

# Re-Mantle and Make: the role of maker spaces in empowering a new wave of circular thinking for textile designers.

## ABSTRACT

*This paper provides a preview of a feasibility study exploring how maker spaces might be developed in the future to support circular innovation, within the context of textiles.*

## KEY WORDS

Design; Textiles; Sustainability; Maker Spaces; Circular Innovation; Open Innovation.

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## INTRODUCTION

We live in a ‘throwaway and replace’ culture, our growing population and demand for new products has placed huge pressures on our planet’s resources. Our economy is locked into a system in which everything from production to economics and the way people behave favours a linear model of production and consumption, where resources pass through from sourcing to disposal in a ‘take-make-use-dispose’ construct. Climate instability, volatile commodity prices, ocean dead zones, vanishing forests, stalling economic growth, expanding food insecurity and resource conflicts are all part of the resource to waste linear economics (Grayson, 2008). Any of these are surely justifiable reasons to explore a new pattern. The Circular Economy is a new construct being positioned as a solution to addressing complex issues around material waste and linear models of resource use. This paper explores this concept within the context of fashion and textile design in the UK, and does so from the textile designer’s perspective to explore how this might be achieved. The circular economy offers a new outlook for design practice and designers will need to learn how to adopt a more pro-active, systems-based approach that truly ‘closes the loop’ (Goldsworthy, 2014).

This paper provides a preview of a six-month feasibility study titled ‘*Re-Mantle and Make*’ led by the Glasgow School of Art. This research is funded by a larger project titled ‘Future Makespaces in Redistributed Manufacturing’, a two-year research project funded by the Engineering and Physical Sciences Research Council (EPSRC). The larger project is led by Baurley, Tooze, Stewart and Hunter (2014-16) from the Royal College of Art, London, and explores the role of maker spaces in redistributed manufacturing (RdM). Our study will be undertaken in partnership with Kalopsia Collective, a micro-manufacturing unit based in Edinburgh, Scotland. Together we will conduct practice-led research to produce a small collection of fashion accessories within a circular economy model. In addition to the collection we will prototype a potential future maker space for circular textile design to scope what tools, techniques, equipment and materials might be required. Currently there are limited practical examples and it is unknown if it is truly possible to implement close loop innovation within the textile sector and on what scale. Our study aims to explore the barriers and opportunities to this closed loop scenario.

Through the research we aim to investigate how we can use maker spaces to cultivate circular thinking for textile designers and provide them with resources to develop circular design knowledge and practice. Re-Mantle and Make was defined as a term by the authors as a provocation to challenge our perceived perception of a finished artifact. This is also a model aiming to demonstrate how future maker spaces could be developed to experiment with strategies for material recovery, repair and reuse on a local scale, providing educational hubs for designers to experiment and learn. This will be achieved through consultation and partnership with textile manufacturers, engagement with higher-education institutions, small to medium enterprises and policy makers to investigate the potential for sustainable, circular design futures in the textile industry.

The following sections begin by outlining some of the challenges concerning textiles, fashion and sustainability before contemplating the ways in which the textile designers' role might change in the future. It goes on to describe the scope and design of our study. Finally, recommendations will be made for future enquiry beyond the research.

## **TEXTILES, FASHION AND SUSTAINABILITY**

Throughout the wider fashion system changes are emerging in response to a call for a more circular economy and responsible resource use. Within the UK alone we dispose of approximately 10,000 garments every ten minutes (Kerr & Foster, 2011), a level of waste that is unsustainable. Conventional methods of dealing with these issues have been cited as being symptoms based and they have not addressed continuous and rising consumption levels.

