

FUTURESCAN 4: VALUING PRACTICE

The *Service Shirt*: ultra-slow fashion textile design research for industry

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Abstract

This paper presents the context for the practice work, the *Service Shirt*, exhibited at the Association of Fashion and Textile Courses (FTC) 2019 conference at the University of Bolton. The *Service Shirt* was a concept created as part of the Mistra Future Fashion (MFF) research consortium, phase 2 (2015–2019), based in Sweden. The *Service Shirt* was produced through a Design Researchers in Residence process which took place at a Swedish fashion brand between March 2017 and March 2018. By reflecting on previous practice work and how it contributed to the development of this new work, this paper discusses a textile design practice concept developed to create extreme extended-lifecycles for circular fashion textiles. In the *Service Shirt* concept a brand provides many of the material state changes, enabling users to experience a variety of different ownership, rental and updating services, across a 50-year period. The paper explores how the author's longitudinal design practice has evolved an approach to *ultra-longevity* - or super-slow design - by identifying creative and logistical opportunities within the framework of materials, models and mindsets, which was an outcome of phase 1 MFF research. When combining this framework with the idea of lifecycle speed, as well as circular business model innovation, the *Service Shirt* shows that textile design practice research can make useful contributions to our understanding of future sustainable and circular design practices.

Keywords: circular fashion textile design; practice research; slow fashion textiles; design for longevity; textile design research for industry

1. Introduction

Textile designers and makers have a long tradition for being resourceful with materials – think of patchwork and boro-boro approaches - but the recent emergence of the circular economy design discourse (Charter 2018) and the highlighting of opportunities for textiles (Ellen McArthur Foundation 2017) has enabled a differentiation between *linear* and *circular* practice to arise (Earley and Goldsworthy 2019). This considers the end-of-life of the material or product first, and makes all decisions based on this, around its whole lifecycle (production/use/disposal) (Fletcher 2008). This is derived from Cradle-to-Cradle thinking, as popularised by Braungart and McDonough in 2002 and the model has recently built in to a myriad of academic and industry initiatives. Yet there remains a distinct lack of textile design exploration through academic practice research within an applied industry context. In addition to the circular design discourse another is emerging around lifecycle speeds, both longevity/extended use (Cooper 2010) as well as new ways to design for fast cycles (Haffmans et al. 2018; Goldsworthy et al. 2018).

2. The Mistra Future Fashion (MFF) Research Programme

This research was produced within the context of the second phase of a large research programme. Phase 1 began in 2011 and over four years the researcher and her team pursued the question, 'How

can sustainable design processes be created and embedded within companies and gain the participation of consumers?’ (Earley et al. 2016: 17). During this period research was conducted with designers at H&M and with several other companies. At the end of this phase, new opportunities for sustainable design were identified, via the creation of the *Materials, Models and Mindsets* framework (ibid: pp150-151) (figure 1). The project report highlighted the need to test circular design ideas, through working with smaller companies, where an agile infrastructure could allow for real prototyping and new products to come to market.

