving the problem that conclude with the realisation that the problem wasn’t framed properly to begin with. Interaction will sometimes lead to unanticipated discoveries that may turn the design process around. Designer exploration by interacting with the stakeholders also empowers stakeholders and makes them participants in the design and problem-solving process.

2.4.3.3. Welfare or wellbeing focus
The job of the designer is to provide choices for people. (Papanek, 1995)

Design for development provides a great opportunity for human development by advancing the capabilities of a target group of people and expanding the range of options that they have in life. By focussing on wellbeing instead of welfare we can create long-term, sustainable change that money can't provide. Capability building, education and involvement of target groups in the development of their design solutions are good ways of boosting wellbeing in a community, as they achieve satisfaction, enhance one’s internal locus of control and the sense of control over one’s outcomes. Education also helps communities move away from harmful social mores and develop socially and economically.

If milestones are measured in terms of monetary profit achieved by a craftsperson, then the programme aims at ameliorating the craftspeople’s welfare. If there are other developmental objectives or metrics (educating the target group, building skill or capacity, involvement of the targeted group, the target group’s perceived locus of control and feedback from the targeted group, measuring impact following the intervention after a certain length of time), then the programme aims at improving the wellbeing of the target group.

2.5. Conclusion
2.5.1. The new model of social innovation
By synthesising these measures with the aforementioned social innovation model, we can construct a new model that supports the development and welfare of craftspeople specifically and developmental target groups in general. The new model of social innovation reimagines the relationships between the steps in the old model and creates new ones that integrate the resultant criteria of sustainability, exploration through interaction and wellbeing focus into the existing model by introducing them at every step of the process (at the steps of exploration, creation and supporting the structure). It removes the ‘interact’ step from the cycle and instead makes interaction an integral part of each one of the steps.
2.5.2. Exploration through interaction
The first step integrates interaction by using it as a tool of gathering information and exploring a context that one is unfamiliar with. Exploring a community of craft-workers in a specific area, for example, can be completed through heading to that specific area, meeting the craftspeople and spending time with them, observing and examining their activities and experiences. The interactive component here gives the designer a more thorough and realistic image of the subject’s priorities and processes.

2.5.3. Create and interact
The second step integrates interaction in the creation step by reducing the barrier between the designers’ work environment and that of the subject’s. The designers build proposals based on their analyses, strategies and methods but do not proceed without the subject’s input. Instead the designers should be prepared to go through rounds of show-and-tell with the subject, to make room for the subject’s practices, methods and environmental nuances to take the place of the ambiguity inevitably created by the designers’ uninformed proposals.

The craftsperson’s workspace could see the designers adjust and realign their proposals through feedback from the craftsperson and their team of experts. The willingness to allow the subject to revisit certain issues is also integral to the success of the developmental project because it ensures the involvement of the subject, gives them a feeling of control over their outcomes and builds capacity and problem-solving skills by allowing them to participate in the intellectual activities that make up the design process.

2.5.4. Supporting the structure through feedback
The third step would see the subject’s feedback support the structure. It is vital that the design for development process not stop at the creation step and that the designers do not move on before they have gathered feedback from the subject. Welfare-focused projects tend to cease contact with their subjects and their subject’s environment immediately following the creation stage so the project could turn to focus on the way to commercialise the resultant design objects. With the focus turned to the subject’s wellbeing, the feedback stage gains more importance as it becomes key to understanding whether or not the subject’s wellbeing was affected or enhanced by the project. It encourages the subjects to assume more control over the design process. This ensures that mistakes in the process are not repeated in future projects and that assumptions about the methodology or the results do not carry through further. For the design process to yield sustainable results the feedback step has to be performed early and frequently.

Notes
1. The Ahmedabad Declaration resulted from a meeting of the United Nation Industrial Development Organization (UNIDO) and the International Council of Societies of Industrial Design experts at the National Institute of Design in India in January 1979. It stressed the ‘urgent need’ for ‘industrial design activities’ in planning national development plans for developing countries. The document was signed by twenty nations.

2. According to Thompson, ‘tradition is an interpretive scheme, a framework for understanding the world’ (Thompson 1996: 91).

3. Established in 1839 as a school for industrial and technical operations, it targeted graduate specialists in scientific and practical applications relating to materials and industrial productions.

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Re-thinking Craft Knowledge and Education

This session invited participants across all levels of pedagogy - from early years through to post-graduate levels, and on through continuing education - to consider the relevance of craft to the curriculum. Starting from the position that a better future is dependent on whether we can successfully educate our young to adapt and innovate within a context of finite energy and material resources, and to appreciate the importance of natural systems and how we depend upon them, it asked what might a crafts-based education focused upon ethical and environmental stewardship might actually consist of, and how and what issues might it need to address in terms of curriculum design and student engagement.
Matthew Bisco

Knowledge Making at Plymouth School for the Creative Arts

Opening in September 2013, Plymouth School for the Creative Arts (PSCA) emerges in response to a changing culture in primary and secondary education policy in the UK. More significantly, the PSCA vision is informed by a rich history of national and international practice-based research whereby The Arts enable a sense of discovery and enquiry in knowledge making. PSCA sets out to build a place to make, discover and perform; it aims to use art school methodology to capture innovation from each child as an individual. Initiating a unique research continuum, teachers will learn alongside children using the same model: a cycle of enquiry and response; making and process; review and evaluation and, ultimately, the generation of new enquiry. Co-construction will present both children and staff as visible learners.

PSCA will redefine the current model of attainment and achievement by measuring success through a holistic portfolio that captures (though not exclusively) autonomy, impact and influence, identity, wellbeing, narrative, aspiration, resilience and technique. It is the intention that PSCA will pioneer an image and inherent value for assessing Creative Knowledge.

Fundamentally, our school recognises that making is a cognitive process through which the above elements are visible and active in a mode of learning. Craft has a central importance to curriculum design, being both for and of the making process. Outdoor experience; music, dance and drama performance; food technology and food craft; these will all observe a similar duality. PSCA will be a place of made objects inextricably linked to attainment, though not automatically assessable beyond the process that has created them. Children will learn to drive their own agency in making, both of objects and of experience.

This case study presentation will explore the relevance of craft in creating ‘destination’ and ‘journey’ for primary and secondary school learning. Firstly, we will cover the pedagogy of delivery through community expertise, with a high value placed on technique and skill development. Secondly, we will discuss how a focus on being an artist will alter the way children relate to the world and create a sense of meaning from it; this will be tracked for a significant effect on agency in our through-school context, across subjects. Both these items will be highlighted for their balanced part in the holistic nature of knowledge making at PSCA and how this enables our children for the future. Finally, this presentation will include our current position with methods for, and challenges in, measuring creative knowledge. We will share our pursuit of methods which are sensitive to the made object and also embedded in the emergent nature of knowledge making as attainment.
Matthew Bisco

Knowledge Making at Plymouth School of Creative Arts

Our purpose is the transformation of students’ lives, enabling them to become the best that they can be in all areas; achieving academically through a creative, purposeful education. (Strudwick 2013)

Plymouth School of Creative Arts is a 4–16 mainstream, city centre all-through school sponsored by Plymouth College of Art, opening its Primary phase in September 2013 and Secondary in 2014.… [Plymouth School of Creative Arts is] a place for making things – making ideas, making technology, making art – for discovering how knowledge, values and language, identity or experience are made. It will be a place of performance, in both senses: performance as doing; performance as achievement. A place of creative learning in all subjects. (Johnson and Strudwick 2013: 4)

The pupil learning journey at Plymouth School of Creative Arts (PSCA) is defined by four phases, each with a distinguishing curriculum style and assessment strategy. Each phase sets out to deliver preparedness in outcomes to support the onward journey, enabling confidence, inquiry and leadership from the early years to GCSE age. Furthermore, the link to Plymouth College of Art (PCA) offers up a unique continuum through further education (FE) to masters-level study in the arts (MA). At this time, PSCA has 110 children on roll from an available 120 places across years Reception, Year One and Year Two. Classrooms are provided as studios where sixty children and teaching staff explore what studio learning looks like. This often invites team teaching where varying levels of free-fl are explored. PSCA is situated in the community of Millbay, Plymouth, UK.

This illustrative paper portrays our current position as a brand new school – a snapshot of where we are and some of the questions we now face. The emergent learning ecology at PSCA commits to research-based practice and continuous evolution in recognising and responding to learning stimulus on the part of the entire school community. As such, feature elements at the time of writing are within a comprehensive and reflective inquiry cycle and are expected to be redefined in the future through this active working process. The school community is defined here as fully inclusive of pupils, teaching staff, administration and site staff, families, local residents, specialists and partners. At times, the terms used to label groups of target individuals are deliberately ambiguous in order to recognise the process’s relevance to multiple groups. (For example, ‘learning’ is relevant to all partners within that process, and these may be distinct and vary in different situations. Therefore, to specify ‘children’ in that reference would be to the undesired exclusion of other groups.) The case study will illustrate key areas of early practice that are considered definite in their contribution to our purpose: to support and enable people to transform their lives and be the best they can be, exemplified by the working headline statement, Plymouth School of Creative Arts: Creating Individuals, Making Futures.

Inspired in part by the approach set out by Reggio Emilia in Italy, PSCA is, and will continue to be, made for, by and of its community. Its conception comes in response to a regional and nationwide shortage of primary school places, as well as a personal ‘strong bond that unites all parents, teachers and partners of our school [in] that we all want something better, something more creative for our children’ (Brewerton 2013). We believe community transformation begins with a school and we believe Plymouth School of Creative Arts will be successful when it realises our own vision of outstanding practice that is co-created as a community’ (Johnson and Strudwick 2013: 5).

Firstly, let us explore the significance of place at PSCA. The construction of a new-build school site will be taking place through 2013 and 2014 with a target opening date of 1 September 2014, in time for the second intake of pupils at the school. This timeline facilitates the additional enrolment of sixty year-seven pupils (phase three) as well as the onward journey of the current pupils and a new reception intake. For the academic year 2013/2014 the school will be located in a temporary site from which the build will be visible from the Studio One window.
This firmly establishes the fundamental connection to making at PSCA.

Teachers work to connect the children’s experience of school to the design and construction project which will locate their future learning; we are making a school. Children are invited by staff to comment, observe, document and influence this making process, engaging a purposeful and meaningful ‘real life scenario’. The site is next door to Plymouth’s international ferry port, citing geographic connections with mainland Europe and as such the idea of journeying. Equally the local foot ferry connects the school to Cornwall as well as the open waters of the river Tamar and Plymouth Sound. Plymouth’s vicinity to the Dartmoor National Park furthermore invites the school community to explore journey and destination as a practical and metaphorical theme. Learning in the studios is secured through a sense of individuals making experience and it is intended that we further connect beyond our walls to the unique geographic resources offered by our place. In doing so we become a ‘school without walls’ (Jackson et al. 2012). Through connecting fully with their place, children will secure a sense of belonging as well as a voice of influence within their community. This will be achieved by action and contribution to community rather than relying solely on removed historical study. A rich physical curriculum of adventure and contemporary human movement will support children in challenging their own horizons by thinking creatively about broadened possibility through exploring, as well as growing healthy and well.

PSCA is site specific. Our framework devises a process of making rather than the made object as example. However, the made object clearly retains an expressed value. The process of making our school is dependent on a unique time and place to create it, and therefore cannot be transferred to another setting without again starting from scratch. That is not to say PSCA does not aspire to be influential upon policy and wider rationale. It comes to life when people engage with it and only then does it really take on a collective meaning. It would not be possible to make this school in another place. However, it would be possible to apply the following methods of co-construction, dual inquiry, agency and community expertise to a unique setting and its place. Notably, making as craft and as the arts sit to contextualise the framework. The transferable framework parameters listed above (though not exclusively) connect with a contextual requisite derived from the unique relationship between PSCA and PCA. The pedagogical importance of making at PSCA is born of shared concern, influenced by a strength of research, policy, corporate strategy and, most importantly, a shared values set for education of the whole child.

The making of Plymouth School of Creative Arts is engaging numerous and exponential partners in a research methodology. Old questions are being recalled, as this is a rare opportunity not to re-think but to think again. The distinction is a response to common perceptions of those settings where efficiency and impact often supersedes a real interrogation of the purpose (re-thinking in the same way that we thought before). Where shall children put their coats when they arrive? What will learning look like? It would be naive to suppose that every single question is removed from historical influence. Every question comes from an influenced past, as recognised by the significance of ‘place’, but it is important that we are asking the questions again with rigor, employing divergent thought (Robinson) and inquiry, not to simply track the same path laid before. It may well be that the destination emerges in the same place (e.g. we need individual coat pegs); we are not seeking revolutionary design in every aspect for its own sake. We are simply utilising the rare opportunity to make our school. Within that making process lie infinite recognitions and responses. However, where a maker might explore an intense and personal dialogue with materials, PSCA is socially constructed (Vygotsky 1978) by a community of researchers.

Co-construction enables not just children but teachers, families and partners to be makers in this process. It is significant that academic year one is situated within a temporary site, neighbouring the build site of the new school. This provides a tangible object to influence and to contribute a voice in its evolution. The process of designing and making the school, the workforce employed, the pedagogy as it develops, are shared through open forum with the children. At the time of writing, the school has been open a few weeks and already the children are being invited to make meaning of this process. Children are being invited to dream about facilities and opportunities the school might provide for them. Teachers are visible learners as they are sharing the growth and development of the rhythm of the day to best fit a need and to remain purposeful.

Learners at PSCA are currently establishing a culture and vision in response to the question: what does studio learning look like? Everyone is consistently reminded that we are journeying together.
In studio one (reception year) themes are being explored through gentle provocations: mirrors used to look back at myself; messy space with the tactile characteristics of mud and paint being scratched, twisted and smeared to feel my responses; natural materials collected into the studio from a nature walk to examine my world. Teachers are observing fascinations and responding to child-led inquiry in order to stretch the experience and facilitate these independent individual meaning makers. Through observation, enabling interaction and dialogue, learning is situated in the zone of proximal development (ZPD) (Vygotsky 1978) created between adult and child. Both parties are invited to a cognitive space that could not exist without that interpersonal communication; learning is co-constructed and, as such, relevant, progressive and purposeful. Through this process modelling, it is hoped that a culture of intrinsically motivated learning emerges – learning to learn – in which it is safe for a teacher to not have the answer.

In studio two (years one and two) extended studio conversation is happening. Children are responding to skills input, particularly located in the visual arts. They have spent time exploring the studio and its resources while adults are observing usage and need in order to respond with appropriate provision going forward. Children are often working in small groups, experiencing a carousel of activities based around a central curricular theme. Children are already beginning to show extraordinary competency and growth in knowing what they need to express their own meaning. Music is being explored regularly, largely through narrative to make and connect meaning. However, there is a visible journey in process exploring permissions within this mode of inquiry. The establishment of accessibility routines (particularly apparent with technology such as iPads), responsibility for autonomy and implications of a multi-functional space are significant areas of learning emerging in these early weeks. Responses from teaching staff are shared through forum with the children and the implications of actions, both positive and less positive, are owned collectively.

It is particularly relevant in studio two that most children have enrolled at PSCA having had a previous experience of school – as have all the teaching staff. It is the efore to be expected that a mixed set of rules and prior conditioning will have a more visible presence here, inviting exploration and a re-defining of what school looks like. The learning of these rhythms is perhaps more commonly found in a reception class, depending on specific features of a setting, but at PSCA we are seeing these aspects fully interrogated due to it being such a comprehensively collective experience.

Dr Mike Beard, Director for Potential and Performance, is developing a lens model with staff exploring a foundation of dual inquiry: What am I making and how am I making it? What am I looking at and how am I looking at it? This is objectified by the idea of a looking lens such as a hand-held magnifying glass. This work is connecting powerfully to individual need and understanding of the person living within the learning community. It is hoped that this foundation of dual inquiry will also support our purpose: ‘To support and enable people to transform their lives and be the best they can be.’ Reflecting on both the what and the how encourages the individual to own responsibility for the process of learning as acquiring knowledge and learning to be.

These two core aspects are co-dependent in order to become a healthy learner. Craft and the wider arts will provide the vehicle for this reflective practice in the studios, due in part to being a safe place for subjective response – we have permission to respond subjectively to artistic expression and, as such, must re-enforce those responses by communicating how that meaning has been formed, both by the artist or maker and by the audience. Crucially, as learning, this invites forming and interpretation of meaning over the time imposed by the making process. There is often a necessary timespan for a making process, particularly with a view to the making of craft. Meanwhile, and throughout, the child is responding and communicating with materials to form that picture – perhaps a ZPD (Vygotsky 1978) formed by the interdependent relationship between child and media could be argued.

It is clear that Plymouth School of Creative Arts will be a place of made objects through access to high-quality and relevant material technology. However, a significant area for future research will explore the implications of this process upon the maker in terms of growth, autonomy and knowledge making. Through exploring processes of Craft, for example, haptic perception engages a complete state of learning, one that relies on both skilful and conceptual handling in order to journey through as a maker. In doing so, children are communicating and making meaning from a process. This process is one that values time, reflection and an individual voice in order to present ideas to an audience, as well as the skills to work the given material. We intend to nurture agency through these times of making
where individual actions are secured by a child’s own reasoning. This will take careful and challenging intervention from teachers as instructors in order to generate skill competencies whilst enabling complete time for divergent thought (Robinson) in order to elaborate the skills through application.

At the time of writing, connections are being made between strands of thought by children in the studios. Choice is offered in most activities, encouraging children to make meaning in a way that makes sense to them, as well as best communicating this outside. Over time the consequences of providing these individual decision points are to be carefully observed as to their effect on age – that which may be visible as autonomy transferred beyond the making process. We intend to examine the impact of making beyond its contribution to the arts but upon readiness for the next steps, be those exams, employment, a personal goal or conversation with a friend. We will be exploring the arts as a journey to living well, knowing yourself and connecting with your place in a community. Crucially these explorations will be driven by our purpose, enabling people to support and transform themselves.

Our connections to community are furthermore explored by the application of expert partners and bespoke facilities for delivery. Ben Dunks is a contemporary dance practitioner based in Plymouth and has been exploring the fundamentals of individual human movement as well as its effect on others and the space within which we move. Children are invited to explore themselves through dance, rather than learning a dance. Elsewhere, the year two children attend a street dance studio session each week. Here, there may be more learning of outcome-led skills (a performed dance move), yet the individual interpretation of these dance moves is powerfully valued and shared. Both settings are born of this shared values set as a way of communicating yourself as the best you can be.

There is some exceptional work happening within the dedicated cooking spaces in the studio. Food craft is facilitated daily. Children as young as four are making their own fish fingers and rolling out fresh pasta. The acquisition of these skills has exceeded age-related expectations so the method of delivery has been successful in providing an achievable amount of stretch, tailored to the individual, rather than working by pre-determined competencies. Crucially, this cooking is purposeful – focaccia bread is baked daily and served with lunch. The children are working with Andy, an experienced professional chef who is employed as a teaching assistant, usually in small groups of around six but determined by the process and the individual needs. The transfer of skills from these experts is embedded with integrity and a depth of knowledge that facilitates their exploration to their full potential. These sessions take place within a dedicated cooking area in the studio spaces.

Activity is visible and, where relevant, connected to themes within the wider studio focus. Children have been working according to competency and need rather than a structured rota. Individual tendencies are explored, and so it may be that some children utilise cooking more than others as their means to express or explore the learning theme. However, every child has access to these facilities that are an everyday component of the learning environment. It is not expected that children will always be working in a way that is comfortable for them; the vision for the emerging culture of the school is for times of learning stretch to be intrinsically motivated in order for me to become a better learner. This may also not always be a consciously motivated move.

The concept of rage to master (Drake and Winner 2013) becomes more likely in an environment where facilitated choice and extension is offered. Children are motivated by the haptic process to work for extended periods, far beyond time frames expected for their age. We are finding that in the early stages of a new school, modelling is often necessary and, therefore, mindful and careful attention is applied by teachers in order to nurture the move from comfort to purposeful stretch (Beard). It is also true that in any moments of intrinsically motivated learning that do occur, the stretch is more extended in some children than others. For some, this comes more naturally whereas others have a sharper threshold before they become disengaged – the stretch is beyond reach. This is where, for practitioners, a distinction between process for use as context and process to develop a key skill is clearly defined.

A craft skill, coached by an expert, may be a fundamental necessity on the journey towards mastery of that art. If the skill is beyond reasonable stretch for that child then scaffolding steps must be put in place in order for that child to grow and eventually achieve the desired skill competency. It is deemed necessary for the child in this instance to acquire the skill. If, on the other hand, the skill is beyond reasonable stretch but this time its purpose in the activity is to provide context, then an alternative context may be sought – perhaps producing a

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painting is more enabling for that particular child than cooking to show the same learning.

As a school we will be exploring the tension between these two applications of craft that are often thrown into the melting pot of creativity. This is where a clarity of destination on the part of the school is important. In practice this might look like a decision between whether a child will be learning how to make bread or learning how to weigh and measure ingredients. Or indeed the distinction between learning a street dance routine and learning how our bodies move.

The collaboration between Plymouth College of Art and Plymouth School of Creative Arts offers a unique continuum for arts education going forward. We intend to make real connections along this line of arts practitioners so that children are able to see working examples of what they may aspire to be. Children at PCA will be immersed in experiences of the arts: galleries and exhibitions, performances, community projects, seeing both how creative practice is made as well as its meaningful application. This is also an area that will be supported by families, exemplifying the work and industry of the parents in our community. We will aim to track the effect of these connections upon the creative aspirations of our children. What is significant is that we are at the very early stages of this process.

Our continuum offers a significant opportunity for a longitudinal study of these effects so we have a responsibility to make the most of utilising our emergent practice for research. Learning opportunities at PSCA are born of the people that activate it, and we have a commitment to sustaining these relationships so that children can utilise them over time. It is unlikely that we will see the same input occurring in, for example, year two each spring. Making experiences will be unique to their time, place and people involved. It will be significant to observe how, for example, a child working with a creative practitioner in year two might then work with the same practitioner when they are in year eleven, and what effect this long term investment in relationships will have in the intermediate outcomes along the way.

It is a clear expectation at PSCA that we will undergo national quality assessment routines and be fully accountable to the processes involved. Our children will undergo statutory standardised testing at the necessary points. However, this will support the school’s own picture of comprehensive assessment that draws a picture of the child as an individual, including the effect of interpersonal relationships on their progress. We are designing an Individual Learning Profile (ILP) which will develop as a dynamic and active portfolio to illustrate an image of the child at any given time. Staff are working to collectively explore the meaning of assessment and how it will be used to support our purpose. Items currently being shared include a commitment to collaboration in order to populate this ILP document – contributions from family to deeply inform school-based responses, as well as including the very present voice of the child. We are exploring the interdependence of utilising assessment of learning, assessment for learning and assessment as learning. In any assessment strategy that emerges, a balance of these three aspects will work to ensure a rigorous and broad view of knowledge making at PSCA.

