

# Applying service design approaches to create a sustainable fashion retail future

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Dr. Qian Sun  
Reader in Service Design, Policy & Social Innovation  
qian.sun@rca.ac.uk

Dr. Richard Atkinson  
Senior Tutor, Service Design  
richard.atkinson@rca.ac.uk

Dr. Savithri Bartlett  
Senior Tutor (Research) Fashion  
S.Bartlett@rca.ac.uk

## 1 Introduction

Fashion retail is a huge contributor to problems of carbon emissions, waste and pollution. Reducing its impact is a matter of urgency. The fashion industry has understood clearly the points in the fashion ecosystem where sustainable innovation is needed. These include the raw materials used, fabric and garment production, disposal of garments and of course retail and consumption patterns. Whilst this paper is focused particularly on retail and consumption, it recognises that the different points in the system intersect (see figure 1 below) and therefore takes a holistic view of the opportunities for innovation.

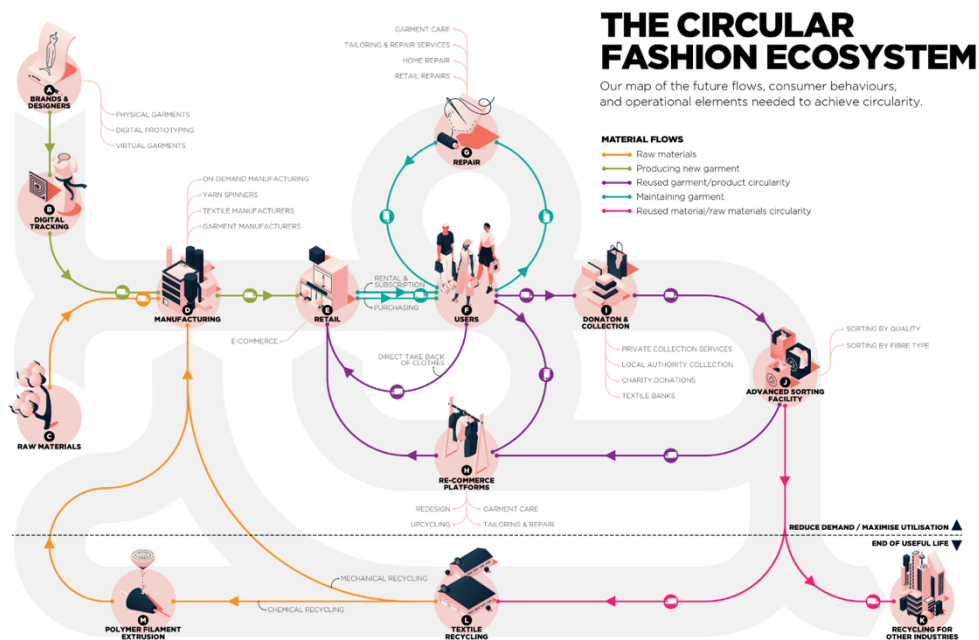


Figure 1: *The Circular Fashion Ecosystem: A Blueprint for the Future*. Institute of Positive Fashion (2021) London: British Fashion Council.

We argue that Service Design offers a valuable way of inspiring and guiding sustainable fashion retail. It can do so by bringing a human centred approach to business problems and a systems thinking approach to a complex “wicked” problem (Rittel & Webber, 1974). In the context of fashion, service design is an approach aimed at understanding people and systems, accommodating changes in behaviour and on system level over time (Kongelf & Camacho-Otero, 2020).

This paper explores how to actualise this potential that service design practice offers. It brings two forms of new knowledge. The first comes from identifying examples of where service designers are already addressing challenges within the fashion retail system. The second comes from exploring critically how this contribution can be expanded and refined. We do this by analysing the work of students on a leading Service Design Masters programme in the UK, who represent the next generation of service design. The analysis concludes that new service designers are already working on a range of emerging areas of interests in the fashion system: material

innovation, behavioural change, business model innovation, and technology. They are applying service design to the fashion retail system in wide-ranging ways, from shaping behaviour change at the point of purchase, to building services that aid diffusion of new materials and technology to helping fashion retail actors to identify and exploit intangible assets within the industry. The paper also identifies considerable barriers to the use of service design in fashion retail, notably the lack of points of dialogue between the two sectors. It argues that service design education also needs to evolve to support the next generation of service designers to address complex, systemic problems such as building a sustainable fashion retail system.