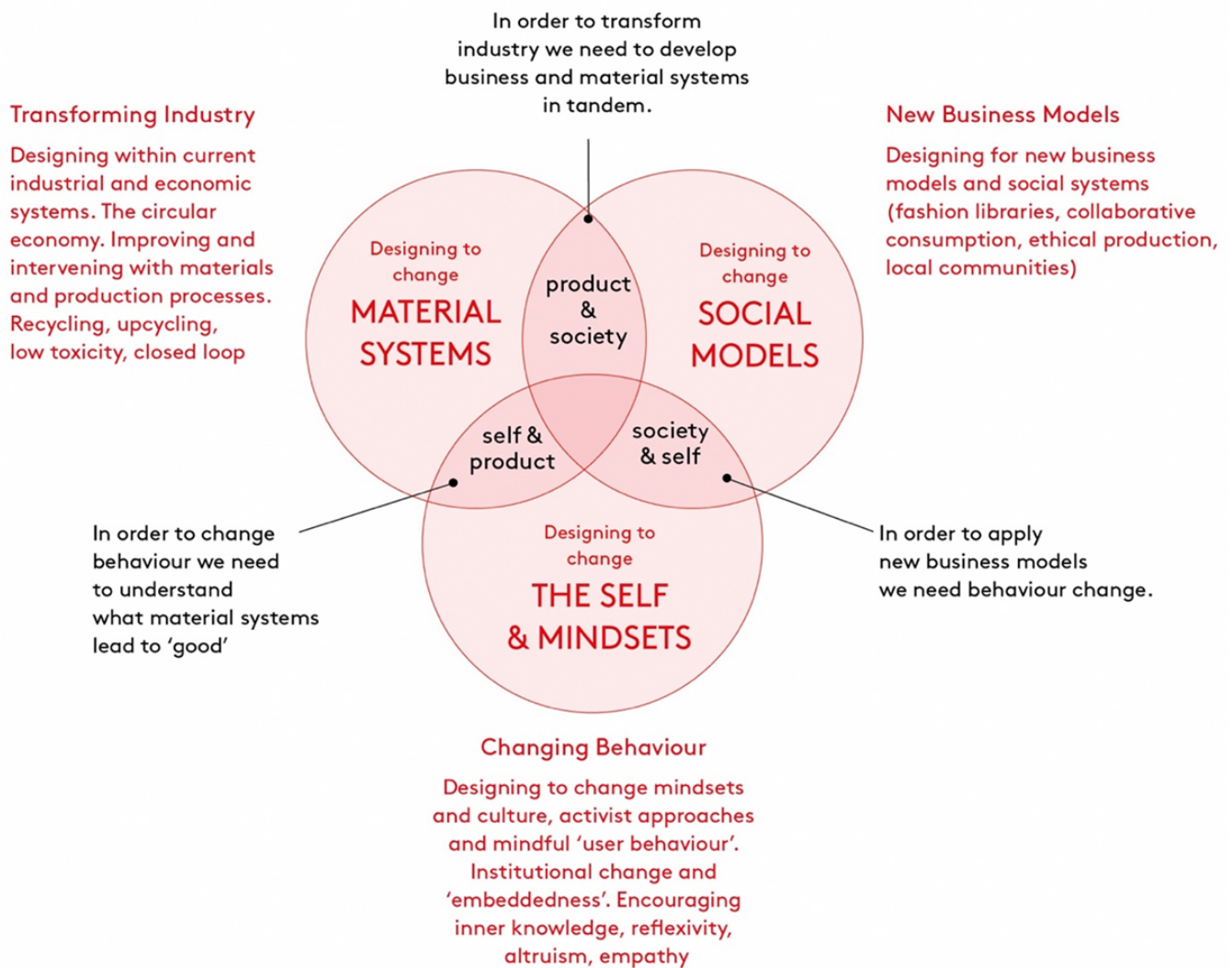


Figure 1: The *Materials, Models, Mindsets* framework from phase 1 Mistra Future Fashion research by Earley, Goldsworthy and Vuletich 2015 (in Earley et al. 2016:1).

In MFF phase 2 (2015-2019) the researcher and the team at Centre for Circular Design worked with Filippa K, a small or medium-sized enterprise (SME) fashion brand based in Stockholm. In this phase the team also worked more closely with the scientists in the programme, in parallel to the designers and staff at the brand. The length of the programme (eight years in total) allowed unique methods to mature between inter-disciplinary collaborators.

3. Context

This research took place through three different but related activities: workshops with professional designers, a design researchers in residence programme at a Swedish fashion brand, and through reflective studio practice.

3.1 International Professional Designers

Designing Fast and Slow workshops took place in 2015 with over 50 designers from three countries, with results published around new design concepts (Earley 2017) and workshop tools and methods (Earley and Goldsworthy 2017).

3.2 Circular Design Speeds: the residency at Filippa K & studio practice

For the Design Researchers in Residence programme at Filippa K (2017-2018), the researcher devised workshops within the boundaries of the business model, to support their innovation process. Filippa K's final outcome was the next *Frontrunners* garments – the latest additions to their ongoing sustainable fashion collections (<https://www.filippa-k.com/se/man/frontrunners>). In parallel to this process, the academic researchers developed their own prototypes back in London. In addition to textile design research processes, this work also included user research, in the home of a 'typical' Filippa K customer.