At the time of writing, we are seeing meaningful and dynamic learning occur throughout the school. Progress feels contradictory in many ways. At times the establishment of the rhythm feels slow. Yet this is due largely to thinking again, and in a divergent manner (Robinson), as well as it being perpetually responsive and inclusive of a collective voice. At other times, achievement is significant, beyond expectation, as we are noticing children making true meaning from their permission to explore possibility and themselves as individuals. Achievement in this sense is extraordinary. Parents are noticing positive changes in their children, transformations that they never expected to see. Feedback from one parent shared his welcome surprise at the accuracy and intent use of challenging vocabulary from his 5-year-old at the dinner table at home. Such things have rarely been taught in didactic fashion but are instead acquired through a culture of knowledge sharing which permeates studio practice. Teachers are having to learn again, and it is not an easy process. Teachers are tired yet at the same time invigorated by the new meaning of their practice. These early signifiers reinforce our vision and aspiration as a school to make something different. We are committed to documenting and researching our work, as well as offering our school as a subject of research in order to fully explore the short- and long-term implications of this new kind of school.

I see future opportunity for research that connects a place of making and developing the whole child to numerous successes, some quantifiable year output from national tests, others outside that. We are driven by the opportunity to develop a new framework to assess, through truly exploring our
core values of education as a community. We will be measured above all by our own aspirational and collective vision of what excellence looks like. Future questions will explore the impact of our purpose upon tangible items that politics might measure. We will also research the fundamentals of our purpose to ensure that it remains appropriate, meaningful and providing the best possible outcomes for the children of our school. It is intended that the work we produce will be of impact and genuine meaning to an education system beyond our walls.

At PSCA the individual is at the centre of a community. We believe that nurturing that child to live well and be the best they can be will ensure a healthy and prosperous society, and we believe delivery through the arts will achieve measurable success. Research will lead where our practice goes. As such, it may be worth exploring the impact of visible research practice within a school setting, on the part of both child and adult. It would be a missed opportunity to become a specialist unit outside of mainstream education. We have a chance to explore and examine the intricate details of what we are making, and communicate its impact on future economies and wellbeing, significant to the community and the individual. It is difficult at this time to say what our school will look like in the future. We will always be asking purposeful questions to explore this. We will always be making a school.

References
Chamithri Greru & Dr Britta Kalkreuter

Artisans in the classroom: understanding ‘the real making of true practice’ through craft collaborations

There is resurgence of interest in design education in recent years, yet only a handful of studies are available on craft education, and specifically on teaching and learning methodologies exploited in classrooms (Venla Moilanen et al 2012). What might safely be assumed is that the existing art and design teaching/learning techniques in classroom practices will increasingly become more complex in the context of multiculturalism. An area of specific interest is how students get associated with these vivid socio-cultural discourses, and how they integrate them into their learning practices, if the efficacy of such relationships is determined by the modes of practice and the contents of instructions.

This paper brings to our attention ways in which we might change current design pedagogy in the classroom context by identifying the modes of engagement students prefer, and by suggesting which instrumental approach could be used as a spring board when interacting with peer students, teachers and external artisans on a cross-cultural knowledge exchange.

The study uses a twofold methodology placing students on a restricted and a non-restricted design context enabling to capture the more subtle and overt practices of design, reinterpreting work when responding to cultural influences. It is part of an artists’ residency exchange programme (ReSide) funded by Creative Scotland where a group of three artisans shared their experiences of culturally-rich, Indian textile craft making in Kutch Gujarat with two groups of students studying arts and design in two Scottish schools.

The paper discusses methodologies employed in the workshops to study and analyse the probable outcome of students’ cognitive and behavioural approaches, level of engagement, their individual and collective learning styles including methods of capturing knowledge and materialization using their own creativity and imagination in response to the distinctive design paths they employed in capturing the cross cultural experiences.

The data gathering employed a qualitative-driven approach using creative interviewing, participant observation and audio and video recording of conversations.

Findings reveal that students appreciate a freedom of choice when they engage in creative practices, as they not only respond to a cultural exposure as a practice of work but that they also build links between their immediate culture and backgrounds creating an expanded awareness of construction of knowledge and practice. Whilst building a sustainable discourse on creative craft practices a new model of pedagogy could be achieved through a more haptic mode of design engagement, suggesting that spontaneity would fuel students’ lateral thinking and problem-solving skills through a practice-based curriculum with wide-ranging consequences for a future generation of designers.
Introduction and context

Craft education in the classroom

Craft education receives much attention in the current educational climate, but Yair (2012) explains there is less research on craft pedagogy within the UK context. This paper adds to the discussion of craft education in a Scottish educational context by highlighting a discontinuity between the rationale of the presence of craft and of how it is normally being realised, perceived, delivered and performed in school classrooms. This is irrespective, or even in contrast to, the fact that craft is the most popular activity in school (Houghton 2011).

Paradoxically, craft is deeply rooted in the Scottish school curriculum from its inception nearly four decades ago. Then, craft was considered to replace what design could not fulfil in the curriculum, like problem-solving skills, and it became hence a ‘third culture’ combining the more technical subjects and creative arts (SQA 1987).

At present, craft is taught in schools as a practical skill using a broad range of materials. It attempts to achieve a work and life balance by developing more individual and transferrable skills of the students (SQA 2012). The early perception of craft as being a medium to provide social learning via the curriculum (SQA 1987) still prevails when SQA’s comments on the application of skills in everyday life. This includes working in shared collaborative environments as well (SQA 2012).

This deep-rooted perception of learning a craft for wider applications contradicts actual classroom practices in the Scottish curriculum. This is evident when the SQA expounds their aims of craft courses to be more product-centric. (i.e. National Level 2 practical craft skill course requires students to identify tools, materials, equipment and use skills, knowledge and technology as part of the production process). But Yair (2012) explains that the current educational climate in the West can be seen as driven by a variety of craft pedagogy models from process to outcome-oriented craft practices.

Hence we see a gap in how craft is being placed in the Scottish school curriculum, underlining the importance and relevance of deciding a methodology to accompany the teaching of craft. The need for this change in craft is evident when Education Scotland highlights the ‘big issues’ of practical craft skills, claiming there should be ‘new angles’ provided for craft education. These new angles centre around students being educated on their role of becoming responsible and active citizens whilst identifying the sustainable issues of the socio-economic environment (Education Scotland 2012).

In the present paper we provide examples of how this goal of becoming responsible individuals, aware of bigger issues through making, might be achieved by collaborating with craft practitioners from a making background that has retained its links with society and material in a more immediate way than is the case in the developed world.

Aware of the potential implications of craft education and its current status quo of practices, we could argue that the craft skills which are mostly associated with Western values and viewpoints of making, designing and handling materials do not fulfil what actual craft-making used to perform. Gardner (1990) explains that craft is about passing down the skills and knowledge to a new generation (cited by Sato 2010), suggesting we might need to review what we teach as craft in the West. If Gardner is still right, we might assume that current craft education of object-related making does not support the new demands of educating responsible citizens as much as it could.

The question to ask of craft education, therefore, is whether integrating creativity, cultural awareness, norms and practices of one’s own and other cultures can be balanced with practical craft skills to allow forming an expanded awareness of the wider socio-cultural factors through making. As Pöllänen (2011) posits, the shift in craft education is now towards focusing on providing more general skills of learning through making rather than providing a specific material skill to students.
This cannot simply be achieved through a simplistic model of pedagogy, which only focuses on the making of the object, but requires a holistic approach (Pollänen 2009) which places the student in an authentic learning experience, and the use of holistic craft as a model for providing authentic learning is acknowledged well (Scholarly Editions 2012). However, Pollänen (2011) also reminds us that achieving holistic craft-making has been regarded as somewhat difficult as it needs more direction on how to exploit it within the classroom.

Aware of the potential benefits of authentic learning brings to learning situations (Herrington and Oliver 2000), and acknowledging that students prefer practice-based learning (Russell-Bowie 2012), we have adopted in our study authentic learning with practical, hands-on working scenarios. We have considered what Lombardi (2007), as cited by Bohemia and Davison (2012), says about this form of learning as being applicable for close interactions, and we are basing our work on situated and cognitive learning theories which postulate ‘learning in meaningful contexts’ (Bohemia and Davison 2012: 136).

The project description

The research on which this paper is based formed part of a funded practitioner exchange project called ReSide under Creative Scotland’s Creative Futures programme, Europe’s largest coordinated residency and exchange programme. The residency took place between Heriot Watt University in Scotland and the National Institute of Design in India during autumn 2012 and spring 2013. Four artisans, makers and designers from the two countries not only extended their own practice through living in their host country for two four-week periods but shared their knowledge and experiences of craft-making by collaborating with other craft interest groups and institutions of the respective communities. In Scotland, one Scottish and two Indian participants visited two secondary schools in Scotland where they collaborated with students and teachers to share their cultural experiences of making crafts.

Through close observation of these engagements from various research angles we were able to explore how students, teachers and external practitioners respond to the connotations of multiculturalism and diverse creative craft practices. Specific attention was paid to identifying how students respond to live cultural exposures, whether they are able to expand their awareness beyond the immediate classroom contexts, and more. The paper therefore explicates how external collaborations could be used more meaningfully in the context of learning wider social behaviour through creative craft practices.

In doing so we effectively communicate a case study example for delivering authentic learning through face to face knowledge exchange (Lombardi 2007). As part of this we examine ways of adopting varied strategies such as authentic learning, cultural knowledge exchange and practiced based, holistic craft-making as part of craft education. We pay specific attention to the understanding of students’ (re)interpretation and (re)production of creative work with respect to cultural influences in their broadest sense, thus providing an alternative perspective on how the above contextual issues are achievable in current educational practices.

Methodology

Makers in the classroom: The workshop

A workshop setting was deemed to be appropriate in enhancing the authentic learning experience, and also to sit well within the realm of a practice-based craft educational setting. When Herrington and Oliver (2000:1) describe the gap between formal education and ‘real life learning’ experiences we recognise what workshop settings could bring to this context in order to invigorate live, practice-based demonstrations as an alternative to Western perspectives on craft learning which might have disengaged people. As real-life learning still prevails in Eastern production of crafts, Houghton’s ‘negligence of traditional craft in the UK school curriculum’ (Houghton 2011) is addressed.

For this purpose, one Indian maker from a traditional craft community and one Indian and one Scottish designer-maker participated in two craft workshop sessions. They visited two schools located in the Scottish Borders and shared their experience and knowledge on rich textile craft-making traditions of the Kutch region in Gujarat which also explored broader culture and aspects of lifestyle. The Indian artisans presented their individual work and demonstrated how they had developed new design skills by being exposed to contemporary craft-making in Scotland. The Scottish participant demonstrated how her practice had been influenced by the making practices experienced first hand while on exchange in Kutch, bringing materials that had inspired and directed that influence to the workshop. Students were thus exposed to a diverse and different approach of Eastern making practices and Western approaches to contemporaneousness which we will discuss later in the paper.
The observation of the two workshops was planned to identify students’ approaches to multicultural craft collaborations, to understand what methodology would add to existing craft learning practices to create a more dynamic learning environment within the classrooms that supported authentic and holistic craft experiences. From the outset, it was recognised that the ‘experience of making’ would be contextualised into a wider cultural experience by having multicultural actors in the workshop, that the link between ‘doing’ and ‘knowing’ would be potentially brought to life by having practitioners and their context leading the workshop (Herrington and Oliver 2000).

Thus the workshop was devised to let students understand what making is all about in real-life engagements, building critical knowledge on how it is technically performed, but adding how and why practices may differ.

**Multicultural collaboration**

Some understanding of multicultural and collaborative practices is desirable to provide a basis for our discussion. Driven by individual assessments schemes, a collaborative atmosphere is not widely supported or practised in classroom situations. Wenger (1999: 3) says that ‘collaborating is considered cheating ... and institutionalised teaching and training is perceived by would-be learners as irrelevant ... feeling that learning is boring and arduous and that we are not really cut out for it.’

More recently, however, we are opting back into such collaborative educational practices with a view to creating life-sustaining experiences. Multicultural education provides students with real-life situations to understand very distinct cultural differences by comparing themselves to others (Delano-Oriaran 2012) because it breaks the barrier of self-centred thinking, allowing students to focus on the real-world relevance of issues (Clemons 2005). Thus Clemons (2005: 289) is implying that collaborative practices improve ‘decision making’ and ‘social action skills’.

Furthermore, during the process of cultural knowledge sharing, the mutual knowledge exchange and dissemination of different cultural elements, history and traditions helps students move from one culture to the other via an easy transition process. As Stephanie Clemons further notes, ‘bringing family heritage, traditions and cultural motifs into the classroom instruction can benefit individuals through improved educational experiences and subsequent academic success’ (Clemons 2005: 290).

The understanding provided here through cultural collaborations makes students be ‘cultural beings’ (Anderson 2003: 64). This translates easily into seeing culture as an appropriate tool which complements holistic craft educational practices because ‘all cultures have a visual dimension’ (Clemons 2005: 290), and visual and technical components are key for holistic craft practices (Pöllänen 2009).

**The sketchbook cover making**

The participants of the classroom study included a total of twenty-one S2 and S3 Grade students between the ages of 12 and 13 from two secondary schools in the rural Scottish Borders, an area rich in textile history. It comprised a sample of ten female students studying Craft Skills and Textiles in Home Economics and a sample of ten female and one male student studying Art and Design. This mixed cohort of students was perceived to have a variety of skills with regard to hands-on craft-making which allowed researchers to observe and evaluate their approaches to practice-based making in response to cultural exposures and collaborative experiences by way of comparing pre, during and after workshop experiences.

To identify students’ impression of the workshop experiences, and to decide the modes of delivery of practice-based education and the content of craft courses, we placed one group of students in a non-restricted design environment and the other group in a restricted environment. During the workshop we requested students to design a sketchbook cover to demonstrate their creative craft abilities informed by the cultural experience. The non-restricted workshop setting allowed students to choose whatever materials, colours, techniques and skills they wished to employ in their design and making process. In contrast the group of students in the restricted environment was asked to choose a colour theme prior to the workshop.

The students were then divided into sub-groups of three to four people in each group on a voluntary basis to identify their responsiveness to craft collaborations and to identify their cognitive and behavioural approaches in the making process, both individually and collectively.

This categorisation of the modes of delivery was to determine the educational needs and the interests of students and teachers in actual learning tasks, as well as the concerns for effective engagements by makers during craftwork.
Data gathering methodology
The data were gathered on a qualitatively driven mixed method approach where use of observatory, participatory and narrative techniques was employed. This included visual data gathering through photographs and video recording, creative interviews and semi-structured interviews and live engagements with students’ creative design work.

A choice of comprehensive techniques allowed capturing students’ feelings towards craft-making activities beyond their cultural borders. This included their perception and impression of the kind of information they found useful and constructive to build a holistic and authentic craft learning experience. The techniques also helped to identify students’ perception on craft’s usefulness in expanding it to cross curricular learning, and their engagement with professionals outside the school. Students were questioned on three schemes: a) design of the workshop, b) impact of the workshop on students’ creativity and awareness of culture and craft, and c) usefulness for future craft engagements.

The workshop presentation
The three makers who participated in the workshops demonstrated their traditional and original work specific to the community and culture, as well as work produced during their residency. They explained how they had been influenced by exploring a different set of culture practices. This part of the workshop included providing the students with first-hand experience to have a closer look at the traditional artisanal products, at making skills, and a reflection on how they have contemporised them. The experience allowed students to explore what traditional and contemporary making means in the craft context with regard to geo-demographic differences and similarities which go beyond their classroom learning.

The demonstrations included Murji Hameed Vankar, a traditional Kutchi artisan, showing his weaving techniques and explaining the choice of materials and colours. He explained how textile crafts have been re-established as a dominant player in their livelihoods as well as a distinguishing feature in identifying communities and sub-communities. Students realised how and why crafts are inextricably bound to a particular culture and the way in which the community systems and hierarchies are organised, e.g. strict gender participations around the process of making. They questioned these aspects of making which go beyond the object level when artisans explained these socio-cultural relationships.

These Rabari women, their hands are incredibly rough because they do these house works, and then they do the smooth work with the needle. (Lindsay Roberts, Scottish designer-maker)

They start training their children since they were kids and a lot of it is the dowry. They do it for a long period of time. (Swati Unakar, Indian designer maker)

Swati Unakar, being a contemporary designer with traditional knowledge on silk-weaving techniques, explained her own creations with a detailed story of silk production techniques of Bangalore where she originally comes from. This accompanied her exploration of Kutch textile traditions as a Gujarati-speaking practitioner and a researcher in mixing the fine silk production techniques with the very geometric, coarse but vibrant Kutchi styles.

Lindsay Roberts, the Scottish designer maker, unveiled her own stories of Eastern making through her Western lens, drawing similarities and differences of the Scottish and Indian cultures. She went on to explain the most painstaking Bandhani work as well as the unusual Rabari mirror-attaching techniques. She explained ‘one person does the tying and the other does the dying and another community attaches mirrors’. These stories elaborated the concept of a traditional community of practice to the students without forcefully trying to explain what it is.

Through this presentation with varied examples, students identified the differences in cultural roots, acknowledging and respecting those differences. Lindsay Roberts drew comparisons between Scottish culture and the culture of making in Kutch. She said: ‘each community has different ways of stitching which is identifiable in Kutch craft work. It is like different clans having different tartans here in Scotland.’ Students posed questions about the surrounding stories of the particular crafts, asking more about the history and the reasoning. The viewpoints they held on collaborative engagements revealed the workshop experience was a meaning-making session rather than mere object-related making.

Findings and discussion
Cultural exposure and awareness within object level of making
Knowledge on new craft skills became a significant part of student learning gained during this object level of making. Students were inspired by the
basic technical skills and rethought their practices of how they used colours and materials in terms of the range and the breadth of use. During the workshops students attempted to go beyond their usual classroom learning practices by exceeding the use of a basic set of patterns and design theories. The craft students, for example, integrated different making skills to design the sketchbook cover in hand-stitching techniques, block printing, fabric painting, appliqué, patchwork and so on. And the art and design students stepped away from their usual design and making by playing with colours and patterns. They also tried experimenting with stitching as well as using mixed media as seen in Indian examples.

The students were able to use the basic knowledge of patterns, texture, colour, form and materials to express their understanding of a particular culture, thereby establishing connections with the more hidden or hard to recognise contextual stories underlying this material expression.

Their representation of work varied when they were presented with a cultural experience in that we saw strong commitments to using craft as a means of cultural expression as exemplified by several participant statements:

Kane, an art and design student, got inspired by the story telling of the silk production technique by Swati Unakar: ‘I remember the silkworm, so I thought to make a silk story.’

This form of object-related making through narrative stories triggered students’ deeper explorations of the culture and making which in turn heightened their making abilities. This is discussed in detail in the next section (see Figure 1).

Another art and design student, Bethany, got inspired by the vibrant colours and techniques used in shawl-making by Murji Vankar. When he explained how women in his family make the tussle work by hand once he finishes the weaving, this collective experience allowed the student to build deep understanding through making (see Figure 2). Says Bethany:

I really like the bright colours and I think it really stands out when you’ve got so many other colours. I like the different patterns and also I have got these little bling blings (showing some mini bells) – I think they are quite pretty. I have heard about the Indian culture before in the geography class but there we don’t quite learn about weaving or how different kinds of men and women do the weaving and work together on the same craft. We watched some videos on India but we didn’t do much material stuff and also we didn’t meet anyone or see for real how people dress and all that in other cultures.

It is also worth noting in this example how students tended to form a comprehensive awareness by cross-relating their making experience with previous learning or experiences. It confirms that education can result in deeper learning when including practice-based work or making. Hence we see an emergence in authentic learning experiences where they successfully recognise and understand different aspects of learning tasks that bear relevance to their life or practice through which they develop meaningful and refined knowledge. This is what Guiller et al. (2008) emphasise when calling authentic learning multidimensional (cited by Bohemia and Davison 2012).
Awareness beyond object level of making
Holistic craft-making believes in the use of creative
techniques to stimulate the making process by
generating more ideas (Pöllänen 2009). We observed
that the method of narrative storytelling was
effective as it provided students with a better picture
than verbal explanations. When students were
given the chance to experience how people of other
cultures dress and behave in a live demonstration,
a multisensory approach to their design work was
instigated (see Figure 3).

Image 3 Swati Unakar demonstrating
Rabari traditional dress

Students applied the techniques they learnt beyond
the original object level of making by extracting and
developing it while concentrating on interesting
features and applying it as a concept to their own
object’s story. These narrative stimuli correlated with
students’ previously seen or experienced events and
with the immediate learning of the workshop. This
was reflected in their work as they tried to express
this through a collection of memorable cultural
experiences, combining the more disparate events
that have taken place elsewhere, outside class rooms
to form an effective learning practice. This is part of
the holistic learning which (Pöllänen 2009) mentions.

Lorraine, an art and design student, explained how
she constructed knowledge and expanded her
awareness by reflecting on her similar learning
practices through appreciation:

I went to Turkey where they make these
beautiful carpets, and it is a bit like this. The
way they make things is quite same. Because
they are kind of unique each and every piece
is unique.

Students learnt entirely new things which created
a rippling effect towards a wider social circle as
the researchers received interesting feedback
from students’ friends and family weeks after the
workshop. This strong and lasting impact enhanced
students’ continuous engagement with the craft
leading to innovation.

Mel, a textile and craft student, learnt more keenly
about Kutch traditions and craft-making. Responses
received directly from her mother indicated: ‘my
daughter has been well into the workshop and
focused. When she came back from school that
evening she was so impressed. She said the man
was wearing something he made. And she kept on
stitching a mirror to the fabric that whole afternoon.’

This reinforced their reflection of things learned on
their (Western) society, especially the ideology of
Eastern craft making through community of practice,
as something that intrigued them sufficiently o
practise within their own communities.

One student commented: ‘My mum makes handmade
craft items. I was never interested in learning from
my mother. But now I know how important it is and
how interesting it could be.’

Another student said, ‘I think it is kind of cool that
they are kind of passing it down through their family.
Because we have some stuff here (in Scotland) but like
it is not as they are taken so strong (serious) or well-
kept as the fabric and weaving and everything in India.’

The interview data analysis indicated that students
had developed a sense of deeper and wider
appreciation of other cultures, craft skills and
developed a fondness for handmade products. Most
importantly they learnt not to treat or consider other
cultures and people as ‘exotic aliens’ (Anderson
2003: 64). They understood that hand crafted items
have more value than what they see in fast fashion
in the Western culture and also as something truly
appreciative as it is being made by sweat, memory
and emotions. This depicts Frayling’s view, as cited
by Houghton (2011: 180), that craft teaches us the
'value over the quantity'. Various answers indicated
this sense of appreciation:

I think they are really hard to make and take a
lot of time … really hard …

I think those people must be quite enjoying
making that work … and they are really
imaginative.
You know these people put a lot of effort in it and they try to make it look as good as they possibly can.

‘They must have long [sic] patience to try and make it over a long period of time, maybe days and weeks and years.

Placing the student in a real life-situation allowed them to evaluate an authentic experience and be aware of the making process. This improved students’ problem-solving skills, creativity and innovation.

I like working in groups because they help me. I know I am not the best in doing things so my friend corrects me and you can get better ideas and of course get the chance to blend ideas.

Discussion: The restricted and non-restricted design context

Putting the students in a restricted and non-restricted design environment led us to observe and identify many useful cognitive and behavioural approaches towards creativity, innovation and their design process, especially with an approach to how craft education could be linked up with external engagements and provide authentic learning practices. We saw that students acquire many skills when placed in a situation which triggers curiosity and spontaneity, and that they best respond to the external engagements in that way.