Value needs to be placed on consumer use, attachment and stronger 'user-product' and 'user-manufacturer' relationships (Chapman, 2006; Niinimäki & Hassi, 2011). Due to the low cost of high street fashion combined with a lack of service offers post consumption, it has become more cost effective to dispose and replace a garment once it has served its purpose. The whole economic system in the industrialised world is based on a products fast replacement and planned obsolescence (Jackson, 2011), and the field of fashion and textiles is no exception. The concept of planned obsolescence prompts the shortened life cycle of products to ensure a market need for future products (Walker, 2011). Change in fashion is stimulated leading to product designs that reflect short life cycles and disposal, which in turn stimulates change. There is further disparity through disconnection between the designer, the process of manufacturing, and the consumer who is often left unsatisfied long term, which encourages the rapid replacement of products.

There is limited literature relating to the role of the specifics of ethics within the fashion or textile industry from a designers perspective, for example acknowledging their responsibility within the supply chain and the lifecycle of a garment. Traditionally fashion designers do not write, or theories; they cut and make (Thomas, 2001:4). Whilst interrogating the modus operandi of the fashion industry there could also be an interrogation of sustainability and the circular economy, and what it could mean if universally adopted by design practitioners and by the fashion or textile industry in general. While the work of Black (2012), Fletcher (2008), Tham & Jones (2008) and Lee (2006) have expanded upon this territory within a fashion context. Fletcher (2010) a founding scholar of the slow fashion movement calls for a re-examination of the entire design, production and distribution process. Prior to these publications, fashion design practitioners and the industry have had to adapt and co-opt sustainability arguments and theories from product design and architecture design writers, such as Chapman (2006) and Manzini (2005). While McDonough & Braungart (2009) expand upon sustainable design if "*we understand that design leads to the manifestation of human intention and if what we make with our hands is to be sacred and honor the earth that gives us life, then the things we make must not only rise from the ground but return it, soil, to soil, water to water, so everything is received from the earth can be freely given back without causing harm to any living system. This is ecology. This is good design. It is of this we must now speak*" (Braungart & McDonough, 2009).

## **CIRCULAR THINKING FOR TEXTILE DESIGNERS**

Within the UK textile sector there is increasing awareness of the requirement for new textile initiatives to be linked with the concept of the circular economy (Goldsworthy and Earley, 2016), but there is a lack of innovation tools and practical knowledge and accessible evidence available to provide support. Within the UK, the RSA's Great Recovery programme has focused on the role of the design community in delivering a more circular economy. They highlight the importance of acknowledging that it is not the designer's responsibility alone to change whole supply chains. Businesses must begin to develop design briefs around new business models that take account of provenance, longevity, impacts and end of life (RSA, 2013) therefore partnerships will be crucial. Moving forward, knowledge exchange will be essential to support joined-up thinking to connect all stakeholders involved in the lifecycle of textile material journeys and new supply chain models. Most recently, the Ellen MacArthur Foundation has partnered with world leading design agency IDEO (Jan, 2016) to explore how design might play a strategic role in supporting circular innovation to support systemic change.

This research aims to learn from this ongoing work and expand upon it further to identify what strategies and innovation tools are required to cultivate ‘Circular Textile Thinking’. Here, for the purpose of this paper, the term ‘designer’ is applied to define fashion and or textile designers. However, it is worth acknowledging that traditional design disciplines are no longer a clear-cut categorisation of design professionals, and that new hybrid roles are emerging, particularly within the area of maker spaces (Thomas, 2015). Within these physical hubs, technology, skills, ideology and education can come together to explore and experiment with new ideas and possible futures. The propagation of open workshops that are supporting small producers to access skills and equipment to design and make, termed the ‘maker space movement’, has been coined ‘the next industrial revolution’ by Anderson (2011). Where Designers are learning that co-creation, rather than individual authorship, is becoming a more effective way to understand and meet social needs and new tools and platforms are becoming more effective than finished artifacts (Thackara, 2013). This is part of a shift towards transmaterialisation, where service design concepts are evolving in parallel to product design development to construct new scenarios of use, reuse, design and redesign. In a genuinely circular fashion and textile system, design and use would comprise a single whole. What actually happens in the lives of people who use garments would provide inputs for fashion and textile design and production (Fletcher, 2015). Therefore, an important part of cultivating circular textile thinking must involve fostering skills and practices that are conducive to promoting a satisfying use of garments. The designer’s role will move beyond just consideration of functionality and aesthetic sensibility. Designers are finding new socially aligned roles, envisioning new ways to produce goods, services, and even policy (Smith & Mortati, 2016). To work this way, designers need to acquire new skills, knowledge and experience to enable them to act as social innovators and become agents of change.