The simplest way to differentiate between the two sets of work was to frame the garment concepts with a 'now', 'near' or 'far' label. The Filippa K *Frontrunners* 'Eternal Trench' coat was the 'now' product; their 'Throwaway Dress', made from compostable materials, was a 'near' product. (This dress collection was a showcase range – not for sale - created to probe the idea of garments we use rarely or quickly being made from materials that can be put safely in to the food or garden composter). The *Eternal Trench* went on sale in November 2018.

3.3 Reflective Process

The researcher had been working on design for extended use contexts for polyester shirts for many years. The opportunity arose to look back over previous prototypes and extract insights which might be useful for the next phase. The framework of *Materials, Models and Mindsets* proved to be the clearest way to retrospectively categorise and review the work. In fact, the process showed that the development of this framework during phase 1 of the project had been informed by the practice research that had been conducted at the same time. The review provided the opportunity to more clearly express how the framework could be useful for generating new directions for sustainable fashion and textile design practice.

4. The Top 100 Project

The Top 100 Project (www.upcyclingtextiles.net) (1999-2019) began more than 20 years ago as a way to cheaply and quickly make clothes using garments from the huge range of second-hand markets that surrounded the author's Brick Lane studio in London. Over time the one-off pieces evolved into small collections that explored different aspects of sustainable design theory, which in time contributed new insights through practice. Research funding provided opportunities to build the ideas more formally, developing a palette of collaborative approaches (Earley 2011). The project as a whole demonstrates the value of researchers engaging with sustainability issues through forms of *longitudinal practice research* (Walker 2017).

The Top 100 work began with simple material transformations performed through over-printing old polyester shirts using heat transfer techniques. It developed by exploring different technologies that facilitated other forms of transformation. Later the work began to consider what the remanufactured shirts might mean in terms of agency; the researcher enabling others to make overprinted shirts for themselves. The *Mindsets* group of shirts (4.3) takes this agency further and suggests how the remaking of shirts can bring us closer to influencing and understanding new user behaviours as well

as working more collaboratively and in interdisciplinary ways towards a circular economy for fashion and textiles.

4.1 Exploring Material Transformations

The *Ever & Again* (2007) shirt (figure 2, left), was an outcome from an Arts and Humanities Research Council (AHRC) Project, called 'Worn Again: Rethinking Recycled Textiles'. The project brought together 12 textile designers to explore theory and practice around how we could 'upcycle' textiles – adding value through design. This shirt experimented with sonic cutting and slitting to reshape it, and fused digital dye sublimation printing with a heat photogram printing technique (which uses real objects as stencils).



Figure 2: From left to right - *Ever & Again* (Earley 2007), *Twice Upcycled* (Earley and Goldsworthy 2009), *Jabot Shirt* (Earley and Geesin 2010).

The *Twice Upcycled* (2009) shirt (figure 2, centre), was co-created with Kate Goldsworthy for the AHRC project exhibition, *Ever & Again: Experimental Recycled Textiles* (Earley 2007). The idea was to add a third use phase to the recycled shirt product. The notion of combining shirts to create a quilted jacket had come about through previous workshops, but a technical approach had not been identified. Kate's PhD – funded through the AHRC project – had begun to explore laser etching and welding polyester materials. The *Twice Upcycled* work used a shirt from an earlier Top 100 collection and took it apart, before cutting and printing a fleece lining to fit it. Kate used a program of tiny stitch-like lines to weld the two layers together, creating a quilted effect. The second shirt used a Top 100 thistle print garment on to which a lace pattern was laser-etched (pictured).

Jabot Shirt (2010) (figure 2, right) was co-created with Dr. Frances Geesin and was funded by the Science Museum's Trash Fashion: Designing Out Waste exhibition. *Jabot Shirt* consciously tested a combination of several of the researcher's TEN strategies (<http://www.tedresearch.net/teds-ten/>): minimising waste, reduction of resource use (material, water, energy and chemicals), emotional durability and multifunctionality. Frances's metal lace, detachable pieces on the neck and cuffs tested the idea that one industrial waste stream could become the raw material for another sector of the industry – a form of industrial symbiosis – where cheap lace can become more precious by being transformed by the artist's silver electroplating technique into jewellery.