‘Today’s workshop is good because you are not planning it or anything but you work towards an end result as you go’ commented one student who was from the non-restricted design class. So it proves that holistic craft experiences are achievable through interactive and collaborative craft-making engagements.

The students in the restricted design environment tended to focus on their materials and were disengaged from the immediate leanings of workshop experience. Their design outcome showed less inspiration taken from the Indian culture when compared to the non-restricted group (see Figures 4 and 5).

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This gives us a hint that working on a colour theme, though believed to be one of the key features of design education, might not work well, especially in a knowledge sharing context in cultural crafts. Thus we identified colour as one of the important cultural expressers or identifiers apart from materials, techniques, patterns and forms.

Working in a non-restricted design environment and developing what they see in the classroom instantly provided students with enhanced clarity in their design work and added cultural relevance. They tended to evaluate their designs and processes on-site without any pre-conditions, and this intrigued them to get more inspired by external engagements. We conclude that this fuels multicultural collaborative practices in providing holistic craft experiences as students could easily align their previous experiences and the immediate engagements to the entire learning process (see Figure 6).

The workshop project delivered most of the outcomes and contributed to our knowledge of craft in an educational setting. In this paper we have used the term authentic learning within a craft context to explain the process of learning while observing and practising the knowledge acquired through a cultural engagement. This is achieved by being truer to the original context of learning and re-producing and re-interpreting while reflecting on students’ previously used skills in the classroom and applying the learning on wider applications. The presence of makers in the classroom helped in achieving such learning in various ways.

The use of narrative methods, e.g. by showing the students how Rabari women wear their traditional dress, explained the stories related to culture including dress codes, detailed making process and the involvement of the community in making such textile crafts. The use of a haptic mode of learning was influential in the authentic learning process especially, in sharing cultural knowledge. Students had the chance to actually touch each and every product and compare the materials, techniques, and experience the depth of the skills involved. This allowed them to learn in a personally preferred manner by being truer to themselves as experiences were triggered by interest rather than being imposed. There is some evidence that lasting memories have been produced which spread across social contexts and into other subject areas, allowing them to apply knowledge in different contexts and experiences. ‘This is much funner [sic]. I like it more than my geography or science classes’ commented one student.

Further research might focus on longer-term workshops between varied student and practitioner populations to further validate the preliminary findings of this case study.

Authenticity and multicultural craft collaborations

Herrington et al. (2003) mention ten characteristics of authentic learning including: real-world relevance, defining tasks and ub-tasks to complete a task, investigating a complex task over a period of time, examining tasks from different perspectives, opportunities to collaborate and to reflect, applying learning cross-subject and beyond subject areas, ability to integrate with assessments, creating a polished product, competing solutions and diversity of outcomes. We identified most of the characteristics in our workshops despite not carrying them out over a period of time as is normally the case.
Notes

1. SQA – Scottish Qualifications Authority.
2. The concept of holistic craft-making is introduced by the Finnish National Core Curriculum. Pollanen (2009) describes it as a making process by which the maker/student is involved from brainstorming of the idea to the final making of the product, giving them the authority and initiative to take active decisions and to experience the entire making process.
3. Rabari is an embroidery technique which is practised by women of the nomadic Rabari community. They use mirrors of varying shapes which are attached to the fabric via different decorative stitching.
4. Bandhani is a form of tie-dye technique seen in Gujarat.

References

This paper sets out to explore thinking-through-making as a complex dynamic of learnt skills and intuitive thought and to examine how these may be taught in what will be termed in this pedagogical context ‘learning and doing’. The paper will propose that whilst there are established strategies relating to the acquisition of craft skills there are fewer that deal with their autonomous practice, provoking a gap or discontinuity in studio teaching. It will consider the value of rejecting the duality implied by thinking-through-making, taking the practice of drawing as its exemplar in this exploration of intuition and its value in creative, entrepreneurial and sustainable practice.

In drawing, the artist uses intuition to inscribe the mercurial drawn line: as a means to judge when to yield to whim and when to reassert control, when to be attentive to variables and when to be prepared for the unexpected. Intuition, speculation, courting failure: these are all cornerstones of a studio practice and yet are difficult to articulate or orchestrate meaningfully in a teaching situation. The paper sets out to unpack what we might mean by ‘intuition’ in arts practice by examining the Aristotelian concepts of techné, métis and kairos, an expression of creative thinking that:

‘implies a complex but very coherent body of mental attitudes and intellectual behaviour which combine flair, wisdom, forethought, subtlety of mind, resourcefulness...applied to situations which are transient, shifting, disconcerting and ambiguous, situations which do not lend themselves to precise measurement, exact calculation or rigorous logic’[6].

For Bourdieu, the ‘pedagogical problem’ of how to put into practice a range of learnt skills, or what Bourdieu would call the ‘embodiment’ of an art, is the difficulty of imparting the ability to ‘appreciate the meaning of the situation instantly, at a glance, in the heat of the action, and to produce at once the opportune response’[5]. The ability to embody, or to learn through habituation, is seen as key in a learning process that leads to intuitive thinking-through-making and to the entrepreneurism essential in negotiating an uncertain future of discontinuity and accelerating change.

The paper will conclude that the gap between the learning of a set of skills and their subsequent autonomous practice represents a problem that is often solved tacitly or by implication in studio teaching, and that a greater understanding of the mechanisms of creative thought is essential to informing those studio pedagogies that will engender the “understanding of uncertainty, ambiguity and the limits of knowledge”[4] in the makers and thinkers of the future.


We construct and construct, and yet intuition is still a good thing. A considerable amount can be done without it, but not all. There is plenty of room for exact research in art, but there is no substitute for intuition. (Klee 1958[1929])

This paper sets out to explore thinking-through-making as a complex dynamic of learnt skills and intuitive thought and to examine how these may be taught in what will be termed in this context ‘learning and doing’. The paper proposes that, whilst there are established strategies relating to the acquisition of craft skills and to creativity, it is less clear how intuition, as the act of knowing or sensing in the moment, can be taught in the context of art and design education. The paper will take the practice of drawing as its exemplar in this exploration of intuition, examining how it might be described and imparted in an education context and its value in creative, entrepreneurial and sustainable practice. I set out to unpack what we might mean by ‘intuition’ in arts practice by examining the Aristotelian concepts of techne, metis and kairos. This mode of thinking is seen as the desired result in creative practice and the paper will argue that it is expressed most cogently in the teaching of drawing.

Firstly I would like to approach the question of what might constitute intuition by thinking in a particular way about creativity. Despite a history that stretches back to the 1920s, modern research into creativity has not produced one outlook sufficiently widely accepted to serve as a unifying theory (Beattie 2000: 175). I would like to examine some current theories of creativity before asking what role intuition may play within it. There are many individual theories in the field relating to creativity – I would like to look at three of these that seem to have most relevance to art and design education.

The most widespread approach to creativity is the creative strategies model, characterised by a pragmatic or commercial approach that builds on what is known about the causes and effects of creativity and attempts to construct this into a usable model that can be taught. Examples include Geoff Petty’s ‘How to be Better at Creativity’ (familiar to those who have passed through post-graduate training in teaching) which describes a system that can be applied to a learning environment through the mnemonic ICEDIP and a process which involves, in order, Inspiration, Clarification, Evaluation, Distillation, Incubation and Perspiration (Petty 1997). This is a variation on early work by Helmholtz in the late nineteenth century and Graham Wallas’s system of 1926 that uses Idea, Germination, Knowledge Accumulation, Incubation, Illumination and Verifi ation. It is no surprise that the teaching of creative strategies within the education sector has drawn so much of its inspiration from this approach: it lends itself to an off-the-shelf, turnkey solution to motivating students whilst providing opportunities to explore feelings and develop new skills. The system has largely grown from economic business necessity, closely following the growth of a business approach within the Higher Education system itself.

Alternatively, the cognitive style theory of creativity sets out a rational and problem-solving approach when dealing with creativity. It is closely allied to the pragmatic approach detailed above, again based on the Helmholtz and Wallas models. Research into ‘cognitive styles’ (Kirton 1976: 622) has attempted to discover what kinds of creativity techniques work best with which kinds of people and under what circumstances. It is in effect looking beneath the pragmatic approach and moving towards an understanding of why individuals approach problems in different ways, particularly in a group situation. Cognitive styles refer to an individual’s typical mode of thinking, which ‘cuts across diverse spheres of behaviour’ (Messick 1976: 59) and which are relatively stable over time. Kirton identified a personality continuum that he called ‘Adaptor–Innovator’ (Kirton 1976: 622) which reflects two very different approaches to creativity. In this, the adaptor is characterised by precision, reliability, conformity and the use of convergent thinking; the adaptor...
reduces problems by improvement and bringing greater efficiency. The innovator, however, prefers to challenge the prevailing structures, is sometimes seen as undisciplined, and often solves problems by breaking down patterns and doing things in a different way, using divergent thinking.

A more interesting third model for a discussion on the role of intuition is the confluent or systems approach, which emphasises the interaction of different forces within creativity. This research introduces a post-modern paradigm for thinking about creativity that removes it from a process existing in a single person at a particular time, instead placing it in a complex social system of opposing and related forces. The work of Mihaly Csikszentmihaly is key here, amongst other researchers (Feldman et al. 1994). Interestingly, Csikszentmihaly (1994: 85) does not ask ‘What is creativity?’ but rather ‘Where is creativity?’, arguing that only when we have answered this question can we begin to define it adequately. A common model in an art school institution teaching contemporary art practice is made up of a series of groupings – the taught group (undergraduates), staff members (also commonly practising artists) and a context that reaches out to contemporary practice in its widest sense. The systems approach looks at creativity as a concept resulting from the interaction of a field, a domain and an individual. Here the field is defined as the ‘social and cultural aspects of a profession or job’ (Feldman 1994: 12). In the case of the arts, this is artists, curators, museum administrators and so on whilst, in the closed system of the art school, the field is represented by the tutors and their connections to the outside art world. The field recognises, preserves and remembers the creative endeavour. The domain is the structure formed by the field and is a normal organisation of the body of knowledge and is a set of symbolic rules and procedures (Csikszentmihaly 1994: 85). In the art school model, the domain has its corollary in the art world outside the school, with its norms and conventions, however unconventional these may be. Finally the individual is the site of the acquisition, organisation and transformation of knowledge which has the possibility of changing domains and field (Feldman 1994: 16).

The three elements relate to one another in a dynamic way; the domain, as the body of knowledge, transmits learning to the individual who, by understanding the rules and by creatively adapting them, produces a variation in them; the field elects the variation and passes it back to the domain. In the context of the learning environment, the cycle should be applied to the student experience in so far as it operates within the understanding of the student. That is, the teacher operates as ‘gate-keeper’ for the domain, allowing the student to deal with the existing domain through a system of modules or via modelling strategies. Current research, as well, shows that ‘creativity is domain-specific’ (Aer 1993: 337), relying on a sufficient grasp of knowledge of a domain for it to act as a basis of creativity.

To sum up this overview of theories of creativity – the first, creative strategies model, current in mainstream educational practice, can be defined by the ability to generate innovative ideas and manifest them from thought into reality. The process involves original thinking and then producing by separating creativity into discrete steps. This is what Deleuze and Guattari (2004[1980]: 450) would call a matter-form or hylomorphic model, a perspective which only takes into account what goes in and what comes out of a process, effectively an imposition of form onto matter by the maker. Their thinking about the creative act and its impact upon the matter or material to which it is directed that is important here. The second, cognitive styles model follows a similar path, with a focus on the individual attributes of the subject (Adaptor-Innovator). The third, confluent or systems approach, however, emphasises the interaction of dynamic forces within creativity, removing it from a process existing in a single person at a particular time, instead placing it in a complex social system of opposing and related forces. If creativity is a quality that exists within this social system, then the means to influence novel approaches or innovations in a domain, to be ‘transformational’, is one closely aligned to a quality we might call intuition.

Deleuze and Guattari go on to say that whenever we encounter matter it is matter in movement, in flux, in variation, with the consequence that ‘this matter-flux can only be followed’ (p. 451). Thus, artisans or practitioners who follow this flux are, in effect, wayfarers, whose task is to enter the grain of the world’s becoming and bend it to an evolving purpose: theirs is ‘an intuition in action’ (p. 452). This wayfaring, or following of the flux, works continually against the grain of traditional categories and conventional methods; it upsets orders of scale, imparts unusual rhythms, creates social turbulence and sometimes, if it is fortunate, gives birth to new modes of expression that are then selected and passed on. Thus intuition could be seen as an ability to follow and respond to the ebb and flow of materials and ideas to effect a change or different course of a material that is in flux and is implicated in the flux of the forces at work in creativity, as we...
Metis is the attendant form of intelligence associated with techné: it is a cunning intelligence, a shrewd and enterprising spirit – flai, wisdom, forethought, subtlety of mind, opportunism. It feels its way forward, guessing, a type of thinking that is at odds with rational ‘knowledge’. Writing on the subject of metis, Marcel Detienne and Jean-Pierre Vernant (1991: 3) describe it as:

A type of intelligence and of thought, a way of knowing; it implies a complex but very coherent body of mental attitudes and intellectual behaviour which combine flai, wisdom, forethought, subtlety of mind, resourcefulness … applied to situations which are transient, shifting, disconcerting and ambiguous, situations which do not lend themselves to precise measurement, exact calculation or rigorous logic.

Knowing the moment to act, to put into practice, is defined in Aristotelian terms by kairos – the time associated with techné. It is ‘a passing instant when an opening appears which must be driven through with force if success is to be achieved’ (White 1987: 13) which is bound up with an ability to adapt to and take advantage of changing, contingent circumstances. It operates outside of ‘chronos’, or everyday time. In this sense, kairos is not time taken, but timeliness, a ‘temporal gap or breach opening up within the logic of chronos’ (Cocker 2012: xvii). Thus Aristotle sets out techné as a tactical practice that is capable of setting up the conditions where kairos (the time of opportunity) might arise and in knowing (through metis) how and when to act in response. Applying this model to the earlier definitions of creativity, this is a way of thinking about creativity that is at odds with the acquisition of rational knowledge and received wisdom in the production of novel forms. Rather it preferences knowing how and knowing when: these are attributes that we commonly associate with an intuitive intelligence that is capable of being transformative in its field of operation.

The idea of techné has a long history in Western thought. Heidegger’s interpretation is to ‘bring forth or to produce’ (Heidegger 1971[1951]: 159), to make something appear, to reveal or produce, through poesis (or production). Heidegger makes two points about techné: in the sense of ‘technique’, techné refers to both manufacturing (the techniques of shoemakers and printers, for example) and to the arts (for instance, the techniques of poets and graphic designers). Techné, for Heidegger, is part of poesis and is a kind of knowing. We might think of it as expertise, which we generally understand as more than a set of practical skills. It is ‘know-how’; in Heidegger’s words, ‘what is decisive in techné does not lie at all in making and manipulating nor in the using of means, but rather in the revealing.’ If we understand technology as deriving from this concept of techné, Heidegger continues, then we will see that its essence lies not in the instrumental production of goods or manipulation of materials, but in this sense of revealing. Heidegger, in his essay ‘The question concerning technology’ describes the silversmith, who, through his techné, brings together the form and matter of the chalice within the idea of ‘chaliceness’ to reveal the chalice that has been ‘on its way’ to existence (Heidegger 1977: 295). This
aspect of revealing adds an important attribute to the qualities of cunning intelligence and timeliness that we have seen above. As Hubert Dreyfus and Sean Dorrance Kelly (2011: 209) state: ‘The task of the craftsman is not to generate the meaning, but rather to cultivate in himself the skill for discerning the meanings that are already there.’

Knowing the right moment bears witness to a very complex kind of mimesis – what Bourdieu calls the ‘embodiment’ of an art. What is ‘learned by body’, according to Bourdieu, ‘is not something that one has, like knowledge that can be brandished, but something that one is’ (Atwill 1998: 59). Only this kind of embodiment creates the mastery that ‘makes it possible to appreciate the meaning of the situation instantly, at a glance, in the heat of the action, and to produce at once the opportune response’. Jennifer Atwill goes on to relate the writing of the Greek rhetor Isocrates in his Antidosis, where he is clear that deploying an art at the ‘right moment’ in a particular situation is something that cannot be taught by explicit rules or precepts. Isocrates is especially sensitive to the notion that acquiring a ‘sense’ of the right way and right moment requires careful inculcation and the imitation of the masters, which he describes as ‘habitation’ (Atwill 1998: 58). Bringing us up to the present, how can we teach the deployment at the ‘right moment’ in a particular situation if this is something that cannot be taught by explicit rules or precepts, but is seemingly something, according to Bourdieu, that one already ‘has’?

The act and practice of drawing have an important role to play here, both as a ‘primary means of symbolic communication’ (Downs et al. 2007: xi) and as a ‘means of making manifest that which could not have been conceived of at the outset nor planned for in advance … but simply attempts to bring forth, make appear’ (Cocker 2012: xiii). It mediates as well between the physical and the metaphysical, between thought and perception, and refers to both simultaneously. It interrogates meaning in a particular way: Derrida (1993: 61) describes it as ‘disseminated meaning, which remains fragmented, multiple and dispersed’. It does not need to be logical and can extend beyond the thing or entity it describes (Downs et al. 2007: xvi). Liberated from the need to access truth, the concept of meaning in drawing can extend beyond appearance allowing a number of possibilities to inhabit the image that can exist at the same time. These possibilities are not required to resolve themselves, instead they exist contemporaneously as part of the ‘context’ of the image: ‘It works much like a fi ur e-field witch, in which the peripheral becomes necessary and central at the same time as being an addition’ (Downs et al. 2007: xvii). In drawing, the drawer uses intuition to inscribe the mercurial drawn line: as a means to judge when to yield to whim and when to reassert control, when to be attentive to variables and when to be prepared for the unexpected (Cocker 2012: xv).

Intuition, speculation, courting failure: these are all cornerstones of a studio practice when articulated or orchestrated meaningfully in the studio community of practice. My own teaching practice begins with expanding student perceptions of what drawing can be and fostering construction of new knowledge, idea generation and cross-level communities of drawing practice. This takes the form of drawing workshops and seminars that encourage debate, critical thinking, collaborative practice, research into practice and idea generation through experiential learning. Experiential learning in this context is through tacit knowledge; gesture and its link to the haptic process of making; gathering information by touch; the inter relationship between handwork and the individual body’s physique and temporality and rhythm in learning.

Bourdieu’s suggestion of an ‘embodiment’ leads to the conclusion that intuition can be taught by modelling behaviour and by habitation. Relating this to the confl  ent or systems model of creativity discussed in the opening paragraphs of this paper, we could conclude as well that it is learnt most effectively within the fl wing together and merging of social forces than from a community of practice. As Jean Lave (1990: 312) writes when she says that learning is a matter of ‘understanding in practice’ rather than ‘acquiring culture’, this happens in a social setting, in a community of practice, amongst the act of co-learning with one’s peers. By thinking about intuition and creativity as a play of forces rather than a series of discrete steps we bring to bear what Tim Ingold (2013: 11) describes as a means of turning students into good hunters … to train students in the art of inquiry, to sharpen their powers of observation, and to encourage them to think through observation rather than after it. Like hunters they have to learn to learn, to follow the movements of beings and things, and in turn to respond to them with judgement and precision.
Drawing as an intuitive practice in its own right has a powerful part to play in the inculcation of techné, timeliness and tactical intelligence in the student as the materials and divergent rhythms of drawing ebb and flow in their hands.

References


This paper reports and analyses how some UK universities are teaching about sustainability in their creative arts courses. Many UK universities have accepted that one of their roles is to take a lead in trying to bring about a sustainable future, although they differ about their definition and interpretation of what sustainability means. All the same, there are clear common threads around enhancing ‘environmental literacy’ in students and through promoting engagement with the wider community. Sustainable behaviour is often referred to as being ethical in that it is about not harming individuals or the environment and is seen as a means of promoting social and environmental responsibility and justice.

One consequence has been for sustainability to sometimes become an element of the creative arts curriculum. When including sustainability in the curriculum, it is necessary to turn lofty ideals into concrete learning opportunities. This means helping students to develop their awareness of their social, ethical and environmental responsibilities and to adopt sustainable practice in their discipline.

This descriptive paper will present case studies of how various course teams have set about teaching about sustainability through their creative arts discipline. The common way to incorporate sustainability has been to introduce a specific project on this topic, for example designing a product out of recycled materials which could itself be easily recycled at the end of its life, or designing a low-carbon building.

In thinking how to do this, some have been able to build on a legacy of teaching about ethics in their course. Some courses and disciplines had traditions of social engagement on which they could build. Others took their lead from the slow design and slow craft movements. By embracing this ethical framework it should be possible for sustainability to eventually move from being one token project to becoming a key skill which informs every facet of learning.

Having presented case studies, this paper analyses how sustainability fits with other university priorities. It asks whether in this context sustainability is a temporary initiative, or a valid means of moving arts education away from introspection to engagement with local, national and global communities. It concludes by showing that sustainability presents a challenge to those who see the purpose of education as being an instrument which only serves the needs of the markets. Sustainability in this context not only builds on the legacy of the Arts and Crafts Movement and the Bauhaus, but also on the tradition of critical pedagogy. It is therefore both highly relevant to the present day world and in danger of being marginalised if perceived to be radical. Yet if it is not radical, it becomes little more than tokenism.
Abstract
This descriptive paper presents case studies of how various course teams have set about teaching about sustainability through their art and design discipline. The common way to incorporate sustainability has been to introduce a specific project on this topic, for example, designing a product out of recycled materials which could itself be easily recycled at the end of its life, or designing a low-carbon building.

Introduction
As well as presenting case studies, this paper analyses how sustainability fits with other university priorities. It asks whether sustainability is a utopian fad or a valid means of moving art and design away from introspection to engagement with local, national and global communities. It concludes by showing that sustainability presents a challenge to those who see the purpose of education as being an instrument which serves the needs of the markets. Sustainability in this context not only builds on the legacy of the Arts and Crafts Movement and the Bauhaus, but also on the tradition of critical pedagogy. It is therefore both highly relevant to the present-day world and in danger of being marginalised if perceived to be radical. Yet if it is not radical, it becomes little more than tokenism.

This paper reports and analyses how some United Kingdom (UK) universities are teaching about sustainability through their art, craft and design courses. Many UK universities have declared that one of their roles is to take a lead in trying to bring about a sustainable future. It would be gratifying to report that this was because universities had, of their own volition, made a decision to act. However, the truth is that they were also reacting to external factors, in particular a strong push from the Quality Assurance Agency for Higher Education (QAA), the Higher Education Academy, as well as the Higher Education Funding Council for England (HEFCE) which states on its website (2013):

Our vision is that, within the next 10 years, the HE sector in England will be recognised as a major contributor to society's efforts to achieve sustainability -- through the skills and knowledge that its graduates learn and put into practice, its research and exchange of knowledge through business, community and public policy engagement, and through its own strategies and operations.

The QAA and the HEA are preparing a new document to be published in 2014 (Higher Education Academy 2013). This will offer guidance to universities about sustainability in the curriculum. In a draft version, it is notable that it promotes not just knowledge and understanding of these issues, but of turning this into action.