## **POSITIONING RE-MANTLE AND MAKE**

Re-Mantle and Make is an exploratory model designed to pilot a new approach for trialing a circular fashion system on a local scale contextualised within Scotland’s textile sector. It is important to acknowledge that this feasibility study is currently within the early stages and in order to flourish partnerships, prototypes and pilots will be integral. The following sections outline the timeline and include a detailed overview of the four key stages of; sourcing; prototyping; piloting and evaluation.

Our approach is to pilot a range of different approaches for repurposing textile waste within a future maker space. However, to align to the principals of the circular economy we will endeavor to preserve and enhance natural capital, optimise the use of resources and foster system effectiveness by designing out wastefulness. This will require collaboration and a range of manufacturers have generously agreed to provide access to their textile waste. Three designers have been commissioned to produce circular archetypes in response to a design challenge and the archetypes will be presented and the textile techniques will be demonstrate within design jam events to orchestrate further ideas for circular innovation. A panel of specialists across the supply chain will review the concepts and be invited to make recommendations on feasibility and the most viable concepts will be produced within the Kalopsia micro-manufacturing unit. A short film will be produced to document each stage and this will be showcased alongside a Pop Up exhibition.

### **Stage 1: Sourcing – textile waste on a local scale**

The first stage of the study has been undertaken through a consultation with key stakeholders situated within the Scottish textile sector and identified a growing awareness and responsiveness to circular innovation. This could be credited to the work undertaken by Zero Waste Scotland who provided a range of training programs and master classes (Zero Waste Scotland, 2014-16) tailored to demonstrate a wealth of different strategies such as design for modularity, collaborative consumption, zero waste design and pattern cutting and material efficiency. The Scottish Textile and Leather Association (STLA) that provides support for approximately ninety-five businesses of varying scale were also consulted. They made recommendations of manufacturers who might be responsive in donating textile waste and participating within the study.

The Scottish Leather Group are providing leather waste generating during manufacturing processes, MYB Textiles are providing offcuts of traditional Scottish lace and Begg and Company are providing remnants of traditional Scottish cashmere.

## **Stage 2: Prototyping – circular archetypes**

Prior to introducing the design brief for prototyping it is important to acknowledge that context is everything. Earley and Goldsworthy (2015) highlight that we need to be very clear about which segment of the fashion industry we are designing for and also which specific garment archetype. They continue by stating that while strategies may be more relevant for the mass market and high street fashion (short-life), others will be focused on more niche, SME brands and even reach beyond industry to the user (long-life) (Earley and Goldsworthy, *ibid*). The Re-Mantle and Make model aims to prototype a long-life, circular archetype that has the potential to be transformed within a maker space to enable the archetype to evolve through different design loops. The market place may be positioned somewhere in between the high street and luxury retail.

A design brief was written (see below) which provides an overview of a circular fashion archetype. Three textile designers have been commissioned to conduct research and development to produce a concept, demonstrated through a prototype and presented as an open source package for others to replicate or modify. The maker space facilities will be available to support sampling and production and at least one of the materials need to be included.

### **The Design Brief: Circular Collar**

*'Fashion clothes capture a moment in time and are as quickly forgotten. But what if that moment was not one but many moments... a process of transformation?'* (Earley & Fletcher, 2003).

**Design Challenge:** To prototype a circular design concept for a collar that can be worn with existing garments. This project aims to shift our perception of fashion archetypes and the collar needs to be open source, the original conception of a collar can be hacked or modified to produce a hybrid concept. This must apply a modular design approach and consider how to sustain a long-life. The collar will be initially produced within a maker space and this can be used to provide a range of different services to support transformation through workshops or a menu of tailored options.