## **2 Fashion Industry and Challenges**

The global fashion industry is forecast to grow exponentially from £1.2 trillion in 2020, to £1.8 trillion by 2025. In the UK alone, clothing and textiles had a turnover of £55 billion in 2022, with clothing purchases rising by 25% compared to figures in 2019 (Ikram, 2022). The thriving garment industry, however, contributes 8-10% (4-5 billion tonnes annually) of CO<sub>2</sub> emissions through its globally distributed supply chains (Niinimäki, 2020). With a shift in production from the Global North to the Global South, 80% of the supply chain impacts the environment in low-labour-cost countries (Cobbing et. al., 2022). To keep up with fashion trends, approximately 98% of purchases, in 2022, were worn only 10 times before being thrown away. According to WRAP (2023), each year, an estimated £140 million worth of clothing and textile waste are sent to landfill. The EU reported that 1.4 million tonnes of textile waste, often “falsely labelled as second-hand goods”, were exported to non-OECD countries in 2020 (EU, 2022: p.13). Greenpeace claims that 40% of these exports are of poor quality and “deemed worthless on arrival and end up dumped in landfill” (Cobbing et. al., 2022: p. 6).

The main drawback with the existing textile and clothing industry is the concept of a linear system that undermines its sustainability (Rathinamoorthy, 2019). The need for a more “circular” model is widely accepted amongst the fashion and textile industries as the way to achieve a more sustainable future. For example, the 2022 EU Strategy for Sustainable and Circular Textiles has set in place a framework to help fashion businesses achieve a more circular, sustainable, and resilient value chain (Centobelli et al., 2022; EU, 2022).

The concept of circular economy utilises waste, which is transformed into new products and useful resources, in contrast to the existing linear take-make-waste system (Rathinamoorthy, 2019). A circular economy approach to fashion addresses design strategies which include reduced utilisation of virgin raw materials, efficiency, recycling, reuse, and remanufacturing, new business thinking, avoiding textile waste, slowing down consumption; and embraces new business strategies which include renting, sharing, swapping, and borrowing, while at the same time increasing sustainable fashion consumption (Peleg Mizrahi & Tal, 2022).

However, to make the transition to a circular economy and to achieve the goal of sustainability, there are significant barriers. First, the fashion industry forms part of a larger social and cultural phenomenon known as the “fashion system”, a concept that embraces not only the business of fashion but also the art of fashion, and not only production but also consumption (Čiarnienė & Vienažindienė, 2014). Ertekin and Atik (2020) argue that all actors in the system, including producers, mediators, and consumers, are not separate, but highly connected constituents. The collective effort of different actors is necessary to address challenges in the fashion system (Ertekin & Atik, 2020; Todeschini et al., 2020).

To do that, it is vital to understand the role and responsibility of the various actors and institutions involved in the production and consumption of textiles and clothing in solving the sustainability

challenges (Ertekin & Atik, 2020). It has long been recognised that there is a need to innovate and to strengthen failing systems (Faerm, 2012) and to shift towards non-material design for a more sustainable future to promote ideas and behaviours rather than material products (Geller 1989). Although there has been a rise of projects that encourage and support textile and fashion designers in considering their responsibilities as creators of sustainable products and systems (e.g. Fashion Futures 2025), they have been struggling to find a way to both comprehend the complexity of the challenges and to know how to go about tackling them in a scalable and economically viable way (Earley & Goldsworthy, 2015). Bertola and Teunissen (2018) argue for the importance of including a range of practices beyond fashion design, e.g., service design, to promote ideas and behaviours rather than creating material products. Further to this suggestion, this paper looks into service design to explore its value and limitation in the transition of the fashion industry towards a more circular and sustainable one.