4.2 Exploring Social Models

The *Fast-Refashioned Shirt* (2013) (figure 3, left) was created for a collaborative conference workshop session for the 10th EAD conference (Gothenburg, April 2013). The concept combined previous work by the researcher – the *Black Hack* (2012) – with the *Old is the New Black* (2010) work by Jen Ballie and Otto von Busch in which they re-worked old clothes using black paint. The aim of the workshop was to push the boundaries of textile design practice to identify how it can be used as a tool for citizen engagement for both the individual creating for themselves, and the retailer who wishes to creatively engage with their products over a longer time frame (von Busch 2014: 379–401). In the run up to the event the researcher created the *Fast-Refashioned Shirt* using a domestic iron and some folded/cut black transfer paper. With a tripod set up over the table, the researcher made a film to capture the process and serve as a demonstration tool at the workshop.

By stitching second hand garments together – an old H&M sundress with a home-made second-hand shirt found in Shanghai – the *Shanghai Shirt* (2014) (figure 3, centre) reflected upon the need for us to consider the disconnect that exists between people in the supply chain. The H&M design staff who the researcher worked with in Stockholm were very much removed from the decisions made by staff in the Production Offices in China. Sustainability concerns often exist within large fashion companies but the organisational infrastructure may prevent change taking place at the speed that is required. For this piece the researcher used over-printing and stitching to create a quilted jacket full of symbolism and messages for a young Swedish consumer, inspired by the traditional Chinese Hundred Family Jacket. The design of dragons, horses and flowers was hand drawn and painted, fusing visual research from Dong Hua Museum in Shanghai, the Ming Dynasty artefacts at the British Museum in London, and folk textiles from museums in Stockholm.



Figure 3: From left to right – *Fast-Refashioned Shirt* (Earley 2013); *Shanghai Shirt II* (Earley and Spurgin 2015); *School Shirts* (Earley 2015).

Textile designer, Isabel Dodd stitched into the first print design to bind the monomaterial fabric layers together, making the sculptural garment warmer, more durable and adding more decorative surface detailing inside and out. The intention was to turn the simple, inexpensive yellow Shanghai shirt into something of much higher value, and potentially imbue it with greater meaning, significance and emotional durability for the owner. The second paper print went onto a subsequent item - a crepe jacket - and produced a paler, more faded effect. Textile designer, Karen Spurgin then hand stitched

into the jacket, using naturally dyed threads. She also stitched into the hand painted papers, creating artworks from the 'waste' created in the print process.

The School Shirts (2015) (figure 3, right) resulted from a small project in a primary school - St Mary's School in Chiswick - conducted in support of Fashion Revolution Day (FRD), with the intention of creating educational resources for school children to learn about the supply chain behind their school uniforms. Beginning with a carefully prepared school assembly on the actual day, the project consisted of a week-long residency with the help of another mum, and a series of class projects run by the teachers. Over the summer term they asked: Where was my uniform made? Who made my uniform? What is it made from? How can I make my own clothes?

4.3 Exploring Circular Mindsets

ReDressing Activism (2014) (figure 4, left): Inspired by the activist organisations and culture, as well as the colours, food and architecture from field research in Hong Kong during January 2014, this shirt was created to highlight the global relationship between waste, the actions of the designer, the industry, and food production. The shirt aimed to highlight the quantity of garments that are being thrown out each year in a context of a limited second-hand clothing market. It was co-created by the researcher, facilitating eight industry designers in Hong Kong in January 2014 – at the ReDress Miele challenge workshop, an educational project to encourage young Hong Kong designers to use recycled materials to their practices. It used traditional local food stuff, a domestic iron, a local second-hand garment and transfer paper to create an upcycled monomaterial 'designer' garment.



Figure 4: From left to right - *ReDressing Activism* (Earley 2014); *Shavasana Shirt* (Earley 2015); *Silence Shirt, Long Sleeves* (Earley 2016).