**Facilities:** 3-D Printer, Digital Textile Printer, Digital Embroidery Machine, hand stitching and embroidery, screen printing

**Materials:** leather, lace and cashmere

**Inspiration:** The following open source fashion archetypes are available to reference; the Uniform Project (ref), Smock Shop (ref), SHOW studios Design Download project (2009 - ongoing) provides downloadable fashion garment patterns from previous catwalk collectives from several high profile fashion designers (McQueen, Galliano, Pugh, Yamamoto, Watanabe, Price and Margiela, 2009). Each of these projects utilise social media to adopt an open source approach for distributing patterns and downloadable templates.

Three textile designers have been commissioned; Shirley McLauchlan; Heather Martin; and Aimee Kent. They have been invited to design a circular collar with reference to the design brief, documenting the process for others to replicate or reference. They have also been encouraged to challenge themselves as designers to re-think new ways of designing, with value associated to consumer use, attachment and stronger 'user-product' and 'user-manufacturer' relationships. The emphasis on product care and maintenance will become more important, and the cultivation of a more considerate approach to consumption in which the user is provided with an opportunity to learn new skills, knowledge, and are motivated to extend the life or use of their clothing. This research endeavors to learn more about the drivers for cultivating resourcefulness and cherishability within fashion and textiles, but experimentation will be required to identify creative methods through which they may be implemented.

## **Stage 3: Piloting – assembling a circular maker space for textiles**

This research will pilot Re-Mantle and Make within a design jam, an interactive event orchestrated to invite a selected group of stakeholders to work collectively to address a design challenge or problem over an intensive period of time. Within this instance they will take place over one day and the study will host an event in both a rural and urban context. While we focus on the role of the textile designer within this paper, it is worth acknowledging that the design jams will support collaboration and input from additional stakeholders across the supply chain from the

manufacturers providing the textile waste, to other local businesses, design students, policy makers and citizens.

The commissioned designers will be invited to share their prototypes and to demonstrate their making processes and reflect on their personal journeys. Within these events, we will explore additional design ideas for circular collars through ideation and prototyping activities. An experience prototype of a future maker space will also be curated to enable participants to experience the model in situ and to provide them with an opportunity to offer feedback and make recommendations.

The project partner Kalopsia will play a pivotal role in servicing the production of emerging design concepts.

#### **Stage 4: Evaluation - lifecycle analysis**

The final stages of the research will evaluate the prototypes and 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 design new briefs for the designer working towards a more connected material economy.

Although in general terms consumer products have come to be considered disposable, it is argued that through 'good' design there is an opportunity to establish an emotional bond or attachment between the user and the product but this will require associated practices of care in order to help sustain and extend product lifetimes (Chapman, 2005; Walker, 2006; Schifferstein & Zwartkruis-Pelgrim, 2008).

The manufacturers will be invited to an internal seminar towards the final stages of the study that will share the learning outcomes and include a presentation of future scenarios.

### **CLOSING REFLECTIONS**

So far, the findings have identified that there is a large cohort of highly innovative independent textile designers based in Scotland who are growing frustrated with the lack of support available to enable them to design and manufacture on a local scale. Some of the challenges include: being unable to access innovative new materials due to a minimum order requirement; onshore manufacture is too expensive and unequipped to support small orders; and finally business support programs within public sector agencies are tailored to high growth businesses within the textile sector.

This study provides an opportunity for textile designers and students to experience the concept of the circular economy through participating within a practical intervention. Discussion will be facilitated to challenge existing perceptions and prompt conversation around circular innovation to re-think design, production and use. The circular economy can provide a new lens to preview how we as designers would like to experience fashion. Research and development is beginning to help design and the textile industry to understand the value, viability, scalability and role of circular approaches in the future (DeCastro, 2014). By engaging education institutions in the research, we will develop resources for circular design thinking and explore the role maker spaces can play in future learning experiences for students around sustainability in design and circular economy.

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