Another incentive for universities to embrace sustainability is the fact that their performance in environmental management and performance is evaluated each year against thirteen criteria by People and Planet, a student-led charity. One of the thirteen criteria is ‘education and learning’. The results are published in the form of a green league table, both online (People and Planet 2013) and in the Guardian newspaper. The picture it paints is mixed. However, it is clear that the sector as a whole is not so much leading society in this area as following it. This was also the conclusion of Lozano (2011), whose research found that universities lag behind the corporate sector in sustainability reporting.

In comparing institutional sustainability policies, it needs to be noted that each university will have their own definition of the term sustainability. Most policies include some sort of combination of the environmental and the social, with some adding an ethical dimension. There are clear common threads around enhancing environmental literacy in students and promoting engagement with the wider community. Sustainable behaviour is often referred to as being ethical in that it is about not harming individuals or the environment and is seen as a means of promoting social and environmental responsibility and justice. Many of these, even if only aspirations, are almost impossible to realise, such as leaving the planet in the state we found it, or having no net
environmental impact. One only has to consider one aspect, such as travel, to realise how unrealistic this is. Even without taking into account staff ravel (for example, to conferences), one only has to consider the dependence of UK universities on international students (arriving by air) to realise the huge gap between what is written in a policy and the reality.

In reading these policy documents it becomes unclear whether they are written for the benefit of the university or the students. Perhaps there is an assumption that they share identical interests. This is not necessarily the case.

At present universities have concentrated on areas where the near-term cost savings are so apparent that they would be idiotic not to embrace them. Hence simple things such as ensuring lights are switched off, heating is ‘t wasted and waste recycled have been seized upon by all but the most recalcitrant managements. Where some have gone much further, it is probably because those with influence in the institution have been convinced of the importance of sustainability. Without action being promoted through leadership, sustainability withers on the vine.

Sustainability poses some particular challenges for art, craft and design. There has long been an oscillation between the poles of social engagement and art for art’s sake; all the same, there is the social engagement tradition and this can be claimed. One of the best-known institutions of learning of these disciplines – the Bauhaus – tended to be firmly on the side of ensuring that what was made would be useful for society. Hence the social doesn’t have to be a problem whereas the environmental is. These disciplines are concentrated on making or producing things and it is inevitable this will use resources. Even if somebody’s activity consists only of working on a computer, there are issues to do with energy use, as well as the environmental impact of the computer.

But usually it goes much further than this. People working in glass or ceramics need a kiln to be heated to between 800 and 1400 degrees. There is a serious environmental impact in the production of many textiles. Most colours used are a by-product of the petrochemical industry, but whatever their source, they use resources. It is possible to go through discipline by discipline and demonstrate the environmental impact of the resources used – and of transporting these materials. What is more, it is hard to work in any of these disciplines and not be feeding consumerism, unless you are the most conceptual of conceptual artists.

In the first instance, universities are attempting to teach about sustainability and, therefore, it can be possible to use unsustainable means to teach about sustainable ends. However, it is clear that the direction of travel isn’t likely to be easy, because the more students embrace the issue of sustainability, the more they are learning to question practice in their discipline.

Some teachers of art, craft and design will have a personal commitment to sustainability and have made this issue a part of the curriculum. For most, though, teaching about sustainability has come either as an instruction from above, or because their university has put in place incentives to do this, such as a competition or making it a source of extra funding. In either case, it is a question of turning lofty ideals into concrete learning opportunities, but there can be real difficulties if those doing the teaching have only a half-hearted commitment to sustainability (Stables 2009). For all, there is the challenge of how and where to fit sustainability in. After all, the curriculum in art, craft and design, has become ever more crowded, as more and more things have been added while few, if any, have been taken away (Houghton 2009).

Through studying the ways in which sustainability has been implemented in these disciplines, it has been possible to identify a series of stages, or levels of engagement. The quality of these varies, with the most important factor being the level of knowledge and commitment of the teacher(s). The first of the e is a single project which could best be described as being less unsustainable.

The less unsustainable single project usually introduces just an aspect of sustainability and varies from a naive propagation of ill-considered greenwash to enabling students to do something which is at least a step in the right direction. Examples include making and using a sawdust kiln, making jewellery out of traceable precious materials, experimenting with vegetable dyes or designing packaging which uses only recycled materials which are themselves easy to recycle.

Where they are most successful, these projects can engender debates about the issue. After all, these topics are uncomfortable and not easy to answer. Take the packaging project, for example; if one conclusion is that there is no need for a packaging industry to exist in its present form, then students could be talking themselves out of the career they were studying for. On the other hand, if
they conclude that they need to reduce the carbon footprint of packaging, then they could find that when they leave university and start to practise, this chimes perfectly with the new needs of manufacturers and retailers. In the same vein, product design students might conclude that there is no need for the products they design. But if they instead decide to design so that recycling at the end of a product’s life is easy, this could make them very employable.

The less unsustainable project might consider some of: the choice of materials, the means of production, how to minimise impact and waste, the social context and the life-cycle of the outcome. The next stage in implementing sustainability in the curriculum is a single project which considers not one or two, but all of these criteria. Some product design and architecture courses have been doing this for some time. Being further along has only led to a deeper understanding of the extent of the problem. For example, an architect might have to juggle the environmental impact of producing an insulation material together with its value in reducing energy use for the lifetime of the building. No longer is a building judged only on its carbon footprint when built; now the carbon footprint of its construction and all its materials are calculated. In the case of architecture, because it is accredited, sustainability will need to meet the requirements of the Royal Institute of British Architects. This isn’t the case for product designers. All the same, being able to design products which are easy to recycle when they reach the end of their life will make these designers better able to meet the needs of manufacturers.

Fashion is another context in which this stage of sustainability is sometimes introduced. For the over-earnest, sustainable fashion is an oxymoron. However, human culture has always included a preoccupation with body adornment and personal decoration, and this important human activity shows no sign of going away (Perlingieri 2003). Moreover, instead of being po-faced about this, they should instead welcome the potential changes it could usher in, which could include encouraging people to buy fewer, better-made garments. The choice of materials is very important, because in the regular fashion business these can be very harmful to the environment. For example, in the growing of cotton copious amounts of chemical sprays are used, while it also requires extravagant amounts of water (often in parts of the world where water is a scarce resource). In the processing of cotton (and in particular of the washed look needed for jeans denim) more dangerous chemicals and dyes are employed.

Woolens might sound the obvious choice for those who want a natural fabric, but in fact there is also a long trail of harmful chemicals used in its production, starting with those used in sheep dips. It is normal for wool to go from Australia or New Zealand to China for processing and then to another country, such as Bangladesh, for making up into a garment. Viscose, which is made from wood pulp, also requires harmful chemicals and much energy to be produced. Nylons and polyester are by-products of the petro-chemical industry and hence it is self-evident they cannot be sustainable.

One answer is to use organic cotton or wool, or fabrics made out of recycled polyester (there are, for example, fabrics made from recycled plastic bottles). In considering the life-cycle of a garment, it is important to bear in mind that mixed fabric garments cannot be recycled. As if this wasn’t a long enough list of considerations, sustainable fashion also needs to consider the working conditions of the workers who produce the clothes and ensure that the marketing and retailing is ethical. There is clearly a lot which students need to learn.

The next stage for introducing sustainability into the curriculum is to introduce projects where the students have to educate others about aspects of sustainability. It has been proven that the very best way to learn about something is to teach about it (Biggs and Tang 2011). Therefore, requiring students to find out about a sustainability issue and then turn this into a message which others will receive is a very effective way of enabling learning by students, as well as improving engagement.

Such messages have to be effective, and it is probably ineffective to use a metaphoric megaphone to tell people off. It’s also probably not a good idea to have ‘don’t’ as a central message. Hence, these projects are working on two levels: on the one hand students are learning about sustainability, on the other hand they are learning how to effectively get a message across. An example includes a photography project for which the issue was lawns. The wildflower meadow at the park of the 2012 London Olympic Games demonstrated that lawns can be more than single variety rye grass. However, rye grass remains the norm. To have the one species growing necessitates endless use of chemical herbicide. The students in this project were asked not only to discourage the one kind of lawn but to promote the advantages of a bio-diverse lawn.
Another example is a graphics project which concentrates on issues around water use. Students learned that water use can be indirect, as well as direct, so that all sorts of manufactured or agricultural goods increase a person’s use of water, albeit the water was used in another country. For example, if flowers are grown in Saudi Arabia, or Kenya, by buying those flowers, we import the water used. This means that some of the countries where fresh water is scarce are using, or exporting, this water to parts of the world where water is more plentiful. In this case, the project set was to represent this through graphic means.

The next stage is to take the learning of sustainability beyond the university and into society. An example is the Lost Skills project of the North Wales School of Art and Design, Wrexham. In 2010, final year Illustration students took a space in the town centre where they set up a skills exchange, so that those who had (often endangered) skills could demonstrate them and pass them on. Examples of ‘lost’ skills (it would be more accurate to call them skills which are in danger of being lost) which were revived in that way include sign writing and painting, flower arranging and making and using a pinhole film camera (The Department of Illustration 2010).

Another example is a project at Glasgow School of Art, Scotland, where students from Fine Art and Architecture worked in collaboration. Put into groups, they were told to go to the edge of the city (by bus) and then to study this locale and plan and implement an intervention which would benefit the local community. These areas all had in common that they were areas of social deprivation.

One group of students found in their locality there was an area of wasteland which was used by dog walkers. They used debris which was lying around in this land to build an attractive shelter, with a seat, so that dog walkers would have somewhere to go if it rained, but also an opportunity to meet others. Another group found that, in their locality, there was a large number of discarded supermarket trolleys; there were also many people who had no jobs and who were hanging about killing time. So they organised trolley-pushing races which were enthusiastically taken up. They designed a trophy for the winner, which is much like the kind of cups awarded for sporting success, but in the form of a mini supermarket trolley (Carter 2010).

One striking example of this kind of social project was reported at Making Futures 2 (Barber and Swindells 2013). The project had many layers, but to put it simply: textile students from Huddersfield University transformed and personalised sleeping bags discarded at the end of the Leeds Music Festival. These were then given to homeless people in Bradford.

The ultimate stage of implementing sustainability is to embed it into all aspects of a course (Gürel 2010). A parallel could be drawn with digital technologies. When in their infancy in the 1980s, students might have been given a single project (or part of a project) which gave them some experience of, for example, designing on a computer. In the event of there being a staff member present who embraced the new technology, these opportunities might be expanded. Now digital technology is taken for granted, thought of as essential and runs through many aspects of learning on courses like annual rings in a cross-section of a tree trunk.

It would be gratifying to think that sustainability will become embedded in many courses. The trouble is that it competes with so many other university priorities. As noted above, UK universities are dependent on the fees of overseas students, yet by no stretch of the imagination can flying regularly round the world be considered sustainable. In other words, most universities would probably be comfortable being light green, but resist embracing a darker shade. They are able to embrace serving fair trade coffee in the cafeteria, but just as happy to install an energy-hungry giant plasma screen by the reception and keep it permanently turned on.

Research at universities is subject to ethical policies which stipulate there should be no harm to people. It would be unthinkable to extend this to no harm to the planet. Even when it comes to the social realm, universities are notorious for keeping themselves to themselves: the infamous town/gown divide. The government requirement to show evidence of research impact often means impact within the academic community.

One way universities have entered the arena of social responsibility has been through considering issues of employability of their students (and on occasion adjusting the curriculum to better make graduates able to find work). All the same, this is in reaction to a narrow interpretation of the benefits of education by government which isn’t necessarily in the best interests of students. As explained above, familiarity with some issues around sustainability can enhance the job prospects of some art, craft
and design graduates, but at a certain point the aims and needs of a lightly regulated, capitalist economy and issues of sustainability will start to rub up against each other.

Art, craft and design sometimes pay scant regard to anything other than issues embedded in these disciplines, but they can also call on a rich tradition of social engagement. For all its internal contradictions, the arts and crafts movement came firmly down on the duty of the arts worker to society. But social engagement isn’t the whole issue. For sustainability to be more than tokenism, arts practitioners need to show leadership and not passively follow social trends. This is not always comfortable.

Engaging with issues of sustainability may be comfortable as long as it is paying lip service to prevailing educational policies, but it can be anything but when it goes much beyond this. An instrumental education does not include the encouragement of free thinking and questioning the status quo. Instead, the role of the university is considered to be the provision of unthinking, compliant subjects (Shor 1996). In my experience, students express a large amount of disillusionment with their socio-political lot, but only a minority feel there is the slightest point in looking deeper into this and trying to do something about it.

Of course this could be changed. But do universities, or university teachers, see this as their role? It is doubtful. And this is the difficulty for sustainability. As long as it remains one (or even two) token projects, it can be accommodated, provided there is space in the curriculum. However, the more it becomes an integral part of a course and the more students engage with the issue, the more they are likely to ask awkward questions of the institution where they are studying. It might be thought that the bargain they consider they are signing up to is to pay their fees in return for being equipped to slot into society, not to overthrow it. All the same, research shows that two-thirds of UK undergraduates expect to learn about sustainable development on their courses (Higher Education Academy 2013).

Sustainability is unlikely to make large inroads as long as most teachers remain, at best, lukewarm about the issue. However, for those who are keen to introduce it to the curriculum, learning theory provides a way forward. The best way to learn is to find out for oneself, not be told (Beard and Wilson 2006). The best projects should be doing just this. Sustainability education is far more likely to succeed if the teachers are not dogmatic and don’t try to ram it down students’ throats, but instead provide opportunities for them to discover about it for themselves (Illeris 2012).

My view is that global society is like people on a wooden steamship, sailing full-speed ahead and frantically fuelling the boilers with the very wood the ship is built out of. Others might take a more optimistic view. But if not, then it is apparent that we have a duty to our students to point out that the voyage of this ship is unsustainable. We resist change at our peril.

**References**


Mary Loveday Edwards

The Academic Dimension in Craft Education: Anomaly or opportunity?

There is an interesting dichotomy in the teaching of crafts as a subject in UK tertiary institutions. It is taught as an academic degree - but in what is essentially a vocational manner. After all, students are expected to be able to “do” ceramics, glass or jewellery when they graduate. There is an underlying ambivalence at the heart of educational institutions concerning the valuing of subjects that are taught by doing – iteratively, by the body, rather than by the mind.

One option is to divorce craft from academia; to teach it as a purely vocational subject, as an apprenticeship, and in some cases this would be an excellent option. But it is not the only option. Academic work and studio work can exist in harmony and indeed complement each other. But there is a need to define what a academic study in crafts needs to provide for the student, for the institution, and for the wider society. The challenge is to make the academic work that students do relevant, not just in an institutional sense (where a dissertation, for example, “proves” that students have a right to represent themselves as academic degree level students to society at large) but to their wider lives.

It could be argued that the process of making in itself creates a kind of meta-learning, if students are encouraged to see the wider picture of their processes of problem solving in materials and to relate it to the rest of their work and lives. But there may be a way in which theoretical cultural study and research can deepen students’ engagement. We might do this by drawing attention to the contention that making needs to be underpinned by a deep understanding of the culture and conditions under which it is produced. This view is mirrored by my experiences both as a teacher, and as a researcher into sustainability.

It is my conviction that not just unsustainable behaviours, but the thinking that leads to unsustainable behaviours, must be addressed in order for meaningful change to occur. In most institutions, the focus of sustainability initiatives is on stuff. But if we take a more critical and analytical approach to the ideas of sustainability we might begin to, for example, apply the ideas of Marx and the fetishisation of the commodity to sustainability, perhaps finding that when we focus on the end commodity, even if that commodity is something as nebulous as energy use or carbon credits, we still think we have no intimate relationship with these units or with their producers, and we still think we can buy our way out of trouble. It takes an understanding of culture, in other words, to be able to fully investigate and understand processes and materials.

This way of thinking can be taught and nurtured to become a systemic approach, in institutions and in lived experience. Such an approach could lead to a more robust and resilient approach, not only to the ideas around sustainability, but to those around materiality, process and craft.
Mary Loveday Edwards

The academic dimension in craft education: Anomaly or opportunity?

There is an interesting dichotomy in the teaching of crafts as a subject in UK tertiary institutions. It is taught as an academic degree – but in what is essentially a vocational manner. After all, students are expected to be able to ‘do’ ceramics, glass or jewellery when they graduate. There is an underlying ambivalence at the heart of educational institutions concerning the valuing of subjects that are taught by doing – iteratively – by the body, rather than by the mind. One option is to divorce craft from academia; to teach it as a purely vocational subject, as an apprenticeship, and in some cases this would be an excellent option. But it is not the only option. Academic work and studio work can exist in harmony and indeed complement each other. But there is a need to define what an academic study in crafts needs to provide for the student, for the institution, and for the wider society. The challenge is to make the academic work that students do relevant, not just in an institutional sense (where a dissertation, for example, ‘proves’ that students have a right to represent themselves as academic degree level students to society at large) but to their wider lives.

As an educator in Higher Education today I feel under pressure all the time to change what I do according to the winds of change and the whims of those in power. Should my teaching be less academic? More employer-focused? There is a subtle pressure not to push students too hard for fear of Trip Advisor style feedback from things like the National Student Survey. This I find particularly misguided. I know I am not the only person to have passed through a degree who finds them selves thinking some (at times many) years later of a lecture or tutorial, and making a new kind of sense of it. And yet our accountability systems are determinedly short term. All of this is presented to us as being in the interest of students; but I feel we should question this robustly. The question we need to ask is, what are we actually providing when we provide what we do as educators? In whose interests? There is a tremendous pressure in education in the UK to return to a kind of imaginary land in which students are all writing academic papers for esoteric journals, discovering new types of (lucrative) processes or materials, starting debating clubs and probably learning Greek in their spare time. These may all be good things … But there seems to be a concomitant shift, with students who study vocational (in this case arts) subjects, away from academia, as if it is not relevant, or worse, as if because they are vocational they can’t cope with academic thinking or writing. I am not about to argue against appropriate differentiation for students. But I do want to try to make a case for the retention and development of academic ways of thinking, of understanding the world, for all students.

It’s not just because it’s my job that I think this impulse to do away with the academic side of craft altogether is a bad idea. My own experience of studying what was called Communication and Cultural Studies was to feel as if I had gained a new kind of sight, a new sense by which I could examine the world. I realised a new sense of freedom, and I would like to pass this on to students. The ability to engage in critical thinking gives freedom in this knowledge and understanding of whose interests are being served in each type of cultural practice encountered in everyday life. I believe that until one realises that everyone has an agenda, and starts to be able to ferret out what those agendas are, one can’t be free – specifically free to act.

Action is significant in particular ways as a measure of craft. Whilst so much fine art is essentially saying, ‘LOOK!’ drawing attention to aspects or things, craft has been concerned with, centred on, and defined by a sense of agency. In an age where Rob Hopkins of the Transition Movement can say that we are bringing up the single most useless generation in history,1 craft students have what many do not – skills. They can actually make things with their hands. This making things may be a kind of meta-skill, a problem-solving-in-action one, in that it may become an attitude that transfers to other areas of life. In any case it is a sense of action (and agency; being capable of action) which sets craft apart. It is also something that is needed in education.

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The work of John P. Portelli, Professor in the Department of Humanities, Social Science and Social Justice Education and Department of Leadership, Higher and Adult Education at Ontario Institute for Studies in Education of the University of Toronto, examines the role of ideology in both the structure and the content of courses at educational institutions. Despite the fact that some current government ministers seem to be of the opinion that ‘ideology’ means the same thing as ‘Marxism’, and that teachers are engaged in promoting it, Portelli says that educational ideology is currently neo-liberal. This is potentially problematic, and the more so because it seems neutral, though it is anything but.

Neoliberalism started as an economic theory, but has long since migrated: what began as a desire (promoted by economists such as Milton Friedman – see Friedman and Friedman 1980 – and others) to have total freedom of movement for capital, goods and services, into a more philosophical realm. The idea that the most important freedoms are market freedoms has been extended into culture, become more like theology than economics. Paul Treanor (2005) writes:

As you would expect from a complete philosophy, neoliberalism has answers to stereotypical philosophical questions such as ‘Why are we here’ and ‘What should I do?’.

We are here for the market, and you should compete. Neo-liberals tend to believe that humans exist for the market, and not the other way around: certainly in the sense that it is good to participate in the market, and that those who do not participate have failed in some way. In personal ethics, the general neoliberal vision is that every human being is an entrepreneur managing their own life, and should act as such. Moral philosophers call this a virtue ethic, where human beings compare their actions to the way an ideal type would act – in this case the ideal entrepreneur. Individuals who choose their friends, hobbies, sports, and partners, to maximise their status with future employers, are ethically neoliberal. Such social actions are not necessarily monetarised, but they represent an extension of the market principle into non-economic area [sic] of life. (emphasis in original)

Portelli says that because the neoliberal agenda and ideology are so entrenched and hegemonic we are blind to them – but that we won’t change anything until, and unless, we embrace the critical democratic approach. This is an approach to education that stems from the work of Paulo Freire (see Richard Shaull, cited in Mayo 1999: 5) and others, which firstly has at its heart an understanding that education is never politically neutral, and that educators must engage with conscious decisions surrounding ideology:

There is no such thing as a neutral education process. Education either functions as an Instrument which is used to facilitate the integration of generations into the logic of the present system and bring about conformity to it, or it becomes the ‘practice of freedom’, the means by which men and women deal critically with reality and discover how to participate in the transformation of their world.

Secondly, a critical democratic education prepares students for thinking critically with the aim of encouraging them to participate in their own schooling as a way of preparing them to shape the future. This approach sees students as active participants in communities, and furthermore sees conflict as a good and necessary engagement with different beliefs about what is in the community’s best interests, rather than as something which needs to be shut down or cut off (Winton 2010).

Having said all that, there is a real issue for educators who believe that students should be encouraged to question and engage in conflict rather than consume and produce. How can we help students to see themselves as actors – stakeholders and participants, in the sense of Freire’s participatory action research – when the venal reality is that we may also need to keep our jobs in an atmosphere increasingly antagonistic towards this approach? The critical–democratic approach is at heart one of ‘common-sense’ attitudes towards power relations, and Portelli fittingly suggests flying under the radar. He says:

... subversion is a useful form of resistance for educators and policy makers committed to promoting social justice and equity and resisting the injustices and inequities created by the neoliberal context ... some of the major tensions and problems in the ethics of subversion in education ... include: Are disobedience and dishonesty justifiable? Is asserting the mere personhood of oppressed people subversive in the context of oppressive power structures? Is resistance to oppression our responsibility/duty? Is subversion
useful/virtuous? (I) …challenge the view that subversion is harmful or negative, and will argue that subversion is often useful in resisting injustice and thereby promoting justice … an important means to achieving more equitable and morally sound education.²

We shy away from the idea that we should be teaching values, ignoring the fact that everything we do as educators has an ideology or set of values embedded in it. We're just pretending that we don't teach neo-liberal agendas and values. Given the ideological change in government initiatives in education, it seems subversive enough some days to merely question neoliberal ideology. (What happens on an institutional level often is that educators are given instructions to become more reactive to what student-consumers want, while at the same time students are not encouraged in any meaningful way to examine what it is they may want outside of a producer/consumer paradigm.) Here is where the academic side of vocational education might have a more important role than one of teaching students to write essays (the role it's often seen as occupying). For example, students may come to a college course thinking they can make a decent living as a craftsperson. If we were to study Marx in a neoliberal way we may concentrate on the writing, or the theory as something historical and unconnected to students' lives. When we look at Marx in a more critical–democratic way, students may begin to recognise that as crafters they are/ have only one unit of capital. They may realise they can only break out of this single unit of capital restriction as artists or designers, where art is part of an investment economy and design a manufactory one. Furthermore, there would be a role in examining and exploring what alternative structures there may be (to be entered into, developed, or possibly challenged) to the current capitalist ones. In this scenario students would have less literary interaction with texts, but arguably more of an exemplified understanding of the theory.