Shavasana Shirts (2015) (figure 4, centre): In order to drive the profound cultural and industrial change that is needed to achieve a more sustainable future, designers must be many things. Aside from creating less impactful materials, products and processes, they must design new systems and services to enable the way that we meet our needs to be lighter and brighter. Mindset and habit changes are needed - meditation and yoga help with making this transformation. In March 2015 the Well Gallery at LCC was transformed into a yoga studio for a one-hour workshop. PhD researcher, Bridget Harvey, MA student, Trish Hegarty and the researcher moved through yoga sequences -

directed by PhD researcher Clara Vuletich on Skype from Australia - using transfer inks to mark-make on wallpaper yoga mats. The papers were then used to overprint and upcycle a set of shirts, creating mindful patterns on neglected garments. Clara's PhD project – *Transitional Textiles* - influenced the researcher's curiosity for how different mental attitudes could positively connect to sustainable design practice and consumption habits (Vuletich 2015).

Silence Shirts (2016) (figure 4, right) explored the contribution silent meditation and portraiture can make in developing relationships between inter-disciplinary partners in the design science EU project, <https://www.trash2cashproject.eu/>. Building on previous collaborations that explore the multiple human aspects of textiles for the circular economy, this collection focused on the relationships between material scientists and industry designers. Trash-2-Cash was a project with 18 partners from 10 countries. This experiment sought to create a baseline experience from which the first co-created piece could be made between researchers where language and expertise levels can be barriers to successful outcomes. The researcher wrote on the project website,

This has been the most difficult of all the shirts in my Top 100 project. The images were created through a silent meditation and portrait session between scientists and designers in the Trash-2-Cash project. I wanted to facilitate the making of a co-created garment for the project, to bring people from different backgrounds, cultures and disciplines together in to one focused task. I wanted to find a common ground for us all – and to give us a chance to connect in a less formal way. After we had made the portraits I found it difficult to make a unified design – the drawing styles differed so much. But the end result is a shirt that represents the effort required to make collaborative projects work – especially between designers and scientists – and I got the print design to work by extending the lines between portraits and literally linking people up.

<http://www.upcyclingtextiles.net/#/silence-shirts-2017/>

5. The Service Shirt (2018)

In 2010, Kate Fletcher suggested that we look to systems design to enable slow fashion (Fletcher 2010); adding to a broad body of theoretical works including the idea of clothing rhythms, which she had explored with Matilda Tham in 2004 (Tham and Fletcher 2004). In *Circular Speeds* (Goldsworthy et al. 2018) the researcher and her co-authors expanded on these ideas with a study around fast and slow fashion textile design in practice. They took examples of their own work, as well as current industry examples, to see how designers are applying this thinking to new sustainable fashion contexts. By reflecting on the practice outcomes produced in MFF phase 1, the article questions the idea of *circular speeds* for textile design and analyses concepts which relate to *super-slow* (as well as *fast-forward* approaches).

The *Service Shirt* project consciously synthesised the thinking that created the above shirts – reflecting on the portfolio of concepts dating from 2007 - and sought to dig more deeply into the materials, models and mindsets framework. *Service Shirt* is the final outcome of the practice research conducted by the researcher in phase 2 of the MFF work, created in parallel to delivering the Design Researchers in Residence Programme at Filippa K. It demonstrated design opportunities in combining the aspect of lifecycle speeds (Goldsworthy et al. 2016) and circular business model innovation (Accenture 2014), to inform and guide future circular design practice.

5.1 Finding an Appropriate Slow Speed

The research began in 2015 with a line of enquiry concerned with making a garment to suit the 200-year lifespan of polyester materials. In workshops with industry designers, the researcher and the team explored a range of extreme speeds – textile garments that last from one day to 200 years – and discovered that whilst both speeds can be challenging, it was the ultra-slow, super long-life that was most problematic (Earley 2017). Designers could imagine compostable and bio-degradable products and fast-use contexts for them, but they really struggled to see how a business model could adapt to a 200-year context. It was beyond their lifetimes – and perhaps the business too. Even though they recognised the possibility and durability of using polyester material in this ‘slow’ way, there was no current business model or user behaviour that could demonstrate this kind of longevity. In the end, after scribbling on the workshop tools – the speeding tickets – a number of concepts were designed to work within a 50-year period. This was a time-frame that participants felt able to speculate for.

5.2 Concept and prototype design and development stages

In order for the *Service Shirt* to last 50 years it has to change hands many times; moving between moments of single use and ownership to shared use contexts with the brand owning and releasing the product again. A process of overprinting the shirt would give it new finishes within the first 19 years. Later the shirt would become the lining for a jacket and then finally jewellery, before going into chemical recycling to reclaim the fibres.