### **3. Service Design**

Service Design from its inception in the 1990s (Hollins and Hollins 1991) grew significantly as a practice and an academic discipline in the 2000s (Sun and Runcie 2016). Whilst definitions of Service Design may vary (Sun 2020) it is generally agreed that Service design “entails a human-centred, holistic, creative, and iterative approach to creating new service futures, building on a design thinking process of exploration, ideation, reflection, and implementation” (Sun, 2020: p.51). As Service Design has matured, it has, like design as a whole, addressed increasingly complex challenges. Kimbell (2011: p.286) notes that “professional design is now operating within an expanded and increasingly complex field. Some design professionals take solving complex social issues as their domain”. Sun et al (2022) trace the shift from designing visual materials and physical artefacts to creating intangible outcomes which focus on social, cultural, and business

issues. Irwin et al (2015) cite Buchanan (2001)'s teleology of design from focusing on visual communication and information design to product and industrial design to designing actions and interactions to addressing complex systems.

In this shift in thinking, Karasti (2014: p.144) advocates an infrastructuring approach that will "extend design towards more open-ended, long-term, and continuous processes where time and resources could be allotted in a flexible manner and diverse stakeholders could innovate together". Bannon and Ehn (2012: p.57) argue for "design-after-design", designing for a continuous appropriation and redesign". Akama et al (2016: p.896) advocate for a form of design as a complex socio-material process "where various contexts or practices and technologies concurrently undergo change and therefore demand continuous infrastructuring and aligning of partly conflicting interests." Irwin (2015) encourages a commitment to change the system through multiple, iterative interventions and the tenacity to persist and change with it, over time.

This is consistent with the discussion in service design. Sun et al (2022: p.2) distinguish between designing services and designing for service where, in the latter "what is being designed is not an end result, but rather a platform for action, with which diverse actors will engage over time." Sun et al (2022) suggest that service design practice adds value to complex challenges at two levels. On one level, when service design operated at an early stage of innovation, it created value by reframing problems and revealing opportunities; and on the other, when service design operated in a later stage of innovation, the value was about solving problems and delivering outcomes.

### *Service Design Characteristics*

In dealing with complex challenges, service design practice is associated with a number of valuable characteristics.

First, service design's human-centred approach can help address the behavioural problems. Brown and Wyatt argue that a user-centred approach can prevent the failure of many social and business innovations, "Time and again, initiatives falter because they are not based on the client's or customer's needs and have never been prototyped to solicit feedback." (2010: p.32) Byrne and Nhampossa argue that "A primarily technical approach is limited since it does not take into account the human dimension of the eventual system use." (2004: p.45). Sun et al (2022) highlight the specific tools, such as journey maps and empathy maps, that service design uses to draw out and capture the nuances of human experience.

Secondly, service design uses systems thinking to engage with complex systemic problems. Brown and Wyatt (2010) argue for the need for systemic solutions.. Buchanan (2019) traces the long history of interest in systems in design as a whole, back to the organisation of the Bauhaus and argues for a view of systems as evolving and unpredictable social phenomena. Sun et al (2022) suggest that systems thinking needs to be further developed amongst service design professionals and academics.

More importantly, a combination of systems thinking and human-centredness gives service design its potential power. The human-centred design approach avoids the problem that "systems thinking sometimes fails to adequately consider the concrete experience of individuals, who live, work, play, and learn in the particular environments of their lives". Buchanan (2019: p.98)

Further, service design is a practice where collaboration is fundamental and pervasive, "including collaboration with the users, experts from different disciplines, clients (in the case of consultancies) and different departments in an organisation (in the case of in-house) and laypersons." (Sun et al., 2022: p.4) As the sustainability challenges of the fashion industry are associated with multiple, interrelated, and complicated issues, involving a large number of these

different institutional constituents, the collective efforts of different actors is vital (Ertekin & Atik, 2020) (Todeschini et al., 2020). Service design practice entails a collaborative approach that brings different disciplines together and to balance human centred concerns with a planet centred trajectory (West, 2020, Tironi et al., 2021).