Of course, this is neither widely publicised. Nor is it the entirety of the subversion.

Students are paying more for their tertiary education, and they are consequently expecting more. But expecting more what? I would argue that the more that they think they want is direction, not freedom. But this is an art college! (Or drama degree, or experimental science, or geography in a rapidly changing world – whatever.) I think students are giving their freedom away when they expect this ‘more’ from an institution and its representatives, and we are complicit in this when we treat them like some odd version of hotel inspectors. Paradoxically I think we give more as educators when we withhold ease, whether this is the ease of continually being told what their achievement level is, or giving them information they could spend some time finding ut for themselves, or any one of a hundred other initiatives that have been set up to head off discomfort. In whose interests is this desperate fear of conflict? We say we want to stretch students, to challenge them to achieve their best. Here I am invoking Emerson when he said: ‘Your actions speak so loudly that I cannot hear what you say.’ Questioning and acting are imperative; not always encouraged. But the discomfort of conflict an often bring very positive results.

When I used to live in a caravan in some woods I had a little handwritten reminder to myself on my wall, something that I’d read somewhere. It said: ‘HEALTH AND HAPPINESS OR COMFORT AND CONVENIENCE’, and it was there to remind me that I couldn’t have both. Living in the woods was hard work, without many of the conveniences I had taken for granted in our modern world, but I was healthy and happy there. Of course the position is a relative one, and it’s a provocative statement (and quite an uncomfortable one for many) but I still think in broad terms you give up health or happiness if you focus on comfort and convenience. You can’t have the nth degree of both. In terms of sustainability you can’t have both either – our desire for comfort brings us into direct conflict with natural systems and their limits. Again, questioning this desire for comfort and convenience, in sustainability terms as in educational terms, could be seen as a subversive act, or at least an ideologically questioning one. I do see the two as inherently linked, and I think theoretical cultural study and research have an important role to play in both.

We might begin by drawing attention to the contention that making needs to be underpinned by a deep understanding of the culture and conditions under which it is produced. This view is mirrored by my experiences both as a teacher, and as a researcher into sustainability. Not just unsustainable behaviours, but the thinking that leads to unsustainable behaviours, must be addressed in order for meaningful change to occur. In most institutions, the focus of sustainability initiatives is on stuff. If we take a more critical and analytical approach to the ideas of sustainability we might begin to, for example, apply the ideas of Marx and the fetishisation of the commodity to sustainability,
perhaps finding that when we focus on the end commodity, even if that commodity is something as nebulous as energy use or carbon credits, we still think we have no intimate relationship with these units or with their producers, and we still think we can buy our way out of trouble. In other words, there is an analogy between the ways we (as institutions) engage with concepts in the world, and the way students can engage with academic tasks.

In setting out my position that levels of engagement with critical thinking in the academic side of crafts education are analogous to levels of engagement with sustainability, I will give a number to these portrayals of levels. Level 1 is just enough to pass, Level 2 is a problem solving, meta-learning one, and I will call Level 3 ‘ninja’.

Level 1 can be described as learning just enough to pass; what students might call ‘doing’ a dissertation. They turn up for some lectures and tutorials, write something that interests them enough to carry them through the process, and hand it in. The do enough to pass, and see this as enough, because they don’t see that the academic side of their course has much to do with their craft practice, or their life. In my analogy this is where most institutions are with their engagement with sustainability debates. They engage in carbon off setting and so on, because the government makes them. They do enough to pass. And, like students, this is often because it would be a wide disruption of comfort or convenience to do anything else. However, as Stephen Sterling (2007) says:

The critical problems of unsustainability are interpreted in terms of a systems failure of society, economy and education to be in tune with the systemic nature of the ecosphere and to fit within its resource limits. At a deeper level, this is traced to the dominant mechanistic cultural worldview. In whose interests is this behaviour?

In this way, when institutions do not question their role in upholding the dominant paradigm, we must ask – in whose interests is this?

In Level 2 of the analogy, when students are engaging with academic constructs, they see their learning in the workshop and in critical thinking and writing as equivalent and complementary. They see a relevance to their lives, and they begin to see that words are material. The learning becomes an end in itself and the process of taking on information, whether academic or tacit (or any other way) is the same process. It could be argued that the process of making in itself creates a kind of meta-learning, if students are encouraged to see the wider picture of their processes of problem solving in materials and to relate it to the rest of their work and lives. In a similar way, institutions might instigate more rigorous sustainability measures, looking, for example, at cultural, social, economic and ecological sustainability measures. Here is a level at which the critical democratic precept of truly engaging in meaningful debate with students may take place, though we would still be unlikely to see questioning of the differentials in wages between managers and cleaners in institutions, or a rigorous exploration of the power struggles between institutions and their local areas.

Level 3 is the ninja level. At this level, learning is not for the sake of marks, or even for the sake of the joy of the experience, but becomes transformative. Students learn about themselves as well as about ideas, develop values as well as knowledge, as Portelli and others describe. What would institutions look like if we engaged with this? It would not be easy to describe this, as for one thing it would look different in each case. But one thing that might happen is that we might stop breaking things down into small quantifiable units, and look at systems theories instead. In the nexus between learning and sustainability I have been talking about, we might not teach Education for Sustainable Development but Education for Sustainable Contraction. As David Selby (2007) says:

We should urgently and concretely explore the idea of Education for Sustainable Contraction (ESC); in other words, what would be the nature of education directed towards helping humanity through a period when assumptions about progress and betterment folded into the concept of ‘development’ are more severely tested than ever before. What is the role of education in helping foster an alternative conception of the ‘good life’ as part of efforts to forestall the onset of the worst effects of global heating? What is the role of education should those worst effects begin to happen?

It takes an understanding of culture to be able to fully investigate and understand processes and materials. This way of thinking can be taught and nurtured to become a systemic approach, in institutions and in lived experience. Such an approach could lead to a more robust and resilient approach to
the ideas around sustainability, but also and at the same time to those around materiality, process and craft. In one sense, of course, it is good to make sure that students are not dissatisfied with their educational experiences because of sub-standard elements of provision. But those students of mine who have decided to go to Borneo to work with orang-utan orphans, to start community farms or to otherwise look beyond the ‘We are here for the market, and you should compete’ message: they are rubbish for the institution’s retention figures. But I cannot, in any sense, look on them as anything but major successes. Because when I question what I am doing, and ask myself in whose interests, I want to be able to be answer honestly: mine, and my students’. As Portelli (2012) writes:

We have the moral responsibility to question the myth that the ‘achievement gap’ can be reduced by simply improving test scores of tests that purport to be neutral and objective while at the same time reproducing the neoliberal way of life without ever offering a reasonable justification for it.

Amidst all the ‘quality control measures’, the rubrics, the quantities and the questionnaires, we need to keep sight of our moral responsibilities; as educators, as people, and as denizens of this planet. We must remember that the purpose of knowing is to act. Our job as educators is to make clear that teaching knowledge for tests or just knowing is not enough; and that action needs to take place within an understanding of whose interests are really being served by the actions. For me, this is why the teaching of critical theoretical approaches is necessary. In this (and following on from Emerson), I am also invoking Thoreau (see Thoreau and McKinney 2007: 25):

I went to the woods because I wished to live deliberately, to front only the essential facts of life, and see if I could not learn what it had to teach, and not, when I came to die, discover that I had not lived. I did not wish to live what was not life, living is so dear; nor did I wish to practice resignation, unless it was quite necessary. I wanted to live deep and suck out all the marrow of life, to live so sturdily and Spartan-like as to put to rout all that was not life, to cut a broad swath and shave close, to drive life into a corner, and reduce it to its lowest terms, and, if it proved to be mean, why then to get the whole and genuine meanness of it, and publish its meanness to the world; or if it were sublime, to know it by experience, and be able to give a true account of it in my next excursion.

Notes


References


Khrystyna McPeake

Crafts in the Built Environment

“Training and educating people requires considerable application.” HRH the Prince of Wales

The role of the built environment in the social development of our society is of crucial importance. It works both as a protagonist and as evidence base and historical stage. The awareness of the responsibilities of the architect, urban designer and planner is the first step in creating vibrant, liveable and sustainable places. The separation between craftspeople and architects has led to a mechanistic design process, which allows for little creativity or personal expression. The size and height of the building has become a status symbol more than it has ever been before. The art, in the form of detail, has been largely excluded from the process of design, being almost replaced by mass production.

In the current climate of increasing consumerism, the need for a revival of crafts and the creative approach is a top priority. There are organisations that began to recognise the problem. One of them is the Prince’s Foundation for Building Community, which has been running “Building Skills” summer schools in the UK and across the world. This paper gives an overview of the benefits of such courses and analysis of the results. It will also provide some examples of contemporary classical buildings, designed with art in mind, as well as outstanding conservation projects involving skilled craftsmen.

The educational programmes carry within a potential to change the fortunes of the individuals and in many cases the entire communities. The comments from the students, who attended the Summer School, often reflect the values received during the training. Many places in the world which have suffered from natural disasters are faced with difficult decisions about rebuilding their settlements. They are faced with choices whether to restore the buildings or demolish and build contemporary structures.

The study will also look at interpretation of architectural details of historic buildings as a language which is now rarely spoken, but which can heal the spaces, if brought back to wider use. A simple exercise of looking and drawing buildings and streetscapes provides the foundation for understanding and producing the creative energy. Even the highly dense urban areas of special historic character usually provide opportunity for relaxation and contemplation. Most recent modern developments lack that quality. The only way to deal with this problem is to educate, starting at an early age, about the language of historic buildings and their features. Changing the culture of perceiving architecture as exclusive occupation and making it accessible to all members of the public is the way forward.
Khrystyna McPeake

Building Crafts in the Built Environment

In a world where the trite, the banal, the cliché and the commonplace are so dominant a part of our lives, we need ever more to cherish and to preserve and celebrate the beauty, the solemnity and the harmony we inherit from the past. (HRH The Prince of Wales, ‘Education for the Future’ speech, 2002)

The architectural world has undergone a dramatic and unprecedented process of separation from the world of craft in the twentieth century. This marks an end to many centuries of consistent use of building crafts. The timeless principles used by generations of craftsmen and builders have entered an era of decline, especially where new built stock is concerned. The language of traditional architecture, dictated by balancing significance of form and its physical expression is now taught at only a few schools (Critchlow and Azzam 1997: 5). The blight of globalisation has been eroding tradition in construction as well as in the implementation of cultural and social identities. The seriousness of the threat posed by globalisation emerged in the late 1970s (Poppi 2008: 4). At around the same time, many commentators and ordinary people voiced concern about the wholesale destruction of historic buildings, and indeed entire neighbourhoods, carried out by voracious planners. Covent Garden Market, one of the most vibrant quarters of central London, only managed to withstand monstrous redevelopment plans because a fierce and skillful campaign of resistance was organised by many highly motivated and influential people. Today society is still struggling with the consequences of post-war planning decisions, which left behind disintegrated communities, lifeless town centres and out of scale unsustainable developments.

Traditional building crafts are an essential part of the restoration and preservation of our built heritage and also provide a valuable social element. This paper addresses the importance of building crafts as well as the issues concerning the decline of traditional skills. Understanding the value of building crafts in the built environment and their role in thriving communities enables their continuation. Another aspect of the discussion is the relationship of building skills to nature, beauty and spirituality.

The revival and continuation of traditional building crafts is vital for the repair, maintenance and preservation of the five million pre-1919 buildings that survive in England, including approximately 500,000 listed as being of historic or architectural interest (English Heritage 2006: 4). Traditional building skills passed down from generation to generation for thousands of years, are now facing oblivion (National Heritage Training Group [NHTG]: 2005: 3). The most ancient traditional building trade – brickmaking – dates back to the 13th millennium BCE (Clegg 2008: 41). However, the future of this craft, along with thatching, flint-knapping and slate roofing is uncertain (NHTG 2005: 22). The introduction of non-local materials on a large scale in pursuit of profit has much to do with the decline of traditional building methods. This, in turn, puts traditional crafts under more serious threat than at any time in history (HRH The Prince of Wales 2004: viii).

The Sustaining Our Living Heritage report by the Heritage Lottery Fund (NHTG 2005: 18) identified severe craft skills shortages: only around 900 thatchers, about 50 firms working on cob and earth buildings, fewer than 300 professional dry-stone wallers and around 600 stone slate roofers were in active occupation in England at the time of the report. The demand for skilled craftsmen in the heritage sector is outstripping supply; in 2005, it was estimated that 6,590 craftpeople would be needed to solve the skills shortage in the UK in 12 months (p. 13). The future of historic buildings depends on the availability of skilled craftsmen as maintenance requires great care and understanding of the original materials of construction. The nature of this work requires a distinct mental attitude due to the sensitive manner in which the work is carried out. Currently the nation’s best buildings have to wait to be repaired or maintained not just due to funding issues, but mainly because of the shortage of skilled workers, making them vulnerable to loss or increased cost due to further deterioration caused by delay. One of the results of the Sustaining Our Living Heritage report was the creation of the NHTG to specifically address traditional building craft skills issues. This, in turn, served as a starting point for the promotion of.
heritage skills in education and the building industry. The Prince’s Foundation for Building Community (PFBC) is one of the institutions running programmes dedicated to traditional building skills (see Figures 1 to 3).

The main aim of the Building Skill in Craft programme run by PFBC is to strengthen the frail relationship between architect and craftsman. It is well known that some of the most famous and talented architects, namely Andrea Palladio, were first of all skilled craftsmen. Modern professional requirements do not demand knowledge of timeless principles, many of which were integral to the creation of our most beloved historic buildings. These rules, frequently mentioned in the lectures of classical architects and traditional art academicians, are governed by the relationship of beauty and humanity. Henry Rambold, a tutor at the PFBC Summer School, who has forty years of experience as a stone mason, believes that ‘Trainees learn to be more confident about performing their work, but also, crucially, more confident about knowing when to hold back because they might be causing damage’ (NHTG 2013).

Another aspect of the building crafts is the link between beauty, human creativity and wellbeing (see Figures 4 and 5). Professor Keith Critchlow commenced his recent lecture at the Prince’s School of Traditional Arts describing the compass as a sacred instrument with the following statement: ‘the point, although intangible, represents a relationship between the real world and the other world’ (Critchlow 2013). Miniatures from the Middle Ages often depict God with compass in hand describing a circle on the primordial chaos, represented as the mouth of a dragon (Hani 2007 [1975]: 49). God as a creator is called dator formarum (giver of form), which carries a philosophical sense that transcends material form. The perennial philosophy holds that sacred geometry is a God-given tool bestowing beauty and divine order. Critchlow (2013) states that:

Geometry is universal – it does not belong to any religion. Geometry itself is sacred and was inherited by craftsmen who learned by doing.

This knowledge, passed on from generation to generation, provides a sense of timelessness and belonging to one’s surroundings. Conversely, today’s brutalist architecture and planning alienate human creativity – with predictable social consequences.

Hani (2007[1975]: 46) perceives architectural skill as the application of the physical and mathematical laws pre-existing man in nature, which necessarily regulate both the arrangement of materials in a building and the general form of the latter. … Man can no more neglect these laws than he can the laws of vegetation if he is to cultivate the earth. The human architect does nothing but rediscover or, in the Platonic sense, ‘remember’ these laws so as to submit to them.
It is believed by the Native Americans that when one enters one's home, one enters one's heart (Critchlow 2013). The relationship between the house and the inhabitant is often regarded as sacred. Hence such cultural idioms as ‘an Englishman's home is his castle'. According to Hani (2007[1975]: 36) the house is a symbol of the universe, which is the primordial House of Man; by building the house, the man reproduces or imitates the creation of the world. Creation in this case can legitimately be conceived as a building. The experience of creating something new or uncovering some hidden beauty is one of the most intense joys that the human mind can experience (Huntley 1970: viii). It appears to justify the familiar aphorism ‘beauty lies in the eye of the beholder'.

**Building crafts and sustainability**

By the early 1980s, issues of sustainability became a matter of public concern, with growing awareness about conservation of world resources and, at the dawn of the millennium, sustainability became an essential part of government policy. Increasingly, councils, charities and businesses are taking account of this issue. And yet, in many cases these worthy objectives are mere box-ticking exercises. HRH The Prince of Wales in his address at the University of Essex seminar (2001) identified the primary objectives of sustainability as those which 'include making the best possible use of natural and regenerative process, of local resources and of human ingenuity and teamwork'. It is this process of human creativity that lies at the heart of community life. Once the wide-reaching effects of the building crafts are proven, it may be possible to identify and reverse a whole raft of other unsustainable processes, e.g. excessive reliance on landfill, fossil fuel and 'food miles'. Three things have been crucial in shaping the man-made environment – natural resources, people and skills; it is through the careful and balanced approach in combining all three that sustainability objectives are achieved (NHTG 2005: 17).

Another possibility for cultivating fertile ground for the building crafts is the housing market. Is it possible that the pressing issue of housing in the UK could be addressed with the use of local craftsmen and local materials? Currently the market is dominated by developments relying on pre-packed construction methods. These methods have very little relevance to local communities and the surrounding environment. There is a recognition of the need for smaller scale, community-supported developments, which can be a long-term solution to the problem of housing. Morel et al. (2001) state that the energy used in building can be reduced by up to 63 per cent by adopting local materials with further energy savings in transportation of up to 78 per cent. However, adoption of local materials in developed countries can be hindered by the loss of traditional building crafts and a lack of appropriate building standards. Again, economics is the key. No doubt taking a traditional approach would be more costly in the short term, but factoring in local employment, reduced crime levels and increased well-being are the foundations of healthy economies which attract inward investment.
Court (1954: 9) lists the decline of the system of apprenticeship throughout the twentieth century as one of the reasons for the increase in population. This system acted as a restraint upon early marriage whereas the new cotton and coal industries provided possibilities of full earning at an early age, which was a factor in the rapid growth of the population. Current pressure on housing is produced by population growth, which in turn is the result of an increased birth rate and immigration. The relationship between food supply, population and building crafts is a significant one. Manual production, the core element of building crafts, has a high monetary value in western society, but it is the means of basic subsistence in many developing countries. The ethics of how a society values the craftsman’s work determines its lifestyles and incomes. It is to be hoped that with increasing competition for resources there will be a shift towards the use of locally sourced materials and labour.

There are various incentives in place to encourage the use of traditional building materials: Oakley (2011: 243) provides an example of a ‘park and ride’ reception erected by Purbeck District Council at Corfe Castle in Dorset, which has benefited greatly from the use of local materials and, as a result, is both in keeping with the local character and far more sustainable than the conventional alternative. It is also in keeping with the Dorset Area of National Beauty (AONB) management plan. Developments within national parks, conservation areas and AONBs are all subject to rigorous conservation policies specifying the appropriate design and materials.

Traditional building crafts have a role to play in delivering housing that is both sustainable and affordable. Prince Charles has been a longstanding champion of traditional building in the UK and worldwide: ‘since Nature’s goods and services are essentially free, sustainable techniques are particularly relevant to poor communities who simply cannot afford to purchase much in the way of inputs or to access the latest technologies’ (HRH The Prince of Wales 2001). The need to identify, safeguard and enable access to sources of traditional building materials on a sustainable basis while providing continuous training in traditional building crafts could provide welcome relief to existing housing pressures. In order to be truly sustainable, the local community must be brought into the equation. All the indications are that if this can be done successfully the benefits will be manifold. If local government bureaucracies are blind to these ongoing benefits then it is an argument for a different paradigm to be used when drafting local plans.

The wider implications of building crafts invite an analogy between ecology and the economics of craftsmandship. A particularly good example would be the medieval woodland management system which provided great benefits for ordinary folk: furniture, building materials, firewood, foraged food and fodder for animals, as well as being an invaluable asset of the unsurpassed English countryside.

**Building crafts: Gender**

Another aspect that needs to be taken into account is the role of women in the building crafts. In the English countryside, outside the control of town corporations, female wage earners were to be found in the building trades as far back as the fourteenth century, although carpentry and thatching invariably remained male. One revolutionary law became the single most important factor in the transformation of local trade company practice in towns and counties across Britain – the Statute of Artificers of 1562–3, regulated through Justices of the Peace (JPs) (Clarke and Wall 2006: 37). It set the framework for wage assessment and, crucially, it was not gender specific but referred to apprentices as ‘persons’ and to ‘boys and girls’, ‘masters and mistresses’ (Statute 5, Elizabeth I c IV and c XVII, cited in Clarke and Wall 2006: 37). As a result, a third of parish apprentices were girls, who were apprenticed in over fifty occupations, including as bricklayers, carpenters, joiners and shipwrights.

The early nineteenth-century transition from feudalism to capitalism altered relations in such a way that women were excluded to a far greater extent than before. The repeal of the Statute of Artificers in 1814 effectively deregulated the relationship between master and apprentice, eroding the access to the trades that women had previously enjoyed. Early trade unions denied women the status of artisan and viewed ‘skill’ as an essentially masculine quality. By the 1840s, women’s access to jobs had been severely restricted with breadwinner status being exclusively associated with the married male worker; the continued discrimination of women went hand in hand with prevailing ‘patriarchal control of the productive resources’.

According to Simonton (1999: 34, cited in Clarke and Wall 2001: 36):
Apprenticeship was a period when the role of the male apprentice moved from lad to man; it was a transitional period that meant far more than 'learning a skill'. The close identification of apprenticeship with sexual development helps to identify the role of the institution in defining masculinity and conversely femininity and in excluding females from the system.

Similarly, Court points out that despite the growing power of the trade unions resulting in the substantial advances in wages and large reductions of working hours, women’s access to employment in construction remained restricted (Court 1954: 250). Their exclusion was due to a closed guild system, which ensured that the transfer of property and power remained within a privileged group (Sheridan 1992: 52, cited in Clarke and Wall 2001: 36). The formation of ‘non-exclusive unions of non-society men’ by the General Union of Carpenters and Joiners, the Friendly Society of Bricklayers and the Operative Stonemasons in the 1820s and 1830s further confined apprenticeship to men. Such restrictions in the building industry were eventually relaxed out of necessity due to severe labour shortages caused by the First World War. Even then, trade unions continued to deny women access to skilled or highly paid work.

During the Second World War, there was once again a need for women to contribute (see Figures 6 and 7). Under the terms issued by the National Joint Council for the Building Industry in 1941, women’s participation was limited by the trade unions, and their wages specified as 20 per cent less than that of men. Despite attempts to introduce equal pay, the wage discrepancy remained, with women often paid just over half of men’s rates. Although discrepancies in pay have lessened, Britain continues to have a poor record of women’s involvement in the building trades.