In order to understand more about the potential for extending use with traditional consumers, the researcher spent time with a family to gain insights into how a shirt might be used and reused within the family and friendship circle. The family was selected from the author’s network based on the profile of the mother and her lifestyle fitting with the brand’s mid- to high- market position. Figure 5 shows the users at their home; spending some informal time with them helped the design decision-making process for the researcher and generated ideas for how the overprinting services might work with a younger generation.

Figure 6, shows one of the many diagrams created by the researcher, which visualises how the printed samples being developed could be applied to the evolving product concept. These diagrams were essential in communicating how the concept worked to the broad range of stakeholders in the project – from the staff at the brand, to the lifecycle assessment experts. The ‘ikat’ print sample series (on the right) show the build-up of tone-on-tone overprinting.

Figure 7 shows the researcher printing the *Service Shirts* in sequence - on a heat transfer press at Central Saint Martins in London – with the lightest print design first, with the darker print on top (on the right). Figure 8 shows the finished shirts worn by the model, lined up from left to right, from year 1 right through to the jacket (year 19), and the jewellery (year 34).



Figure 5: Left – The wardrobes of user 1 and sharing clothes with her daughter (right), user 2.



Figure 6: Left – planning out the shirt overprint and remanufacturing sequence to communicate to the partners in the research consortium. Right – the ‘Ikat’ print sample series showing the build-up of tone-on-tone.



Figure 7: Left and centre – The researcher printing the first shirt with the digital dye sublimation design. Right – the second overprint shirt, on top of the first overprint and plain shirts.



Figure 8: The *Service Shirt*, from left to right, years 1, 8, 11, 17, 19 (the jacket) and 34 (the jewellery). Photographs by Jelly Luise (2018).

5.3 The lifecycle from first user during year 1 to fibre recycling at year 50

Figure 9 (left) shows how the shirt moves around a remanufacture lifecycle, proposing moments of both single and shared use. After the shirt becomes the lining for a jacket it gets turned in to jewellery and finally gets sent off for chemical recycling. Figure 9 (right) illustrates the different forms of remanufacturing the *Service Shirt* goes through; from cut and sew, to transfer printing, to laser cutting and hand sewing. The points below explain the stages in more detail.

- **Original Product (Years 1 – 7):** The original shirt is made from recycled polyester and uses a zero-waste pattern. It is bought from the brand by user one (1) who keeps it for five years before giving it to her daughter (a) who uses it for two to three years.
- **Remanufacture, overprint 1 (Year 8):** User (a) gets the shirt overprinted at the brand's flagship store, which has a redesign salon area where users can be involved in the process of getting the shirt updated. The redesign salon area would need a heat transfer press, rolls of pre-printed papers or a digital printer.
User (a) gifts the shirt to user (b), a friend. She uses it for a short while before trading it in at the brand's flagship store, where she receives a discount voucher for her effort. The brand takes the shirt and puts it out on the rental rail instore for two years (c).
- **Remanufacture, overprint 2 (Year 11):** The brand overprints the shirt a second time (3) to extend the life within the rental system, where it gets worn by for multiple users over a six-year period (d).
- **Remanufacture, overprint 3 (Year 17):** The shirt gets one final overprint, giving it a textured black finish, before it goes out to loan for another two-year period.
- **Remanufacture, jacket lining (Year 19):** The brand gets the blouse remade into the lining of a new jacket, working with a network of local artisanal partners. The jacket and blouse are both made from the same zero-waste pattern shape. User 1 gets the option of the being the first, private user of the item (e) if desired – a kind of return on investment for making the original purchase, which set this process in motion. After a period of wear, the owner returns the jacket to the brand to enable it to go into service as a special occasion rental piece (f).
- **Remanufacture, jewellery (Year 34):** At the end of its useful life – once considered too tatty and worn out - the jacket gets made into several jewellery pieces (5). At the time of making the jacket the design of the pieces were etched into the surface using a laser. This makes it easy for the artisan makers to take the jackets as they come back to them and construct the textile jewellery

items from them. The jewellery items can be sold to individual users (g) and/or go in to the brands rental selection (h).

- **Chemical Recycling (Year 50):** The brand passes the piece on to be reprocessed (6). The recycled polyester can be used again.