As such, the role of service design can be described as enabling change and can serve as a tool for gathering information and developing and implementing interventions (Kongelf & Camacho-Otero, 2020; Pettersen, 2015). It is an approach aimed at understanding people and systems, accommodating changes in behaviour and on a system level over time. The aim is to use service design to decouple value creation from resource use, enhancing environmental, economic and social perspectives (Bocken et al., 2016; Reason, Polaine, & Løvlie, 2013).

### ***Service Design in fashion***

More recently, there is a growing body of work that explores the applicability of service design to fashion sustainability, as the fashion retail industry goes beyond designing goods and focuses more attention on designing the systems in which these goods are produced and consumed. This work envisages multiple levels on which service design approaches could contribute. These include: increasing user acceptance of more sustainable business models through a more human centred design approach (Kongelf & Camacho-Otero, 2020); helping create more circular business models through a systems thinking approach (Ko, 2020, Ballie, 2018); creating new systems that help manufacturers and retailers use technology to track the sustainability of their products (Faerm, 2012; Stickdorn et al., 2018); encouraging a shift in design pedagogy away from a focus on making to a focus on analysis and reflection (Faerm, 2012); identifying opportunities for the dematerialisation of fashion away from tangible to intangible products (Bertola 2018); increasing garment longevity not by designing “perpetually durable” items - viewed as undesirable by



customers (Fletcher, 2017: p.11) - but through Walter Stahel's (2010) "usership" model, where users become stewards. The most influential "actants" are the "habits, skills, ideas and practices of the wearer" gaining satisfaction through wear (Fletcher, 2017: p.9). In 2020, Cynthia Ko designed the "Re-Create" App, from a Service Design perspective, to help users engage with their clothes resourcefully, and shift from "a philosophy of having" to a "philosophy of being". This is achieved through a digitised wardrobe, peer-to-peer styling, tailored content and social interactions with users "shopping their own wardrobe" or "re-using someone else's clothes" instead of buying new (Ko, 2020: p.6). These examples suggest that service design has potential to contribute both through its ethos (a service versus product orientation) and through its methods (understanding people and systems thinking).

However, the real world application of service design to fashion sustainability is a research topic still at a relatively early stage (Kongelf & Camacho-Otero, 2020). There is scope to understand more of how potential translates into practice by exploring further the following questions:

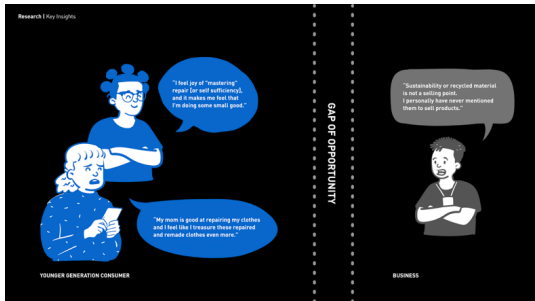
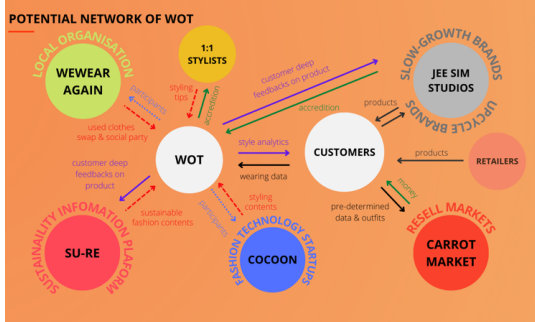
- What areas of fashion do service designers work in?
- What value does service design practice add to the sustainability of the fashion system?
- What are the limitations of service design when applied to the lifecycle of a garment from design to raw material sourcing, manufacture, retail, use and recycle at the end of life?
- What future links are needed between service design and fashion retail?