Building crafts worldwide

There is currently a renaissance in traditional building taking place worldwide, including sites of natural disaster and war zones. One such remarkable programme is underway in war-torn Afghanistan. The Turquoise Mountain Foundation, created by Rory Stewart, has been working since 2005 to save the Murad Khane quarter, an ancient part of Kabul, which has been threatened by the demolition of whole swathes of traditional Afghan mud architecture to make room for modern glass-and-concrete buildings. Stewart believes that traditional arts and crafts will disappear if those skills and an appreciation for them are not passed onto future generations. This work requires considerable dedication and involves working closely and consistently with the locals over a period of time with the aim of helping a troubled nation reconnect with its cultural heritage (Kvinta nd).

Unlike some charities, which might run short training courses, the Turquoise Mountain Foundation is embedded deeply in the lives of the locals (see Figure 8). The restoration was just the beginning, soon initiatives were

The war-time building industry: Women working as bricklayers and boat builders in the Second World War. Figure 6 Imperial War Museum Photograph Archive. © Crown Copyright. IWM http://www.iwm.org.uk/collections/item/object/205202941
Figure 7 Imperial War Museum Photograph Archive. © Crown Copyright. IWM http://www.iwm.org.uk/collections/item/object/205195967
underway which involved anything from training craftsmen, to manufacturing products to sell, to teaching the shopkeepers to read and write. Within two years, the charity was employing 350 local people, the majority of whom had not completed secondary education.

Then, in 2006, Turquoise Mountain established the Institute for Afghan Arts & Architecture in Kabul, which is now a successful and highly popular national higher education institute. It is located in the newly restored buildings of Murad Khane – the heart of Kabul old city. The one crucial element that held this project together is the faith of a handful of loyal supporters and chance benefactors. Once a beautiful vision – the Turquoise Mountain Foundation is now a thriving artery, which feeds the heart of Afghanistan’s old capital.

Meanwhile, on the opposite side of the globe, a hurricane-ravaged city was faced with the choice of whether to reconstruct its historic buildings or settle for the cheaper modern alternatives. One factor against the decision to preserve and restore the rich heritage of New Orleans was a severe lack of traditional building skills. It was in response to this that HRH The Prince of Wales created the Rebuilding Communities Apprentice Programme. This programme is structured to serve as an educational resource as well as a boost to the local job market. The Prince’s Foundation for Building Community, which runs the programme, is committed to reintroducing traditional building crafts, which will enable long-term preservation of the unique character of New Orleans. The apprenticeships also provide the opportunity for locals to master a trade, thereby becoming economically self-sufficient as well as assisting the recovery and regeneration of their own community (see Figure 9).

Figure 8 A student at the Turquoise Mountain Foundation using traditional wood carving technique.

Figure 9 Craft apprentices in New Orleans, The Prince’s Foundation for Building Community.

Founded in 2001, the International Network for Traditional Building, Architecture and Urbanism (INTBAU) is dedicated to the support of traditional building, the maintenance of local character and the creation of better places to live. INTBAU involves a wide range of activities and comprises a worldwide network of affiliated charities. Its educational programmes advocate the use of traditional building methods and provide training for people who want to work in the heritage sector and need hands-on experience. One of the courses (which is run in an old Saxon settlement in Romania) provides training for people who want to work in the heritage sector and need hands-on experience.
Social and economic value of building crafts

No one enjoys his work if he is a cog in a machine. (Christopher Alexander 1977: 399)

Many sacrifices were made to achieve the highly efficient industrialised society of the twentieth century. The social order prior to the Second World War was organised by trade, in many circumstances as self-governing guilds with an intricate system of support for the workers. These have been destroyed by large-scale centralisation, or somewhat facetiously referred to as ‘the nanny state’, and charged with adversely affecting Britain’s manufacturing base and competitiveness generally. In some countries, criminal tactics were used to destroy self-governing working groups, for example, around eight million Ukrainians were starved to death on the orders of the Soviet leadership in order to achieve collectivism and industrialisation. The dynamics of economic change, which happened spontaneously in Britain, and which were characterised by swift urban growth between 1780 and 1820, radically affected both the nature and location of employment and industry: prior to the Reform Bill of 1832, which gave parliamentary representation to many towns for the first time, much industry was located in rural areas (Court 1954: 42).

Although the system of guilds in the nineteenth century afforded relative protection and advantages to its members, it excluded women from employment in skilled building crafts. Gradually, small-scale self-governing groups were replaced by enormous trade unions. This order, according to Alexander, is damaging to the harmonious existence of the individual who ‘enjoys his work when he understands the whole and when he is responsible for the quality of the whole’ (Alexander 1977: 399). Recent legislation in favour of decentralisation of government and the introduction of the Localism Bill is perhaps a conscious effort by society to revive a sense of responsibility and accountability by local people and to recover a fundamentally more intelligent way of working. The understanding and ability to adapt to new laws as well as examine fundamental values, constitutes the success of society, and in the utmost egalitarian way, benefitting not only all strata of society but generations as yet unborn. In Court’s view ‘the modesty of Great Britain’s natural resources, which were indicated by the term ‘land’, might be overcome by a judicious commercial policy’ (Court 1954: 15). The recognition of Britain’s rich heritage and the associated need to maintain the skilled workforce to preserve and enhance it is a key feature to the future prosperity of the nation and an inspiration to people worldwide.

During the last decade, a shortage of skilled craftspeople has highlighted the need for strong action to prevent further erosion of the skills base (NHTG 2005: 3). At a recent English Heritage centenary celebration, HRH The Prince of Wales shared his view: ‘I regard heritage as very much a living thing – after all, what it represents and enshrines is the accumulated skill, devotion, craftsmanship and creativity of countless men and women who have gone before us’ (HRH The Prince of Wales 2013). Rory Stewart, creator of the Turquoise Mountain Foundation, believes that it takes subtlety and acuity to understand that the preservation of the past is the key to building a balanced and meaningful future. While restoring buildings and ‘monumentalising’ history for the benefit of future generations might be a distant goal, the creation of much needed jobs is a highly significant and welcome improvement in the present (Kvinta n.d.).

Azzam (2008: 106) states:

‘Craftsmanship should be understood as a process and not a product. It is a process that includes social, economic, cultural and technical dimensions, as well as a spiritual dimension, all of which bind different aspects of the community together. The work of the craftsman cannot be separated from the other aspects of his life and the life of his community.’

The ethical impact of modern materialism on human labour has been much explored in recent years, with one of the outcomes being the view that heavy reliance on industrial mechanisation and mass production is destructive to customs and culture, with the consequent social disintegration being a recognised factor in the declining mental health of urban populations (Freeman 1984: 49). It is conceivable that moving to reintroduce a built environment on a human scale would go a long way toward alleviating such alienation.

Distrust for materialism arising from the cold logic of industrial production has a long history. John Ruskin, in accordance with Thomas Carlyle’s statement that ‘economics is the dismal science’, went on to detail how the operations of the marketplace are antithetical to the prosperity of what he called ‘the good workman’, that is, one that embodied the virtues of skill, care and understanding and from the employment of whom arises building of lasting...
aesthetic value. In his view the mechanism of demand and supply favoured the cheapest workman in the short term rather than the one who would prove to be of greatest value to society in the long term. These ideas were then incorporated into William Morris’ thinking, and subsequently that of the Arts and Crafts Movement. Whilst modern iconic buildings are undoubtedly impressive, it is frequently those created according to traditional methods which convey a feeling of being an extension of the environment in which they find them selves and around which we feel most at home.

Joachim Tantau, a recent graduate of the Prince’s School of Traditional Arts (PSTA) explains the thought process behind his graduation piece – a fountain-pavilion with a Muqarnas-dome:

‘Looking at different traditions and taking inspiration from many sources is a way for me to understand what traditional building is about: They are different only in a superficial manner. On a higher level, they all manifest the same principles: Nature in her manner of operation, as Thomas Aquinas says.’

Joachim now works for the PSTA Open Reach programme travelling to schools across the UK and sharing his knowledge and skills with pupils. It is hoped that by the time these children reach adulthood, society will have embraced the building crafts as a desirable occupation. A dedicated and growing group of individuals and organisations continues to support the revival of apprenticeships and training in building crafts. The National Heritage Training Group (NHTG) has produced the first ever Skills Needs Analysis research in 2005. Since then efforts have been made to attract young people, women, under-represented groups and adult career changers to the building industry. The work of NHTG, The Prince’s Foundation for Building Community, The Turquoise Mountain Foundation and other conservation and building crafts training bodies are working to change public perceptions and stereotypical thinking.

Figure 10 Prince Charles at the Prince’s School of Traditional Arts for Building presenting Joachim Tantau with his Master’s Award, July 2013.

It is often the case that even a short involvement with building crafts, like many other types of craft, has a positive effect on self-esteem, accompanied by comradeship and unavoidable smiles, which are the common feature in the photos of the craftsmen reproduced in this paper. ‘There is no doubt that skill, pride and quality of work contribute to psychological well-being and motivation’ (HRH The Prince of Wales 2013).
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Teaching theories and conceptual frameworks of sustainability in studio-based design courses often remains at the level of abstraction. Place-based education, however, offers a way to expand students’ understanding of sustainable community development by immersing them directly in the cultural, socio-economic and environmental conditions of a given, local setting. Direct interactions with a particular community, immersed in particular physical and socio-cultural contexts, enhance learning experiences and deepen understandings of complex interrelations between economic prosperity, social equity and environmental stewardship.

Craft is positioned at the forefront of a pedagogical model for place-based learning. As a vehicle for teaching and fostering sustainable community development, craft is the catalyst for transformative change at three affective domains of meaning making: hand, head and heart. As an embodied experience, craft is an affective phenomenological approach to heighten sensory awareness and deepen haptic sensibilities of our material world through our senses. As an intellectual and creative problem-solving pursuit, craft supports development of our cognitive skills. In community design build settings, craft facilitates cultural exchange and knowledge transfer. As a collaborative activity, craft cultivates emotional connectivity and fosters development of empathy for “other”. And finall, as a physical manifestation, craft expresses collective creativity, cultural identity and shared values. Each of these conditions is highlighted in this presentation as a way to explore ideas regarding craft, its meaning, and the potential it holds for transformative action and change.

This approach - teaching through craft - is rooted in the local and situated to be mutually beneficial to the community and university students. The course provides design students with experiential learning opportunities in a local setting, engages urban youth in the educational process of design-build, and serves the needs of a community through education extension and building revitalization efforts. During a fifteen-week-long semester, teams of design students and urban youth work side-by-side to visualise, conceptualise, design and build furniture scale pieces as part of a major renovation project for a new community centre. The adaptive reuse of an abandoned building serves as the site for the renovation project. While students immerse in the socio-economic-environmental conditions of the local, their collaborative design-build efforts with the teens reflect and represent collective creativity and a body of shared values.

Over a four-year period, a substantial number of culturally unique and ecologically sound furniture pieces have been built; these include: shelving systems, storage units, benches, doors, lighting fixtures and a coffee bar. Each of these objects - hand crafted by students and urban teens - demonstrate how craft fuels imagination, ignites passion, communicates meaning and creates community. During the design-build process, they learn new craft skills, are sensitized to diverse cultures, and develop kinship through craft and meaning making. This real-world immersion helps students understand the complex interrelationships between economics, equity and environment, and grounds the issues that affect sustainability in the knowable and known.

This paper describes a design-build course offered at a major university in the United States that brings together university students with urban teens from a disadvantaged neighbouring community.
Teaching theories and conceptual frameworks of sustainability in studio-based design courses often remain at the level of abstraction. Place-based education and hands-on building, however, offer ways to expand students’ understanding of sustainable community development. These learning experiences immerse students directly in the cultural, socio-economic and environmental conditions of a given, local setting. Authentic interactions with a particular community cultivate relationships, enhance learning and deepen understandings of the complex interrelations between economic prosperity, social equity and environmental stewardship.

Craft is positioned at the forefront of a pedagogical model for place-based learning. This study explores craft and collective making as embodied activities that enrich learning experiences, promote environmentalism, and foster social equity. As a vehicle for teaching and fostering sustainable community development, craft is a catalyst for transformative change at three affective domains of meaning making: head, hand and heart. As an intellectual and creative problem-solving pursuit, craft supports development of our cognitive skills. In community design and build settings, craft facilitates cultural exchange and knowledge transfer. As an embodied experience, craft is an affective phenomenological approach to heighten sensory awareness and deepen haptic sensibilities of our material world through our senses. As a collaborative activity, craft cultivates emotional connectivity and fosters development of empathy for the ‘other’. Finally, as a physical manifestation, craft expresses collective creativity, cultural identity and shared values. Each of these conditions is highlighted in this article as a way to explore ideas regarding craft, its meaning, and the potential it holds for sustainability, transformative learning and social change.

Introduction

In schools across the United States, we are beginning to witness paradigmatic shifts in design education. This can be understood as a response to: (1) increasing public pressure for changes in higher education that more directly teach sustainability and positively impact on societal issues (Carlson 2006); and (2) acknowledgement of a growing sector of design professionals coming together across disciplines to respond to humanitarian needs.

Recent events of natural disasters, exploding population growth and environmental crisis have attracted like-minded designers to join forces to enact change. Assembling worldwide, employing design thinking and empathic design skills, they engage directly with the needs of local residents to implement community-led design solutions. (Melsop et al. 2013)

Some design educators are embracing this call to action and are developing their curricula to prepare students with knowledge, skills, attitudes and mindsets they need to be active participants – if they so desire – as agents of change. In his seminal work, Design Activism, Beautiful Strangeness for a Sustainable World, Alistair Fuad-Luke identifies the implicit challenge for design educators. While activists take on the role of ‘change agents’ ... they may also experience what is known as ‘transformational activism', a concept where the activists and the subject(s) of their activism undergo a personal transformation as well as expressing it outwardly. This suggests that being an activist is part of a personal development and life journey to realize a state of being, as well as a desire to contribute to a greater societal good. (Fuad-Luke 2009)

From architecture and interior design to landscape and graphic design, new pedagogical strategies for sustainability education are being developed and curricula that focus on environmentalism are being implemented. At the same time, outside the field of design, theories of transformative learning are being implemented in coursework. This can be observed in the training of medical professionals. ‘Doctors, nurses and related health professionals are trained to heal but their training [also] seeks to ensure that they display caring attitudes towards their patients’
(Shephard 2008). While emphases on sustainability (environmental stewardship) and social responsibility are increasingly embedded in design curriculum, questions of how to do this effectively remain. Providing students with learning opportunities to develop authentic empathy towards the ‘other’ is a critical component in the education of a designer.

This article describes a pedagogical model for place-based learning in the context of the theoretical underpinnings of Transformative Sustainability Learning (TSL). As a vehicle for teaching sustainable community development and as a catalyst for ‘transformational activism’, craft is positioned at the forefront of the study. The methodologies implemented for the applied research study are outlined in the body of the article. Following a description of the context, the text is organised in three sections: head, hand and heart to facilitate an understanding and record the affective domains of meaning making among community members (participants of this study) and university students. Tested in the field, the applied theories are open to further development and adaptability in other design pedagogies.

**Transformative Sustainability Learning**

TSL is the combination of two distinct educational theories. Transformative learning is emphasised in the fields of social sciences, while teaching for sustainability is predominantly from education in the building sciences, i.e. architecture, landscape design and urban planning. Teaching for transformative learning (psychosocial development) and sustainability education (energy and resource conservation) has profoundly different sets of learning objectives and teaching methodologies. The first teaching approach strategically includes lessons that emphasise transformative change in the hearts and minds of students. It is teaching that affects change in attitudes, values and behaviours and involves the learner emotionally. The second approach stresses attainment of knowledge and skill sets that support principles and practices of sustainability and foster environmental stewardship. Emphasis in this case is placed on cognitive development, memorising facts, analysis of case studies and understanding through applied knowledge. Reinforcement of knowledge through application is a fundamental aspect of teaching principles and practices of sustainability. When theory is not applied to a real-world situation, it loses its effectiveness. An example of this can be observed in the architecture design studio. Teaching theories and conceptual frameworks of sustainability often remain at the level of abstraction, as students have no authentic experience for application. However, connecting students directly with residents and providing place-based learning offers students ways to expand their understanding of sustainable community development. These experiences have the potential to connect them emotionally to people and place, and the particular cultural, socio-economic and environmental conditions of a given, local setting. Integrated as one, these two educational theories provide enhanced learning through direct experience. Yona Sipos et al. (2008) offer a useful definition or the theory of TSL:

TSL is a series of learning objectives corresponding to cognitive (head), psychomotor (hands) and affective (heart) domains of learning that facilitate personal experience for participants resulting in profound changes in knowledge, skills and attitudes related to enhancing ecological, social and economic justice.

Applied theory in a service-learning course Specifi ally, the case study described here is an ongoing community design-build studio, designated as a service-learning course at the Ohio State University (OSU), a tier-one research institute in the United States. One criterion for a service-learning designation at OSU is that course content is to be mutually beneficial to students in learning and the community in service. ‘Service-learning … expands and transforms the pedagogy of the typical studio by incorporating social, political, and ethical issues into the learning objectives’ (Angotti et al. 2011). Students enrolled in the community design-build course, Design Matters, engage directly with members of a local non-profit agency in the rebuilding efforts of a local community art centre. In this pedagogical model, students benefit by gaining hands-on experience, applying knowledge of sustainable building, acquiring craft skills and learning to develop empathy for the ‘other’ as they work side-by-side with staff, administrators and teen members of the non-profit. The non-profit agency benefits from the design services provided, the higher education extended to the urban youth throughout the design-build process and the resultant products of the collaborative process. Participatory action research methods and collaborative design (co-design) processes provide the basis for the university–community engagement, which includes collective visioning exercises and full-scale craft-associated activities. Although the course is offered through the
department of design, it is open to all majors across the university. Attracting students from engineering, sociology, architecture and cultural anthropology, the composition of the transdisciplinary teams of students working together reflects the nature of professional practices. The design of the course purposefully integrates experiential learning with the study of social design practice. Methodologies specific or participatory design are intended to prepare students to be agents of change.

Connecting course content with context

The site for the service-learning course takes place in an under-served part of town, east of the capital of Columbus, Ohio. University students engage with urban youth of the neighbourhood in community revitalisation efforts, specifically in the rehabilitation of a historic home. The socio-economic and environmental conditions, and social justice issues provide fertile learning ground for university students who are eager to put into motion participatory action research and co-design methods for environmental stewardship and social change. The adaptive reuse of the historic home serves as the renovation site for a new community art centre (see Figure 1). Formerly this structure housed a non-profit agency, Central Community House (Central). Central has provided social services to the residents of the east side of Columbus in the settlement house tradition since 1946. In 2006, the agency moved into a new facility, which enabled it to expand programming and social services. However, without substantial funding, the administrators of Central could not maintain both the new facility and their former place of residence. The older home was left vacant for years; the deterioration of the 3,800 square foot house and two-storey carriage house, and the overgrown vegetation contribute to the visible signs of a downtrodden neighbourhood.

Formerly this part of town was a bustling and vibrant community of wealthy merchants and city official. Yet, like so many American neighbourhoods that prospered during the turn of the last century, now the area shows visible signs of derelict activity and under-representation. A historical narrative can be read in the character of its street facades and urban fabric. Boarded-up homes and abandoned businesses reflect an area that suffers from violence, drug trafficking and economic turmoil. Many of the once stately three-storey homes adorned with ornate brickwork, turrets and lead glass windows are in various states of disrepair. Mom and Popshops and corner groceries have all but disappeared. Liquor stores and gasoline stations now stand in their place. In the middle of this pedestrian neighbourhood is Central’s former place of business. Once a hub for social interaction, providing security and a sense of place to the area, the vacancy of the community centre has contributed to the poor conditions of the neighbourhood.

The renovation of the house and reinvigorated street energy have the potential to bring dramatic changes to the area. Capitalising on the creativity of the urban youth can add to the cultural expression of the community. Building revitalisation efforts can bring new life to the neighbourhood. The service-learning course is positioned to do both. During a fifteen-week semester, university students and urban teens from TRANSIT ARTS, Central’s youth development programme, work on project-based teams. Small teams composed equally of urban teens and university students visualise, conceptualise, design and build furniture scale pieces as part of the interior architecture renovation project (see Figure 2). During the first half of the course, university students interact and collaborate with the urban teens at Central Community House’s new facility, providing university students with placed-based learning experiences. For the second half of the semester, the TRANSIT ARTS teens visit campus and work in the woodshops with the university students, thus providing them with direct college experience. With a higher education demographic of less than 15 per cent in the predominantly African American east side neighbourhood, experiential learning on campus provides meaningful impact for the urban teens. Together, university students and teens go through processes and explicit assignments that promote environmentally sound building solutions (engaging the head in cognitive development), cultivate collective creativity (engaging the hand in somatic learning), and foster cultural exchange and relationship building (engaging the heart in emotional learning).
Head

As an intellectual and creative problem-solving pursuit, craft supports development of cognitive skills. By extending educational lessons about sustainable building practices to the group of urban teens, university students reinforce their sustainability knowledge. Although the course follows a typical design process of ideation, conceptualisation, design development and implementation, it is structured with specific participatory activities and co-design exercises that promote cognitive and metacognitive development in the minds of students and teens. Three activities are highlighted here to demonstrate the emphasis on the creation of re/constructed knowledge: collective collage making, material exploration and critical reflection.

The first participatory activity is collective collage making. University students are asked to pair up with a TRANSIT ARTS teen to craft a collage. Each couple receives cutout images, words and magazine clippings to use to communicate their real or imagined life. This activity poses challenges and some resistance from both groups as their backgrounds and life experiences are drastically different. The majority of the university students are Caucasian, while the teens associated with TRANSIT ARTS are African American, often from disadvantaged neighbourhoods. However, as the process of making begins, tensions are relieved; energy is redirected towards personal expression and craft. Through this process, a dynamic exchange of cultural values and life experiences is shared. As students and urban teens select images and words that best represent their dreams and daily rituals, each individual learns more profoundly about the ‘other’. A journal entry by one of the students reports: ‘I would say that these interactions started off a little bit awkward but each time developed into an enjoyable and enthusiastic meeting of minds from very different perspectives.’ ‘Resistance, whether based on personal, community, or cultural difference, can be a point of entry leading to enhanced understanding, relationship building, innovation, and the transgression of disciplinary boundaries’ (Angotti et al. 2011).

One of the next participatory activities involves the selection of materials for interior finishes and furniture designs. Again, a vast array of material samples is provided. From bamboo and wood to plastic and polycarbonate, some are sustainable natural resources, while others are synthetic and non-reusable. As university students describe the different materials, TRANSIT ARTS teens display genuine interest in understanding the principles of ‘green materials’. As the teens interact with the materials, university students reinforce their lessons of sustainability and extend ideas about environmental stewardship. Emphasis in this case is placed on cognitive development and application of sustainability knowledge.

Critical reflection is the third activity intended to excel cognitive and metacognitive development. ‘Metacognitive learning can be understood as learning how to learn’ (Melsop et al. 2013). By keeping a weekly journal, university students are empowered to become cognisant of their own learning, personal growth and development. Critical reflection exercises throughout the course encourage students to become more aware of their habits of mind and belief systems. The cyclical processes of reflective practice often generate new ways of thinking and being; new knowledge is created based on direct life experiences. Each of these activities is intended to provide students with skills in co-design and knowledge to problem solve and respond sensitively and ethically towards socio-cultural and environmental dimensions of a design problem.
**Hand**

Our body and how it experiences emotion, sense, or movement ... simultaneously engages in taking in and making sense of information. The cognitive and somatic functions work in conjunction with our cultural background to make meaning from our experience. (Amann 2003)

As an embodied experience, craft is an affective phenomenological approach to heighten sensory awareness and deepen haptic sensibilities of our material world through our body and senses.