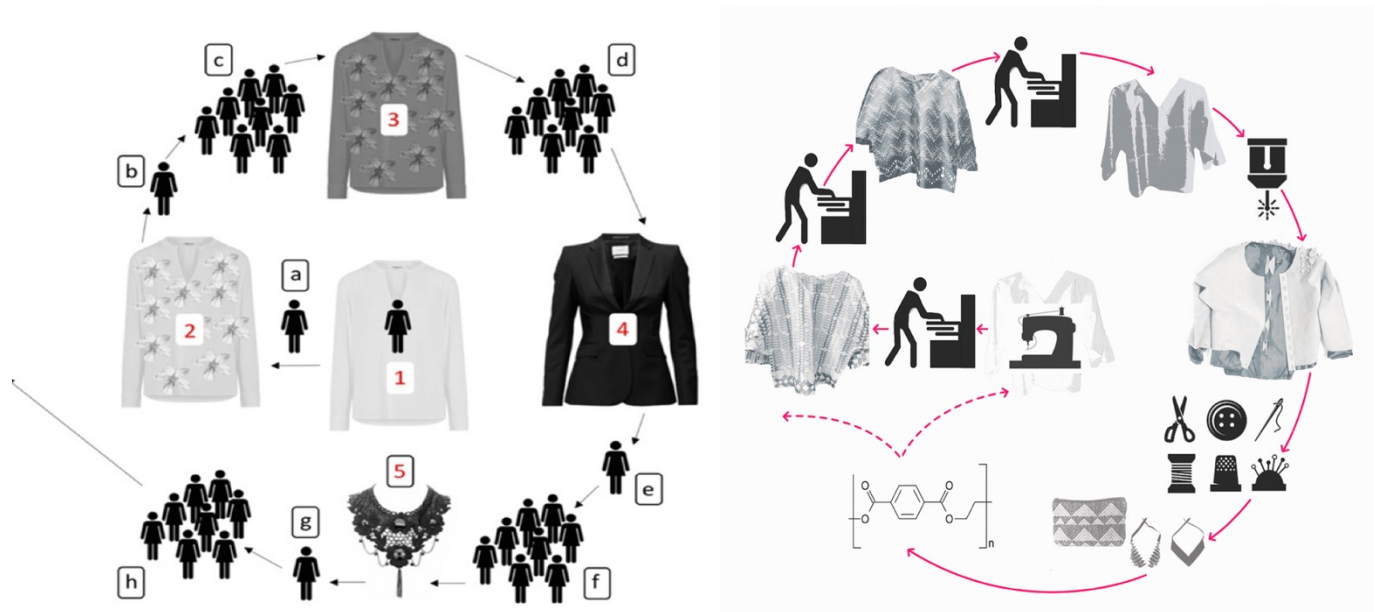


Figure 9: Left – the shirt and the single use and shared contexts it serves at each stage of the cycle. Right – the remanufacturing process stages that the shirt passes through at each stage of the cycle.

6. Insights

The key insights derived from the practice work include (in the chronological order they occurred and within the themes of materials, models and mindsets):

6.1 Materials

- 6.1.1 **Zero waste shirt shape.** The researcher co-developed a shape for the shirt with PhD student Laetitia Forst, based on a template by Professor Kay Politowicz.
- 6.1.2 **Zero waste jacket shape.** The researcher co-developed a shape for the jacket with Laetitia which enabled the shirt to be cut down the centre front and used as a lining for the *Service Jacket*. (The lining was fixed in to the jacket using a *textile lock* system developed by Laetitia, as part of her PhD research into textile design for disassembly (Forst 2018)).
- 6.1.3 **Zero waste digital print design.** The researcher developed the digital print design to be produced in such a way that paper and ink waste were totally minimised.
- 6.1.4 **Sequential print design.** The researcher developed a print series that worked by gradually building up overprint layers, so that the final print layer created a textured black finish. The key to this approach was designing by using the aesthetics derived from the last product that would be made within the 50-year cycle; in this case the textile jewellery.
- 6.1.5 **Sequential jacket and jewellery design.** Laetitia co-developed an approach of using the jewellery design stage as part of the aesthetic finish of the jacket. The laser-etched lines created a unique finish to the suede jacket whilst giving future craft recyclers a pattern to follow to help them construct the jewellery pieces.