#### **4 Analysing Service Design Projects**

We wanted to analyse the extent to which, and ways in which, service designers were addressing issues in the fashion retail system. The RCA Service Design course is one of the largest service design courses in the world and has produced several hundred service design concepts through its masters students' projects. A total of 100 of these student service design projects were reviewed

by the project team of service designers and fashion experts. Of the 100 projects reviewed, 7 were selected for more in-depth analysis. The selection applied the following criteria. First, we sought to include projects from different regions, with chosen projects covering Europe, North America and Asia. Second, we analysed the degree to which projects could be said to address the challenges of the fashion retail system by comparing the projects' focus with the issues identified in the British Fashion Council's model of a Circular Fashion Ecosystem. (Fig 1 above).

Table 1: Examples of Service Design Projects

<p><b>Case Study 1: Adidas Next (in partnership with Adidas)</b></p>	
	<p><i>Challenge:</i> Most businesses are still designed based on a “take-make-waste” model. Consumers are exposed to a flood of advertisements and social media posts that prompt them to consume more, but receive less information on how to consume in a circular way.</p> <p><i>Design opportunity:</i> adidas NEXT, is an innovative learning service that allows consumers to renew their product's life by repurposing it by themselves. It supports all conscious consumers with pathways and means to extend the use and life of their products.</p>
<p><i>Innovation area/s:</i> Behavioural change, collaboration between business and consumers</p>	
<p><b>Case Study 2: Wear Over Two Hundred Times</b></p>	
	<p><i>Challenges:</i> One of the reasons that young consumers over-consume fashion is that they don't have a distinct sense of their own personal style. They buy garments that don't suit them, or which they rarely find occasions to wear because they seek items based on trends, rather than according to their own individual style.</p> <p><i>Design opportunity:</i> Support consumers to purchase consciously by helping them develop and purchase around a clearer idea of their own personal style.</p> <p><i>Innovation area/s:</i> behavioural change</p>
<p><b>Case Study 3: Reboot - how do you turn recycling into an aspirational activity</b></p>	



*Challenges:* The football industry is driven by a linear take-make-waste model. Every year, boots and training gear are thrown away due to lack of resources, wear and tear, and overflowing donation lines.

*Design opportunity:* create a closed-loop recycling system that will reduce the amount of waste generated by the football industry that is normally improperly disposed of.

*Innovation area/s:* Systems level. A Software agent focuses on collaboration and information sharing.

#### Case Study 4: Aethos



*Challenges:* Consumers are finding it hard to assess the environmental and social impact of their choices, with so many brands making claims around their goods and services and the difficulty for consumers of understanding the complex supply chains behind their products.

*Design opportunity:* Empower ethical brands and hold others to account by showing consumers the reality of the supply chain behind their purchase in the form of a receipt.

*Innovation Area:* Emergent technology (blockchain, NFC) combined with *systems level* bringing info from across the supply chain, with the aim of encouraging *behavioural change* by making people more aware of their purchases.

#### Case Study 5: Supplin



*Challenges:* It is hard for fashion brands to certify their clothing accurately. Many clothing products are made from a mix of materials from different suppliers, different certifications have different requirements and getting certification is a cost burden. In addition, it can be hard for manufacturers to understand and keep up with changes in certification.

*Design opportunity:* To update manufacturers regularly on changes in certification standards and practices. And help match manufacturers with suppliers who fit their

sustainability aims.

*Innovation Area/s:* System level intervention. Some use of technology, but more focused on soft interventions of knowledge building, information and support.