Education theory over the past century has moved inexorably from confidence in the wisdom of stand-and-lecture formats to understanding that learning is initiated in the moment of student body engagement. In addition, despite the western dichotomisation of the mind–body split, whole-person engagement requires a head–hand, a somatic learning approach. John Dewey said, ‘students learn by doing’. In this paradigm, a teacher serves as a facilitator in the learning process. This type of learning environment requires that the student becomes an active participant in the learning experience and accepts an explicit challenge to learn. The activities associated with craft lend themselves well to the bodily engagement of doing, emphasising the tactile qualities of material manipulation and the haptic sensibilities of making.

Primitive man used his own body as the dimensioning and proportioning system of his constructions. The essential skills of making a living in traditional cultures are based on the wisdom of the body stored in the haptic memory. The essential knowledge and skill of the ancient hunter, fisherman and armer, as well as of the mason and stone cutter, was an imitation of an embodied tradition of the trade, stored in the muscular and tactile senses. Skill was learned through incorporating the sequence of movements refine by tradition, not through words or theory. (Pallasmaa 2005)

The nature of the furniture-scale products for the renovation project brings questions of the body and space to the forefront. As the design projects evolve through two-dimensional visioning exercises to small-scale, three-dimensional physical models (see Figure 3), issues of human proportions, anthropomorphism and ergonomics foreground the inquiry. One of the participatory activities in this phase of the course is to physically measure team members' height and arm length (these indicate reach capacity). This exercise plays a critical role in space–body awareness. Full-scale dimensions are converted mathematically to one-half inch equals a foot measurement. For the final part of the exercise, students and teens are asked to use these dimensions to craft small avatars of themselves from materials (wire, fabric, beads and buttons) supplied at the beginning of class. Crafted from similar materials, the models express individual creativity and also basic human conditions. This teaching assignment attempts to put into motion Aldo Leopold’s ‘I–Thou’ relationship theory, which advocates for a dissolution between subject–object dichotomies.

![Figure 3 Small-scale physical models are designed and revised before large-scale construction begins.](image_url)
Following the avatar making activity, university students and TRANSIT ARTS teens formulate ideas about the interior spaces and the furniture pieces necessary to support the programme for the newly renovated community art centre. Administrators and staff of Central are invited to critique the team-based projects. Based upon their feedback, design revisions are made, construction drawings are completed and full-scale building begins (see Figure 4). TRANSIT ARTS teens are invited to the university campus to work side-by-side with the university students to craft their jointly conceived projects. These activities emphasise learning through the body. ‘Somatic learning brings the body into the learning experience so that the learner is always actively engaged in the education process’ (Amann, 2003). The skills attained are stored in the memory of the body as the body viscerally engages in the process of making. Throughout the process, teens learn basic construction skills: how to use different tools and equipment, and methods of assembly. Following the completion of one of the more complex project assemblies, one of the urban teens expressed his feelings this way: ‘You all probably didn’t think I was smart when you first met me. But I am smart, and making this with-you all proves it!’

Heart

Educating professionals to care involves setting learning outcomes that include affective attributes and using learning and teaching activities that promote their attainment. (Howe 2003)

As a collaborative activity, craft cultivates emotional connectivity and fosters development of empathy for the ‘other’. Prior to going to the east side and before engaging community members in processes of co-design, university students write a response to a set of questions pertaining to their expectations for the class and their perceptions of the place and people with whom they will be collaborating. This part of the study emphasises psychosocial development. The activity prompts students to become more self aware of their perceptions. The orientation of the questions helps them critically probe the basis of their values and belief systems. In a safe and non-judgmental forum, students willingly share their dispositions. This exchange helps students situate their ‘knowing’ in relation to others in the classroom. Reflective practices of this sort are exercised throughout the duration of the course. In this way, students more fully engage with affective learning and can witness their own transformational growth.

During the first set of exercises that includes the collage and avatar making, university students reported that they had a sense of connection with the teens. In a journal entry, one university student reported: ‘There has been a general sense of optimism, playful humor, and many moments of genuine openness with the teens, and a willingness [of us] to be vulnerable.’ Guiding students in developing self-awareness, empathy towards other and active-listening skills empowers them to be authentic leaders and collaborative team members. If learning is a process of transformation and self-actualisation, as Abraham Maslow argued, then students learn best when given the opportunity to reflect on their learning. Neither transformation nor self-actualisation, however, can be developed without critical awareness of the process of growth and reflective, contemplative practices. Quality instruction is measured to a significant degree by the ability to provide guidance in such reflective processes without exerting external authoritarian values upon students.

Another key to development is communal celebration. At the end of each course, a public exhibition is held at Central’s new facility. Open to neighbourhood residents, members and
staff of central and university administrators, the public forum provides a way to showcase all the projects collaboratively designed and built during the semester-long course. In the large multi-purpose room at Central, each object is displayed, representing a collaborative process of knowledge and cultural exchange. Eventually, all of the built works will be installed in the renovated home (see Figure 5) but, until the interior spaces are ready, this exhibition serves to display the creative synergy and collective imagination between the TRANSIT ARTS teens and university students. The exhibition celebrates diverse communities coming together to collectively envision a renewed neighbourhood and cooperatively rebuilding a community centre; the completed furniture pieces demonstrate authentic collaboration in design and build processes. They are symbolic of the possibilities of new pedagogical models and the transformative effects they can have on individuals working collectively.

Figure 5 One of the first completed projects, the coffee bar, is positioned in the nearly renovated house.

Conclusion

This article explored craft and collective making as embodied activities that enrich learning experiences, promote environmentalism and foster social equity. Teaching principles and practices of sustainable building are paramount to our educational systems today. The challenges we face locally and globally call for collective action. Training design students with the skills, knowledge, mindsets and attitudes necessary to take on these challenges has been the focus of this study. Emphasising the socio-cultural dimension of sustainability allows designers interested in social behaviour and culturally-inflected attitudes to join forces with architects and engineers who, for more than a generation, have developed various technologies for energy efficiency and advanced technical means for sustainable building systems. While these are significant contributions, sustainable design and environmental stewardship depend on individual and collective behaviours, attitudes and mindsets.

The approach described in this article offers university, colleges and educational programmes invested in advancing sustainability education and transformative learning a form of place-based pedagogy. Collective making provides opportunities to apply a phenomenological approach in teaching, test methods of collective creativity in the field, and advance concepts of psychosocial development in environmentalism. The hoped-for results of this applied research endeavour are multifaceted and provide benefits to the community and the university students. Emphasis throughout the service-learning...
course was an integration of head (cognitive development), hand (somatic learning) and heart (emotional connectivity to place and people). TSL and the methodologies of participatory action research and co-design are grounded in: (1) design ethics, (2) social justice, and (3) environmentalism. The development of the service-learning course and the methods of engagement provide fertile ground for discovering critical aspects of individual (self) and collective (community) transformation. The next steps of the study include a more thorough account of student experiences, documentation of students who demonstrate transformational learning, and work as change agents towards social justice and environmental stewardship. The following quote provided by an industrial design student enrolled in the course establishes a promising beginning for such qualitative research:

This course has already made a HUGE impact on how I approach design matters … multi-functional, interdisciplinary teams are the only way to find the best solutions to big problems … this class really puts it all into practice in a way that our traditional studios have not. I love working in class with engineering, architecture and psychology students. I’ve learned as much from them as I have from the Transit Art kids … I think this is extremely valuable … It also affects how I feel design can make an impact on the world. As a global society with dangerously high population levels, we’re starting to face brand new problems. Designers are simply problem solvers, so our skills should be put to use on these humanitarian issues. I know that it’s just a vague, idealistic notion at this point, but I can finally see a direction I’d like to take professionally.

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A craft state of mind

Within contemporary craft, designer/maker practice generates much debate in terms of its viability within 21st Century technological culture. Much of this debate focuses on issues concerning economics, as makers conceive new design ideas and produce the physical/material results in the form of innovative design objects to meet a ‘standard’ of excellence. However there remains a philosophical and practical gap in our knowledge with regards to the relationship between the individual acts of managing creativity and creatively managing craft. In craft writings on research (be it academic or public sector), these two perspectives are most often separated into an economic analysis of the craft sector and the activities of craft practitioners in terms of their contribution to culture. This separation arguably presents an unbalanced and misleading view of the business of being a craft practitioner. This paper addresses this and looks at craft practice from the practitioner perspective focusing on why we practice.

Building on PhD research ‘Making Changes: Applying heuristics to a practice-led investigation of creative well-being in the context of contemporary craft’, this paper will explore the role of values within the creative process and discuss their importance to maintaining creative well-being and the impact of this to both economic and cultural sectors.

The paper highlights how I used a research process to reflect on fundamental challenges that I encountered during ten years of business as a designer/maker; in particular, the difficulty of meeting the sector’s economic and my own creative expectations. Through the research process I highlight creative well-being as an essential part of practice in that it is a necessary ‘state of mind’ that is underpinned by values. I argue that creative well-being drives innovation and design development in the production of objects, and that it facilitates personal growth and creative development. The question I ask in this paper is:

What is creative well-being in a craft context and what is its significance to practice and the craft sector?
Abstract
Within contemporary craft, designer/maker practice generates much debate in terms of its viability within twenty-first century technological culture. Much of this debate focuses on economics, as makers conceive new design ideas and produce physical/material results in the form of innovative design objects to meet a ‘standard’ within the craft sector. However, there remains a philosophical and practical gap in our knowledge with regards to the relationship between the individual acts of managing creativity, and creatively managing craft within the craft sector. In craft writings on research (be it academic or public sector), these two perspectives are most often separated into an analysis of the craft sector that contributes in an economic sense (within the creative industries) to the gross domestic product (GDP), and the activities of craft practitioners in terms of their contribution to culture. This separation arguably presents an unbalanced and misleading view of the business of being a craft practitioner. This paper addresses this and looks at craft practice from the practitioner perspective, focusing on why we practice.

Drawing on the author’s PhD research, ‘Making Changes: Applying Heuristics to a Practice Led Investigation of Creative Wellbeing in the Context of Contemporary Craft’ (2012), this paper will explore the role of values within the creative process and discuss their importance to maintaining creative wellbeing and the impact of this to both economic and cultural sectors.

The paper discusses how a research process is used to reflect on fundamental challenges encountered during ten years of the author’s business as a designer/maker – in particular the difficulty of meeting the sector’s economic expectations and one’s own personal creative expectations. Through the research process creative wellbeing is highlighted as an essential part of practice and a necessary ‘state of mind’ that is underpinned by values. The paper argues that creative wellbeing drives innovation and design development in the production of objects, and that facilitates personal growth and creative development. The question leading the discussion is:

What is creative wellbeing in a craft context and what is its significance to practice and the craft sector?

Introduction
Designing and making ‘stuff’ continues to generate much debate, whether from an historical, traditional, sociological, economic, political or contemporary perspective. But for people who are designer/makers the process of making contemporary products that have the potential to enhance people’s lives is a way of life, where they seek to improve, expand or innovate within their area of practice. Richard Sennett points out that craftsmanship is the constant endeavour to do the best that you can possibly do, and it is this which drives all forms of creative work.

This is of course a historical debate, but one that is at the heart of all craft and arguably all forms of work where people are being creative. However, there are many factors that come into play in the process of making, and it is this which will be discussed in this paper. They include the maker’s own aspirations and expectations and the external factors that impact and influence them.

The report Makers in Focus by Heather Rigg (carried out for West Midlands local authority and the University of Wolverhampton in 2005) highlights a point of tension, namely how to maintain creativity, innovation and the internal motivation for one’s practice at a level that can meet the expectations of external economic drivers. In the contemporary craft sector in the UK, hefty demands are placed on the production of ‘new’ products to sell. Rigg questions the support for makers in terms of professional development, asserting that makers themselves require specific development in how to access new markets from the ones that they currently operate within. She points out that current thinking by providers is not ‘making [the] connection between makers’ motivation for their practices’ (Rigg 2005: 28) and the activities in which they are involved, pointing out that the term ‘market’ should be rethought as ‘processes by which craft … [is] bought and sold … but also to non-commercial opportunities that expose makers to new experiences, new audiences, new
work and new exhibition opportunities. All of these activities collectively comprise “the economy” of the applied arts sector (2005: 1.1.5). Rigg’s point in raising questions concerning the acts of ‘maintaining creativity’, ‘innovation’ and ‘internal motivation’ remains pertinent today. I argue that these three things are a fundamental part of the working lives of makers and thus need to be considered more fully in terms of how they can be maintained, as they underpin why makers do what they do.

The paper also discusses the importance of identifying and communicating values within the craft sector as a whole, and I present observed values and beliefs put forward by others as being significant within this sector. I discuss the relevance of Verhoeven (2007) and Woolley (2007, 2010) as they explore designer/maker practice as a sector now, arguing craft practice needs to be reflected upon and potentially rethought as a viable form of craft in the context of the modern material world; in their view it is not currently sustainable.

I also present my own perspective as a practitioner, arguing creative wellbeing is underpinned by the activity of creating new and innovative ideas in the form of products but that creative wellbeing is unsustainable in the attempt to constantly produce innovative ‘objects’ for an economic market. The argument advocates that markets need to be identified in a whole sense and include the financial and symbolic worth of both the process (the skills of the maker and the objects they make) and the cultural significance of their skills within society.

Within designer/maker practice there is a tension point between the expectations of practitioners, the craft sector and the audience, and this tension needs to be discussed through looking at what our values are as this is the first step in helping designer/maker practice evolve to a new place that practitioners can realistically maintain. The key point is that maintaining a healthy craft state of mind is as important for the sector and society as it is for each individual as it goes to the heart of good mental health through creative and productive work.

**Maintaining creativity: A personal story**

In 1996, at the start of my professional career as a printed textile designer/maker, I was full of ideas and expectations. I took time to research and prototype textile products, knowing I was extending my own knowledge regarding the materials I use and the aesthetic development associated with colour and motifs for printed textiles. I believed in making textile products that people could understand and ultimately buy as critically important to the sustainability of my design studio. Experience gained through working for the UK Crafts Council (1994–5) along with my university design education (1988–94) helped me to understand the primary market for my products (ties, scarves, throws and cushions) were people who frequented galleries, in particular those with retail outlets as well as exhibition space.

As the business developed I witnessed a rapid rise in demand, and by 1999 I needed to manage the business as effectively as my design process. I had new and additional components to learn, understand and consider in the process of making craft. For example, managing accounts, stock creation and distribution to retail outlets, which in my case were galleries in various geographical locations throughout the UK and USA. I quickly realised the greatest challenge of being a professional craft practitioner is mastering or managing the tension between running a business and sustaining (what I perceived to be) the high levels of creativity in my practice. Indeed, I soon discovered the crux of this dilemma arises, or is at its most apparent, when you become known for a particular style and the demand for your creative signature intensifies at a time when your own creative process needs investment for progression.

Figure 1. The author taking part in the New York Gift Fair Trade Show Stand (1999).
By year four in business, my levels of creative development had significantly dropped. My creative signature piece (a velvet scarf) was at its peak in terms of vendor and market recognition. But in fulfilling this demand I had ‘t managed to invest quality time into future design collections. In other words, I needed to give time to advancing my visual signature and to think through how I could continually incorporate this as part of my own creative development. However, I had to face a reality that if I take time out to invest in the development of new ideas, I remove the capacity for making money and securing the necessary financial income needed for living. With the business framework for studio design I had adopted, I could not see how I could do both at the same time.

After five years in business I intuitively understood the approach to being a craft practitioner that I had nurtured had to fundamentally change if I were to meet both creative and market demands and sustain my position as a professional practitioner. But for some reason I found it overwhelming and was uncertain how to make this necessary shift, as I had not thought through how I would cope with growth in business. I did not know where to go, how to make the change or where to start making the change.

The turning point arrived as a consequence of new work for a solo exhibition in 2001, which was an attempt to progress my practice through the creation of a new body of textile products.

However, due to a lack of time spent developing the visual imagery, materials and products, the work did not sell and, more importantly, it did not meet my own printed textile quality thresholds in terms of colour, balance and composition. The impact of the failure of the work to sell was serious: it resulted in a large drop in confidence, taking with it my usually high levels of motivation and accompanying aspirations. The ‘weight’ of this change caused critical damage. I found I was prepared to abandon my vision of being a professional textile designer, as I could not see how to make a living from designer/maker practice. Indeed, having lost the sense of fulfilment I deemed critical to being a successful sole trader, I decided to ‘give up’ my business. Within one year of this decision I had stopped making textiles.

**Understanding the problem**

In 2006, I was ready to accept the challenge of understanding what went wrong in the business years, exploring how to rebuild confidence in my visual signature and find a strategy for growing my craft capacity and capabilities. It involved looking back and reflecting on the situation in its entirety through the framework of doctoral studies, employing a practice-led methodology. Reflection as a method is used extensively in research, particularly practice-led research where reflecting-in-action through being aware of thoughts through practice...
itself or being conscious of the moment (mindful) allows the practitioner to think about what they are thinking about. Reflecting-on-action involves looking back at what has taken place to recount the situation, and reflecting through-action allows awareness to develop about practice through practice itself (Schön 1991; Mason 2002).

As part of the PhD process I used a personal narrative to reflect on past action, allowing me to bring personal endeavour to the fore, starting with the past to reflect on the meaning of everything I had done, everything I had aspired to do, and contextualising this within contemporary craft culture. I considered the early stages of my designer/maker business and realised at that point in my career I had a sense of ‘creative wellbeing’ that kept me creatively buoyant. This seemed to be a balance between having a sense of fulfilment and a sense of worthwhileness in my creative life, something which I believe I lost in later years. I realised the ‘sale’ is not the most important part of the process. It is the expectation that someone wants the object as his or her own and the creative process (embedded in the object) is as important (to me) as the object itself. I expected to be able to continue to make products that represent my own creative process at its best. I observed a need to explore what ‘creative wellbeing’ meant in the context of my practice, as this is arguably what had diminished. I focused on nourishing this and defining to what degree it would help to nurture and enable me to direct my own creative future.

Nurturing creative wellbeing

Wellbeing is a familiar term used extensively to gauge the positive or negative condition of people in terms of how they consider an aspect of their life. It can refer to their financial, health, spiritual, social or cultural state, and it is used primarily in life coaching, therapy, health and spiritual practices. Creative wellbeing is acknowledged as relating to wellbeing in that it refers to specific activities associated with the arts which, it is argued from a psychological perspective, can generate a ‘positive’ outlook on other areas of life (Taylor and Brown 1988). The recent Arts Council of England ‘Be Creative Be Well’ project carried out in London from 2010 looked to use the arts as methods of engendering a sense of creative wellbeing in local communities through participatory art activities. The positive evaluation published at the end of the project (Be Creative Be Well 2012) ‘measured’ how successful it was and cites evidence from the case studies to show how the ‘activities’ deepened community relations and generated a sense of pride among the local communities. This concurs with Taylor and Brown’s (1988) research into positive psychology which identifies wellbeing as a fundamental part of good mental health. When in this state, a person can engage in creative and productive work (Taylor and Brown 1988), meaning that they are in a state of creative wellbeing.

The relevance of values in maintaining creative wellbeing

In his book Start with Why (2009), Simon Sinek has systematised what makes great communicators great, be they companies or individuals (e.g. Apple and Martin Luther King), and he has called this model ‘The Golden Circle’, suggesting that it ‘codifies the three distinct and interdependent elements (Why, How, What) that make any person or organization function at its highest ability’ (Sinek 2011).

The relevance of Sinek’s model to practice is its focus on values or beliefs and the implications of ordering information when communicating to people. It is the specific ordering of three questions – What do you do? How do you do it? Why do you do it? – and the significant implications of the order, be it: (1) Why, (2) How, (3) What, or (1) What, (2) How, (3) Why.

Figure 4

Figure 5
Figure 4: Sinek’s Golden Circle. Top: ‘Inside-Out’. The arrows pointing outwards indicate the direction of travel when communicating to audience(s), beginning with why, then how before what.

Figure 5: ‘Outside-In’. The arrows pointing inwards indicate the direction of travel for communication, beginning with what, and then how before why.

(Drawings by Frances Stevenson from Sinek’s diagrams)

Sinek notes an order of difficulty in terms of communicating: ‘why-how-what’ is the approach less commonly employed because it is more difficult, while ‘what-how-why’ is most often used because it is habitually how we communicate. He explains that most people communicate from the outside-in, i.e. ‘what-how-why’, but ‘inspired leaders’, irrespective of their size or industry, communicate from the inside-out, i.e. they begin by explaining why they do what they do, then how, and end by describing what they do (Sinek 2011). Taking Apple Inc. as an example of outside-in (using the Golden Circle framework for communication), he says their marketing message could be:

We make great computers. They are beautifully designed, simple to use and user friendly. Want to buy one? (Sinek 2011)

However, using Apple’s actual approach, i.e. inside out, Sinek tells us their communication is:

In everything we do, we believe in challenging the status quo. We believe in thinking differently. The way we challenge the status quo is by making our products beautifully designed, simple to use and user friendly. We just happen to make great computers. Want to buy one? (Sinek 2011)

This example shows how reversing the order of the information makes the product (type or form) become less important (e.g. computer, MP3 player), because the values have remained constant. This is Sinek’s argument: by emphasising values, a person and individual can differentiate themselves. He argues it is the values that differentiate Apple from competitors who are equally qualified as competent in making the same product type. People buy into why Apple do what they do – they relate to their values and trust them to deliver those values. In essence, what you do is the proof of why you do something.

Sinek’s way of looking at values and beliefs can be used as a tool to reflect on and understand what drives people as his model encourages stronger, deeper understanding and awareness of values when making products or providing a service for people.

Using Sinek’s theory to reflect

Returning to my earlier experience of commercial failure, one of the questions that re-surfaces is: why did I not delegate production of my designs to others? It is normal for design studios to work in this way, with the creative work (the design) being undertaken by one person, and the actual making the responsibility of another. Similarly, the business side of things – marketing, dealing with clients, invoicing – could have been done by somebody else. Doing this would have allowed me time to focus on new concepts and collections. Sinek’s model offers an explanation, and it begins with ‘why’. For me, the physical and intellectual process of making, and the sense of worth that this engenders, is as important as the development of ideas and designs. In fact it is integral, because it is through the process of working with materials that ideas develop; the two processes cannot be separated in my own practice. And working with other people, the stockists and ultimately the clients, is a key part of this too. Why I am a designer/maker is because of the intellectual and physical stimulation that comes from it. Without those there is no ‘why’, only ‘what’ and the evidence of that early experience is that my ‘what’ without my ‘why’ is not particularly appealing either to me or to others.