6.2 Models

- 6.2.1 **Instore Renting Services.** Developing the prototype in parallel to delivering workshops with the brand in Sweden meant that many aspects of the company's current infrastructure were discussed and incorporated, or rather translated, to be included in the concept of the *Service Shirt*. For example, discussions around the restrictive nature of the relationship with the Filippa K Second-Hand outlet linked to the brand, led to the researcher proposing how a new model for a second hand and rental system might work through imagining new instore arrangements.
- 6.2.2 **Local remanufacture and midsize companies.** The design ideas pursued for the *Service Shirt* lead to new insights around the future partnership opportunities that could be explored between the mid-size brand, future retail concepts and local craft/artisan producers.

6.3 Mindsets

- 6.3.1 **Designing backwards together, including the user and the end-of-life partners.** Many new insights arose from the process of designing in a collaborative manner with the various people who are working at different parts of the lifecycle of the product. To involve everybody at the outset in making decisions required a new way of thinking about each person's role; every decision made had a consequence elsewhere in the cycle.

6.4 Other Insights from the *Service Shirt*

Several other insights arose from the inter-disciplinary collaborations within the MFF research programme which have been published or are in the process of being published. These include:

- A deeper understanding around the **economic barriers** for linear brands of producing extended-life, circular fashion products (Pederson et al. 2018);
- The potential for **user engagement** and *conviviality* in extending the life of products in specific local areas (Real et al. 2018);
- The **lifecycle assessment** impacts and savings that are created from using a shirt and a jacket across a 50-year period (Peters et al. 2018);
- The things that 'went wrong' during the prototyping that form new guidelines for **circular design in practice** (Earley and Forst 2019).

6.5 Emerging Research from USA and Denmark

Rissanen, Grose and Riisberg are currently engaged in practice research concerned with similar questions to the Mistra Future Fashion programme. In their paper, 'Designing Garments with Evolving Aesthetics in Emergent Systems', they asked: What if a shirt were designed from the beginning as an integral part of a fashion service system? What if the design of both the product and the system enabled the object's aesthetic to evolve over time? (Rissanen et al. 2018:1). Their findings at this stage also suggest iterative surface decoration approaches as well as design for partial disassembly. However, the work differs in that they explored cotton as the base material for the shirt, and other techniques, such as 'designing for flattening', digital printing and embroidery. Unlike the *Service Shirt*, their research was not conducted with users (nor with staff at a brand) but their writing up does suggest more research needs to be done concerning the relationship between the designer and user in such fashion/textile service-systems. This interesting research seems to reinforce some of the insights from the *Service Shirt* work.

7. Conclusion

This paper has shown that the creation of the *Service Shirt* has enabled new insights for designers who wish to engage with making long-life, fashion textiles for the circular economy. The *Service Shirt* concept used the phase 1 framework of *Materials, Models and Mindsets* to build on previous practice

work and synthesise these with new ideas for designing for longevity, with the specific ambition of creating a lifecycle of 50 years. To do this, the researcher had to consider the interrelationships between the product, society and the self. The *Service Shirt* considers new business models – the brand that sells, remanufactures, rents and recycles its material goods, working with new partnerships in localised supply chains. It explores changing user behaviour by designing a product that moves between single owners and multiple users, where the consumers are involved in the service loops that bring about the state changes. The ideas embedded in the *Service Shirt* suggest ways for industry to transform, shifting focus from making a shirt for a single season, to sell to one user; to a proposition that connects the brand to several small businesses that enable and support the extended lifecycle.

The next stage for this work is to publish the remaining practice insights (see 6.4 above) and the final report from the Design Researchers in Residence programme at Filippa K, as well as the project report for the Design Theme which covers the full period 2015-2019 (due out in July 2019, available from the MFF project website, www.mistrafuturefashion.com). These reports will enable the sharing of further insights around what the design researchers learned from the experience of working in workshops and in parallel to the industry designers. The reports will also share what the industry designers learned from working with the academic team. The *Service Shirt* and this paper has provided us with new design directions for longevity and extended use, and revealing the changes in everyday practice for both groups will, we hope, further demonstrate the value of textile design practice for industry.

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