#### Case Study 6: Annulu

*Challenges:* The fashion industry in 2020 became the second largest polluter after the oil and gas sector. and a major contributor to carbon emissions. Current business models of fast fashion rely on continuing heavy use of

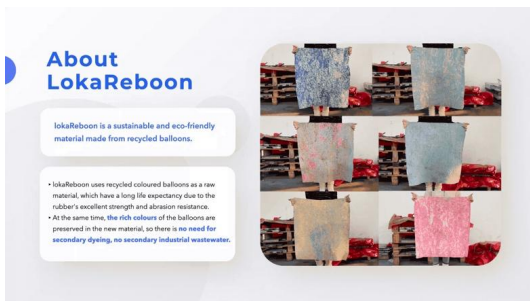


resources and disposability of product. at current growth rates fashion is set to produce 25% of carbon emissions by 2050.

*Design opportunity:* To reduce the amount of new materials used and prolong the use of clothes already in the market by helping retailers to build up an inventory of 2nd hand clothes through collaboration with vintage stores.

*Innovation Area:* System level intervention. Soft agent focus, based on building connections.

### Case Study 7: Lokareboon



*Challenges:* 480 tons of balloons are used and released in Beijing alone every year. An estimated 70% of balloons fall into the sea, where elastomers harm over 700 species, whilst the majority of the rest end up in landfill.

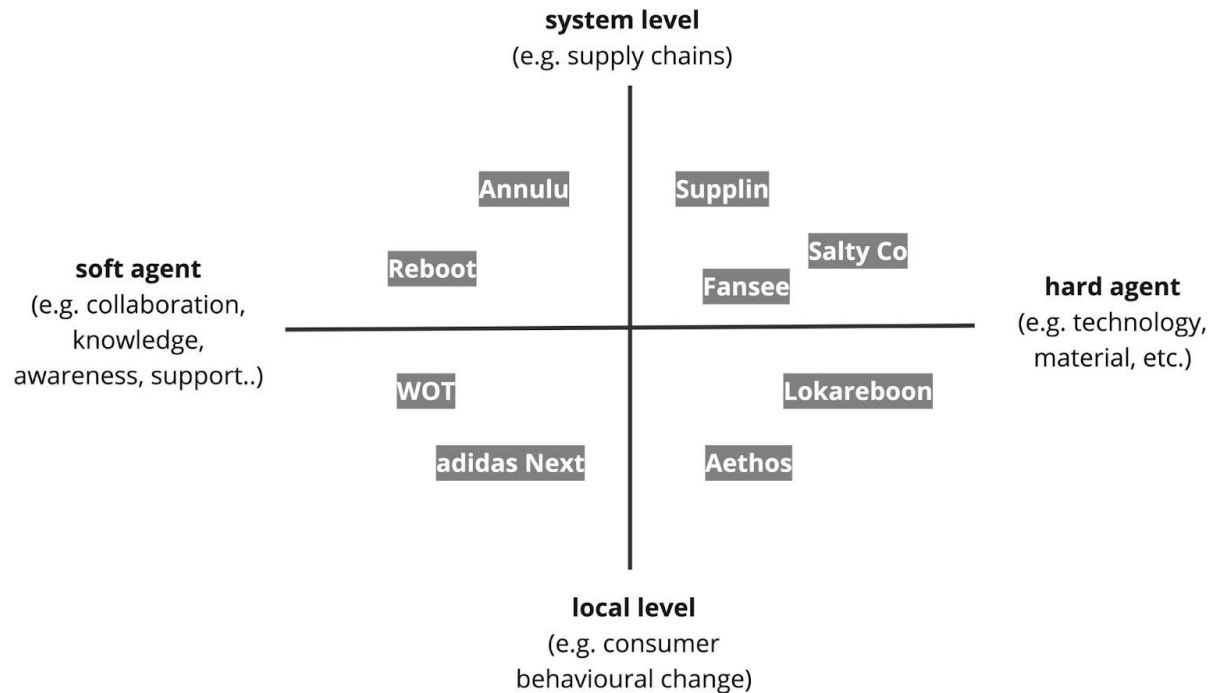
*Design opportunity:* To turn otherwise discarded balloons into fabric that can be used for furniture, accessories and clothing.

*Innovation Area:* Materials and tech innovation combined with systems level intervention leading to behaviour change.