Sinek’s main point is that values provide the rationale for why we do things; therefore understanding them is essential in order to communicate them in a relevant and meaningful way. It is their relevance and meaning to society, or to a particular market at least, that is needed in order to sustain the practice/business. Sinek explains that values underpin why companies and individuals are driven and motivated and, importantly, the audience understands and believes in a company or individual’s values through the way that they are communicated, by placing ‘why’ first. This as laterally not a feature of my business as I had become disconnected from my values and found myself in a conflict situation making the same signature product for economic success to the detriment of creative wellbeing and a healthy craft state of mind.
Craft practice: Values

This then raises a further question, which is how do practitioners support the development of having a healthy craft state of mind? One could also say it is via an open mind, and that open mindedness is integral to progress. Sinek’s message is in essence about change and has to be ‘synthesised’ through craft practice in order to appreciate its significance as a valuable concept. This means identifying which habits hinder progress and development and identifying important or key components that lie at the heart of practice itself. To do this I reflected on my practice through personal narrative, and I also looked to understand what is going on in craft writing past and present, to help me think through how I approached my own practice and the ‘habits’ I had as well as identifying the small things that drive it, which are normally taken for granted.

Similar to Sinek’s model, Donald Schön (1991), Peter Dormer (1994, 1997), Bruce Metcalf (2007), Martin Woolley (2007), Sōetsu Yanagi (1978) and Arno Verhoeven (2007) advocate for craft to improve its communication and make clear its cultural meaning and social relevance by defining its value and beliefs through a coherent structure. Metcalf (2007) argues that cultural meaning and social relevance form crafts values, and these include community and tradition. Dormer talks about the value of excellence and discusses craft as a discipline concerned with quality. In this work he posits the need for craft to communicate differently (1997: 229), subtly suggesting this is achieved by emphasising the creative process where he notes the values of 1) making (through physical engagement), 2) self-discovery, 3) honesty, 4) failure, 5) tacit knowledge (or learning through experience) and, 6) demonstration.

In Sōetsu Yanagi’s (1978) seminal piece – The Unknown Craftsman – craft values are discussed in the context of creative product(s), making reference to the Industrial Revolution, noting the significant cultural shift in values which occurred through this, from the handmade to the industrially produced (1978: 217). The values he cites include: beauty, culture and cultural understanding (where culture is a context for products) and usefulness (in that there is connection(s) with society as well as culture). Martin Woolley (2007: 175, 2010: 136) explains there is a need to communicate contemporary craft values in order to nurture understanding about craft beyond the boundaries of the established or traditionally perceived audience(s) of the sector; to do this he suggests targeting the gallery retail sector (which largely defines the contemporary craft sector). His main objective is that the sector’s value structure should be communicated beyond existing ‘people in the know’ in order to allow subjective interpretation by audience(s) and the various contexts craft can occupy, including the creative development of practitioners themselves, the market(s) that practitioners operate within and the business models within which they choose to sustain themselves, for example, lifestyler, entrepreneur, idealist and/or late developer (Fillis 2010: 132).

Building on this need to identify and communicate contemporary craft values, the writer, maker and designer G. Arno Verhoeven (2007) calls for the craft sector to debate its values in an open manner, implying there is a need to be more transparent. He argues craft as practice is almost dead as there is very little understanding regarding what it is that craftspeople do and why they do it. But, craft as process is still very much alive as it is part of the human condition covering every area in which human beings ‘make’.

Verhoeven’s point relating to how designer/makers’ practice in a business context is not an effective model reflects my own experience as a designer/maker. Within my own creative development an internal communication needed to take place and the heuristic process within the PhD provided the structure that allowed this to happen. In a sense I needed to critically examine my values and beliefs through the research process to nurture a new perspective on my creative life and its wellbeing.

Looking at debates about the sector has helped me understand my own experiences, and I present these from a personal perspective, arguing that understanding values is an essential part of creative practice as being mindful of one’s values helps to maintain creative wellbeing and a healthy craft state of mind. The reflective process that I adopt through narrative helps me understand why and how I work and allows me to understand the profound relationship and connection between the process of making, the product, the audience and the social implications that this has.

Immersing myself in past and present experiences of printed textile design practice as a method to reflect, think through and relive the experiences, has enabled me to see that creative wellbeing is an essential part of my practice, and a necessary ‘state of mind’ that is underpinned by my values. Creative and productive work for me means the balance between having a sense of purpose in why I do what I do and also...
having a sense of fulfilment through having a healthy flow of new ideas within my practice which drives it and keeps it fresh.

Writing the reflective narrative and drawing on Sinek’s theory has allowed me to reflect on why I do what I do. Essentially I value design and I value the way design is created. It is the process of making printed textiles and the experience of creating printed textile products for people to use that are of value to me. Creative wellbeing is the balance between a ‘sense of purpose’ and a ‘sense of fulfillment’ in the work being undertaken. They both relate to creative and productive work: the former includes the relevance of making products for society, or doing some good in enhancing the discipline of printed textiles, and the latter relates to the endless flow of ideas that fuel my own continuous learning and build knowledge within my discipline area, allowing me to produce work to the best of my ability. It is this that constitutes a healthy craft state of mind.

Moreover, it is the embedded emotional engagements that underpin these values. The acts of imagining, observing, touching and constructing textiles, for example, have a definite purpose, which is to offer textiles to people for them to enjoy, in the same way music and/or food is enjoyed. The process of making printed textiles combined with the vision of delivering a personal experience through design capable of affecting an individual’s sense of joy and wonder is my raison d’etre. The deep passion for creating beautiful, sensual, useful textiles is what drives my motivation and provides a sense of design purpose. This is what ultimately underpins my own creative wellbeing.

Idea generation is a critical stage in the process of printed textile design. In my experience it is an aspect of designing that occurs throughout the creative act rather than being confined to the beginning of a process. This process or cycle keeps me connected with reality – it involves spending time looking and engaging with the world. For example, seeking a source of inspiration through drawing and direct engagement with nature, observing people in their everyday lives – noticing how they interact with cloth and understanding this across different cultures. Incorporating ways to deepen personal knowledge and understanding how to use the knowledge I have within culture through looking at society and the role of textiles in people’s lives is of value to me. It supports my decision-making as to why I am designing, how I design and for whom.

Summary

The significance of the perspectives of Dormer, Yanagi, Metcalf, Woolley and Verhoeven in this paper is that they focus on craft from a values perspective, emphasising that craft is a symbol that reflects values. Woolley and Verhoeven focus their discussion specifically on designer/maker, sole trader type practice/professions that produce objects or material products. This profession is often the focus of economic studies. The argument here is that it can be explored more fully in terms of why makers practise as this is at the heart of its social relevance and arguably forms the internal motivation for practitioners themselves.

Drawing on historical and contemporary ethical issues concerning craft practice which include engendering community spirit and moral code (Parry 2010; Gauntlett 2011), engaging in purposeful work (Crawford 2010) and being an ordinary citizen who serves society by working to the best of their ability for society (Sennett 2008) helps to articulate why craft practice is important for practitioners. Gauntlett’s use of the term ‘Making is connecting’ sums up the integral part that making activity has within society as through these physical activities we learn, socialise and innovate for our collective good. I have argued this human instinct to work together and for each other in a creative way is fundamental to why practitioners practise. Rigg’s point regarding maintaining creativity highlights the need to understand what this means in order to explore how it can be supported.

Ultimately, the reflective process raised the following questions for me as a practitioner. What is craft a symbol of now? What is its cultural meaning? And what is its social relevance? Exploring these questions allowed a new confidence and enhanced maturity to develop and emerge through practice and allowed me to identify some of the assumptions underpinning my practice. I was able to dissolve some of these assumptions and understand craft practice in the bigger landscape of life rather than the narrow landscape of market.

References


Conference Exhibitions
Gareth Neal

Main Conference Exhibition: Process, Place, People

Date: 23 September 2013 to 26 October 2013
Venue: The Gallery, Plymouth College of Art

Gareth Neal is perhaps best known for the digitally cut furniture forms he produces, but this show focused upon another dimension of his work that is critical to his identity as a creative producer: his investigations of sustainable practice, including his exploration of the ‘bodging’ tradition, often working with and responding to (sometimes found) materials within specific lo ales.

Gareth’s furniture design practice was established in 2002 and is currently located in the creative heart of North East London. Gareth specialises in the production of unique pieces, which are designed exclusively for individual clients and companies.

His practice seeks a reconsideration of furniture design and our perceptions of the contemporary by questioning history and processes in relation to people and place. The work is positioned at an intersecting point between design and craft, evading any simple categorisation into a specific discipline. This innovative approach provides a critical framework for his ideas as the designs develop into new and diverse territory. His work has received critical acclaim and has featured in numerous publications and exhibitions, both in the UK and internationally.

This new exhibition by Gareth Neal brought together a number of existing works to explore and draw out the connections that each piece makes to process, place and people.
The show included Gareth’s recent project ‘*In pursuit of carbon neutral*’ - as much a research project as an experimental endeavour. In the winter of 2012 two Ash trees were felled in a woodland in Herefordshire. Gareth cycled to the woodland from London and lived a low-impact carbon lifestyle for several weeks by eating local produce, sleeping outdoors, and not using any electricity; with the aim to explore the potential for carbon negative furniture production in the 21st century.

Also on show, *The Orkney Chair*, (pictured), a collaboration between Gareth and traditional Orkney chair maker Kevin Gauld. The beautifully-crafted chair is the result of a process concerned with sharing and securing unique skills and techniques, celebrating traditions located to a specific place and supporting the growth and potential rebirth of a dying industry.
Making Futures: Lifecycles of Material Worlds explored the ways in which five makers – Claire Crompton, Tracey Falvey, Magie Hollingworth, Helen Round and Mirjana Smith - create beautiful, elegant work from the discarded and dismissed, the re-discovered and the recycled. Using materials with lives previously lived, the work in each maker’s collection revealed a narrative; a history personal to the original object that imbued and informed each new piece.

Claire Crompton has given new life to the obsolete: a nurse’s cloak, a relic from an era before today’s sanitised, all-purpose hospital garb, has been refashioned. The tea set created from it conjures a narrative of the caring but disciplined military nurse. While the cups and saucers may have hinted at intimacy and homeliness; echoes remain of the starched authority of the nursing profession.

In Tracey Falvey’s exquisite, sculptural jewellery, there was a suggestion of the silver’s previous incarnations. The surface texture of the precious metal hinted at its reclaimed origin and added an extra lustre to these bold and vibrant pieces.

Magie Hollingworth’s stylistic yet almost primitive tools and vessels were created from paper, fibre and other scraps of material. For Magie, nothing need be thrown away: cast-offs and cast outs can all be reborn in a new image, their identities and stories preserved in the essence of the new work.

The Mount Edgcumbe estate on the banks of the River Tamar – and home to 2013’s Making Futures conference – was the inspiration for Helen Round’s vivid cyanotype work. Fusing an imaginative response to the physical elements of the estate, and using a camera-less process informed by shadow and sunlight, Helen transformed and re-contextualised found textiles to create new and unique objects.

Mirjana Smith’s striking and witty work of found treasures rescued from the unwanted came together to take new forms: pieces reborn and re-imagined. Her colourful and quirky assemblage teapots offered a new perspective on the everyday, and hint at a collection of memories and stories waiting to be shared.

Elaine Dye Founder and Director of Crafting Spaces www.craftingspaces.co.uk

CLAIRE CROMPTON Utilityware (2013)

The tea service is a response to the history and design of a found garment: a cape worn by a member of Queen Alexandra’s Royal Army Nursing Corps (QARANC).

The garment was found in a charity shop in Devon. It shows no signs of wear, no frayed edges or worn hem, no darning or patches. There is nothing to identify its previous owner, no remaining stitch marks of badges or insignia, no name tag. It is in near perfect condition except for small areas of moth damage.

What narrative can we write for this cape? The label tells us it began its life at Hilliers Couture Ltd of Cork Street, London - specialist uniform tailors. The design tells us that it is post 1950. Was it general issue to the nursing corps or was it made bespoke for the nurse? Was she based in Devon or did she retire here, bringing the cape as a remembrance? How did it end up at the charity shop? The owner gone perhaps and with her the emotional significance of the cape?

Utilityware revalues a garment that no longer has a purpose, giving the beautiful wool fabric another life. The nurse is represented by the tea service: a shared cup of tea suggesting time spent caring for another. The tailor is represented by stitching and textile shaping techniques, and by the design of the pieces; grey outer surfaces with scarlet interiors and scarlet details.

Claire Crompton’s creative practice explores themes of waste textiles, mending, repairing and reuse, and has focused on revaluing textiles and garments.
by asking what becomes of them when they have reached the end of their lives. Some are kept as containers of memory of time or place, a special occasion or person. Others are carelessly thrown away, their value diminished by fashion, quickly replaced with an equally expendable garment.

When a garment is sent to landfill or recycled into lower grade materials, in addition to the physical materials, other things are lost: the time and human energy that has been spent in producing the garment. On each piece of textile it is possible to see the handprints of each person who has been part of its lifecycle: the fibre grower, processor, spinner, dyer, garment cutter, stitcher, button maker, and wearer.

Claire's work investigates ways of preserving this human energy together with the precious fabrics. By reinterpreting the textile into ceramic shapes such as tableware and vessels, she asks the viewer to look at the materials that clothe us with a fresh eye.

www.textilelab.wordpress.com

from the off-cuts or scrap she has accumulated through making with recycled silver. Tracey reclaims the scrap by melting it down, adding only a ‘flux’, (borax, a mineral that prevents oxidisation), to the metal's surface. By using a rolling mill or hot/cold forging, she can manipulate the metal into sheet or wire, always keeping the metal well annealed and clean.

This is the beginning of the material process; stretching and squeezing the metal into the basic form is integral to the design process - the potential for unexpected results is infinite. For Tracey it's very important for her to understand the material and all of its different and unanticipated personalities; this creates a relationship within the making process and the individuality of the finished work.

Challenged by material play and experimentation, the silver bubbles, cracks, dimples, flakes and delaminates to create a whole new aspect to how we see precious metals. The end result can be deformed, discoloured, gnarly, and sometimes even unrecognisable as silver.

www.traceyfalvey.blogspot.co.uk

MAGIE HOLLINGWORTH Paperwork

Magie Hollingworth forms vessels and tools, primarily from waste paper pulp, over or around found objects utilised as moulds. Techniques and applications acquired from a long and varied career in the arts are all employed alongside many basic kitchen skills.

This very ordinary sustainable way of working, which evolved at the kitchen table, is still used today even though her practice has long outgrown the house and

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This very ordinary sustainable way of working, which evolved at the kitchen table, is still used today even though her practice has long outgrown the house and
she now operates from a studio in Nottinghamshire. A fine art degree followed by years committed to embroidery and textiles evolved seamlessly into a passion for paper, an area of work she has been developing for the past 20 years.

All things combine, and with an interest in preserving craft traditions her current work displays a combination of ideas and techniques that is difficult to pigeonhole.

Magie makes things because of a need to create that she’s had since childhood. Her non-artistic family background - a coal miner father and a stay-at-home mother - engendered her creative impulses as they literally had to ‘make do and mend’. What has now become fashionable was, for them, an essential way of life.

Such values run deep and encouraged as was the need to sew, knit, craft, cook and grow, waste was, and is now, not an option. Materials have many life cycles in her world, including made pieces that are re-invented as ideas progress and develop. Nothing is thrown away.

Paper, fibre and all things discarded, laced with messages and history, now combine into her primitive/post-apocalyptic collections of tools. Scraps, fragments and waste are all collected and treasured, to be utilised at some point in the future and given a new life layered with meaning.

As Magie notes: “Ideas come from everyday observations, travel and occasional life changing encounters: Skara Brae, the Neolithic settlement on Orkney, or my other connected place – the Western isles - ancient, wild and beautiful. Fascinated by observing instinctive nest making and inspired by tradition, associations, and the fundamental obsessive need to make, I develop ideas, working directly by hand with my chosen materials. Requiring little in the way of studio equipment I am free to explore through the recycled and organic materials I have selected and salvaged. Experimental by nature, vintage paper spoons, paper pulp vessels and intriguing tools all nestle together, resulting in very personal collections.”

www.magiehollingworth.co.uk

Spoons © Magie Hollingworth

HELEN ROUND  Garden Blueprints

Helen Round is a fine art textile artist and teacher whose passion for making and creating contemporary textile collections is inspired by the Cornish landscape in which she lives and works.

Making use of materials that others often discard, she reworks fabrics to give them a new lease of life and a unique usability. From the mundane comes the beautiful: vintage hemp sailors sacks are ripped back, laundered and completely restyled to appear in their new form as beautiful bags, cushions and work aprons. Found tablecloths, napkins and other aged linens, once loved, treasured and used for very special occasions, are bought to life once more and transformed into limited edition and one off keepsakes.

Employing age old, hand-dyeing techniques such as indigo, as well as more modern acid dyes, fabrics are reconstructed and take on new colours. Drawings, sketches, photographs and monoprints are digitally worked and combined to create designs transferred to fabric using both traditional and newly developed print techniques such as screen printing and digital print.

This series of work, Garden Blueprints, uses one of the first camera-less photography processes - the cyanotype. Helen employs the seductive blues, inherent to the medium, to transfer imagery onto found vintage fabrics. Painstaking and careful cutting of stencils, inspired by photographs she collects on
her walks, are the impetus for this work. Playing with, and questioning the original context and scale of the objects, she uses light and shadow to create new photographic snapshots of her own perambulations and journeys through life.

Garden Blueprints© Helen Round

MIRJANA SMITH

Mirjana has a passion for second hand objects: their history, origin and use and the familiarity we all have with these everyday pieces. She enjoys the collectiveness of assemblage and the illusion of function; she demonstrates this playful energy through reassembling, combining and juxtaposing objects.

Coming from a childhood where Mirjana had always been surrounded by her grandparents’ precious teapot and ornament collections, she remembers the stories told to her about these curious objects and where they had come from.

This curiosity with an object’s origin has become increasingly predominant in Mirjana’s work. She hopes that the history of each component part of her assemblages will be thought about and questioned by the viewer.

www.mirjanasmith.moonfruit.com
Conference Exhibition: Autonomatic at Making Futures

Date: 26 September 2013 to 27 September 2013
Venue: Mount Edgcumbe House and Country Park, Cornwall.

The Autonomatic Research Group, formed at Falmouth University in 2003, has pioneered craft methodologies in the use of digital technologies. Their aim is to inspire others to adopt a creative and experimental approach to digital tools, asking what if, so what and what next?

The group are researchers, practitioners and educators in ceramics, metals, glass, textiles, wood and mixed media developing specialist digital craft skills and disseminating them through: workshops, collaborative projects, exhibitions, demonstrations, public lectures and a broad range of press coverage. These knowledge exchange activities have aimed to demystify and make digital tools accessible to others, promoting experimentation and the workmanship of risk as the basis of creative development.

The group’s experimental approach to combining digital tools, traditional methods and materials has resulted in innovative digital making processes, digitally interactive craft objects, as well as award-winning digital craft work now in numerous public collections. Research projects highlight the value of craft skill in contemporary digital culture and emerging opportunities in economic and community development. Increasingly their work involves them in inter-disciplinary teams where practitioners are finding new roles and relevance, expanding the boundaries of the established craft sector.

In 2013 Autonomatic were presented with the Craft Skills Spotlight Award in recognition of important work being done in digital skills across the sector.

For Making Futures 2013, Autonomatic presented recent projects including:

**The Digital Story Book**: a digitally crafted smart object records and plays back peoples’ stories told through personal objects. Multiple threads of narrative are woven around a single object, not only communicating the varying perspectives of individuals who have connected with that thing, but creating new stories through hearing new associations. Justin says “this is a digital recording and play back device designed for families, schools and other groups to record stories about significant people or objects associated with physical artefacts”.

*The Digital Story Book was made by Justin Marshall and co-developed with Gavin Wood from Newcastle University as part of the Bespoke Project, funded by the RCUK Digital Economy Programme, www.bespokeproject.org*

**Pinfabber**: a computer numerically-controlled tool created by Tavs Jørgensen as a part of his investigation into a novel moulding concept known as ‘Reconfigurable Pin Tooling’. The concept is based on the creation of a single moulding device capable of producing an infinite variety of shapes. In this particular investigation the Pinfabber is used to create slumped glass bowls where the edge of the form is derived from digitally captured hand gestures. The overall aim of this project is to explore the expanding opportunities for an individual practitioner to create their own customised tools through digital fabrication.

**SuperCrafted**: a two-year research project aimed at exploring and demonstrating innovative internet-based technology applications that facilitate new
relationships between craft practitioners and other stakeholders in the craft value chain, including audiences, customers, makers and suppliers. For example, using video to tell makers’ stories, developing social media expertise or interactive websites are all part of the SuperCrafted agenda.

*SuperCrafted is jointly funded by Falmouth University and Superfast Cornwall. Superfast Cornwall is bringing superfast broadband to Cornwall and the Isles of Scilly. It is a partnership project between BT and Cornwall Development Company (CDC); funded by the EU, Cornwall Council and BT.

**SuperSlippi**: a digitally-networked machine that combines the advantages of digital communication and computer numeric control with a range of expressive ceramic mark-making tools and materials in the creative production of one-off and batch-made ceramic tiles. The SuperSlippi project is a collaboration between Katie Bunnell, researcher and ceramicist with Autonomic, Leach Pottery, St Ives and the Makernow digital fabrication laboratory at Falmouth University. The aim is to design a DIY machine using relatively low cost, accessible technologies that can be adapted by users, enabling them to develop distinctive individual visual qualities.
**3D printed Glass Moulds:** this collaborative research project by Gayle Matthias and Tavs Jorgensen has established an entirely new method of creating glass casting moulds directly from three dimensional CAD files without the need for a physical mould pattern. It combines specialist knowledge in creative glass practice with digital design and fabrication technologies. The method developed uses a three-dimensional printer to create the detailed inner part of a glass mould that is then strengthened by the application of additional refractory layers. The method has numerous advantages over conventional investment glass casting and presents exciting new creative opportunities for glass practitioners as well as significant potential applications beyond the art and craft sector in healthcare that are currently being tested.

These projects were on show alongside a showcase of digital craft work by other members of the group.

Makernow: a digital fabrication laboratory (Fab Lab) based in the Design Centre at Falmouth University. As a resource of people and digital equipment, Makernow aims to inspire and support individuals, communities or businesses that want to use digital tools to achieve their goals. Whether it's a prototype product, a one-off artwork, a device to solve a local problem, or simply something you have always wanted to make.

Autonomatic are part funded by ERDF and ESF 011200NCO5.
Crysalis

Crysalis, an EU project funded under the INTERREG IV A 2 Seas Programme, is a collaboration between:

The University for the Creative Arts, Rochester, leading the way in digital textile development as well as engaging young entrepreneurs
Plymouth College of Art, with its extensive experience in education and crafts
The city of Calais, represented by The International City of Lace and Fashion
TIO3 Textiles Open Innovation Centre, representing the city of Ronse, Belgium, both of which have a rich heritage of textile tradition and a strong focus on public engagement and entrepreneurialism.

Crysalis offers you an opportunity to engage with new technologies, explore traditional craft techniques, to work and exhibit internationally, to connect with textile business in the UK, France and Belgium, and to develop your practice to new levels or in new directions.

www.crysalis-network.eu
www.plymouthart.ac.uk/about/projects-partnerships/crysalis-project-1/
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Making Futures Archive

Making Futures aims to bring together an international cast of practitioners, academics, curators, campaigners, activists, and representatives from associated organisations and agencies, to investigate contemporary craft as a ‘change agent’ within 21st century society – particularly in relation to global environmental and sustainability issues, socially embedded practices and social innovation.

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