

## The Aesthetics of Prosthetic Greaves: Co-Design For Expressing Personal Identity

We consider the role of co-design in establishing the potential of artisanship in the aesthetics of prosthetics. Limited opportunities exist to accessorize and personalise prosthetics for the aesthetic expression of identity. It has been argued that striving for conformity and similarity would not do justice to the experience and ideals of unique persons, and would come at great cost to individuality (Hilhorst, 2004). Furthermore, psychological factors need to be emphasised to a greater extent if the needs of individual prosthesis users are to be appropriately addressed (Schaffalitzky, 2011).

We present a project that explored the design of a prosthetic 'greave', a traditional piece of armor worn on the shin, which also fulfilled a decorative purpose (Fortenberry, 1991). The project considered an alternative to existing widely available foam-covers that give prosthesis a limb-shape. Thus, transforming the current aesthetics which do not respond adequately to the needs of the wearers (Sansoni, 2016). A bespoke wood and tartan greave was designed as an initial exploration of the aesthetic value of the material to personal identity. From this we established the need for a design process to support artisanship. A design process based upon artefacts that embody the shape of the lower limb, providing a model to craft personalised greaves. The project also explored alternative approaches to templates that support different types of artisan in creating bespoke greaves through co-design with amputees. For a woodworker artisan, a negative shape template was required, as well as cutting guides, to enable their process of sculpting. For a multi-material model artisan a positive shape template was required. This was to enable their cold-casting process to create a mould, and subsequently apply different casting techniques. Finally, for a willow weaver artisan a layered template was required, to guide and position the strands of willow to take shape. The project designed a connector that would allow mounting a decorative greave from different crafts onto a universal section of tube above the prosthesis ankle.

Overall, the process we developed enabled artisans and amputees to focus on co-designing elements of the greave in a workshop setting. Furthermore, the workshop provided a platform for the three artisan-amputee couples to create a shared understanding of one another's preferences, aspirations, skills and needs. These insights were used to co-design elements of the greave bespoke to the amputee, and also led to changes in the designs that artisans proposed. The co-design environment provided a supportive and safe space for sharing experiences related to amputation, identity and craft. It created mutual respect, with confidence for the amputee that the greave would reflect their identity, and for the artisan that their work would be meaningful for the wearer.

We conclude by summarising the role of design in a new paradigm for the 'aesthetics of prosthetics'. We identify in greave making the need for co-design between amputees and artisans for the true expression of identity. This emerges through a collaborative process, pushing the boundaries beyond the traditionally understood aesthetics of materials from which prosthetic greaves can be made.