## 5 Discussion

*What challenges does service design work on*

These service design projects reveal a wide range of opportunities for sustainable innovation in the fashion retail system. These are consistent with the challenges that the fashion industry faces as recorded in the literature and we have found that they are contributing across a range of points in the ecosystem identified in Figure 1, including Raw Materials, Tracking, Retail, Re-commerce, Sorting, Donating and collecting. To dissect the contribution of service design practice further, we mapped the case studies on the matrix in the following figure 2.



*Figure 2: Diversity of service design projects*

The horizontal axis represents the change agents that the proposed innovation relies on, which can be either intangible (about knowledge, awareness, and collection opportunities), or tangible (focused on technologies and materials). The vertical axis represents the level of the proposed innovation either at system level (e.g., supply chains) or at local user level (e.g., individuals). The areas of innovation in these projects cover all four areas, suggesting again the range of areas within fashion retail where service design can contribute.

### *The value of service design*

*1. Service design identifies opportunities for innovation/ speculative approach.* Case studies suggest that service design projects can inspire the industry to look into new areas of innovation and challenge the mindset of the industry in two ways. First, Service Design's holistic, collaborative approach can help fashion connect to opportunities outside its borders, to become

sustainable by engaging with other systems as well as make its own systems more sustainable. This is visible in the example of Case Study 7 Lokareboon, which suggests opportunities for new sustainable materials for fashion products in an unexpected and unrelated industry. Second, Service Design can work as a provocation by proposing services that may not have immediate practical applicability, but offer alternative possible futures. This is visible in the example of Case Study 4 Aethos, a service difficult to implement immediately, but challenging in its scope and aims. We see scope for the fashion retail system to follow other fields such as policymaking (Tseklevs et al., 2022) in using speculative services as a bridge to designing practical interventions. This builds on work (Light, 2021; Akama et al., 2016) that seeks to use speculative design in more practical ways, to open up new routes for future practical interventions.

*2. Service Design introduces intangible/soft change agents into the innovation process.* Service Design's interest in intangible resources - capacities, knowledge, skills, finance - has potential to help the fashion retail system identify and make greater use of its intangible assets. For example, Case Study 6 Annalu and Case Study 3 Reboot show the untapped potential for collaboration between different forms of knowledge.

*3. Service Design provides a holistic approach to look at the challenges at the system level.* All the projects analysed seek to increase the degree of collaboration across boundaries (e.g. stakeholders, companies, disciplines), by looking across boundaries the projects identify opportunities to maximise resources on a systemic level that can benefit all actors, rather than from a single actor perspective. For example, Case Study 5 Supplin shows the value of sharing information resources through more effective matching of manufacturers and suppliers.

4. *Service Design brings human experience into the fashion system*, to address the fundamental needs to empower people to change their behaviour and attitudes. Both Case Study 2 Wear Over Two Hundred Times and Case Study 3 Reboot show how service design can help fashion retailers to understand the nuanced feelings and habits behind people's reluctance to adopt more sustainable behaviours. They both show how service design can work with these complexities to design solutions that acknowledge the quirks and contradictions of human behaviour.

5. *Combining both system and local views*: Many of these projects show the power of *combining* human centred and systems approaches - a core strength of Service Design.

6. *Building new services around material and technological innovation*. For new sustainable technologies and materials to fulfil their potential, they need to be integrated into existing fashion retail systems. A number of these projects look at how emerging technologies (infra-red sorting in Case Study 7 Lokareboon and Blockchain and NFC in Case Study 4 Aethos) will need new complex service systems created around them in order to fulfil their promise.

#### *Limitations of service design practice*

##### *1. Complexity of the system - and the limits of one design solution to make change*

The fashion retail systems in which these projects seek to intervene are extremely complex, with multiple stakeholders, locations and relationships. This complexity means that the knowledge of them is hard to amass, it is hard to understand the system in a rounded way and in some cases easy for designers to propose ideas without considering the difficulties of enacting them. This suggests again that the identification of opportunities may be more valuable than the solutions themselves. Second, complex fashion systems need long-term, multi-actor collaborations. Whilst academic discourse on service design increasingly aspires to work in this way (Sun et al 2022), the projects proposed often function as discrete services, rather than embodying the ethos of

“design for service” and “infrastructuring” discussed above. This raises questions about how service design is taught. What would courses need to do differently to teach “design for service” and how would this fit with the time constraints of courses, the obligation of students to develop their own personal projects and to market themselves as designers capable of creating working solutions?

## *2. Power structure of the system - and the challenges of understanding power dynamics*

Service designers’ position outside the fashion system offers scope for innovation, but to make changes within the system requires the in-depth understanding and influence to do so. We suggest there is a tendency in service design to frame problems in terms of lack of information (and to envisage that more efficient sharing of information is a solution) when problems are also problems of economic incentives and power relations. We argue that more analysis is needed of power relationships within the fashion retail system, the relationships and incentives that may block or precipitate change. There is scope to use tools like power maps employed by service designers in other fields, such as humanitarian aid and to apply insights on leverage points from systems thinking (Meadows 2009).

## *3. Impact needs time to show*

None of the case studies in our sample focus heavily on how their impact will be measured and rarely reference the metrics used, data gathered, modes of analysis. They thereby leave open what constitutes success and make it harder for actors in the fashion retail system to test and assess their impact. This reflects a criticism that has been levelled at design more generally as being focused on creating interventions, rather than assessing the impact of these interventions (Bazzano et al 2017).

## *4. Lack of awareness of range and priorities of problems within the fashion retail system.*



Unlike fashion design, Service Design is inherently domain-neutral, it makes claims to be able to apply its skills to potentially any industry. This means it approaches challenges from a position of relative freshness and naivety. Whilst this opens new directions for innovation, it can also leave service designers unaware of emerging innovations. We would ask, for instance, how service designers might respond to innovations like True Fit and Zalando, which use advanced size normalisation algorithms to help customers make informed choices and reduce the need to return items.

In addition, there appears potential for service designers to engage more with emerging issues in the fashion industry, such as the need for just and fair transition in which workers in the Global North and Global South displaced by the transition to a circular model are properly supported. This systemic, human-centred change is one that Service Design could potentially contribute to significantly, but is not addressed by any case study. Other priorities not addressed in the case studies include disincentivising serial returners and creating city-level circular fashion systems.

## **6. Conclusions**

This research confirms the hypothesis that service design practice can be valuable to the sustainability of the fashion retail system in a number of ways. However, there are a range of limitations constraining what service design can achieve. These include:

- the difficulty of engaging with increasingly complex systems,
- the lack of analysis of power within systems such as the fashion retail system
- the need for more attention paid to measurement of impact
- a lack of awareness and lack of exchanges with the fashion system and fashion design,

With the potential of service design practice being a transdisciplinary approach to address the sustainability of the fashion system, this paper suggests that

- *Service design can help nurture a mindset in fashion retail designers as they move away from certainty in solutions and to shift from making to exploring.*

Within the fashion industry there is increasing demand for the next generation of designers to be happy working with uncertainty and comfortable with complexity. Service design nurtures these mindsets and there is scope for fashion educators to use methods from and collaborations with Service Design to help develop them within fashion retail design.

- *Service design educators need to accelerate the shift from designing services to design for services.*

We need to teach in ways that allow students to work across longer time-scales, to work on projects that are designed for service, rather than designing services. This raises significant questions for student assessment and course design.

- *Industry could use service design to be more speculative, innovative and systemic*

We propose creating spaces for the fashion industry to work with the speculative and the provocative contributions that service design can make. This could include forums, working groups, methodologies within the fashion retail system. In particular we see a need to find ways to build a bridge between the immediate and practical problems that industry is focused on and the speculative, longer-term priorities of service design.

- *Engaging emerging fashion actors with service design*

Powerful new stakeholders have emerged in recent years within the fashion retail system with a mission to drive systemic change. We see scope to explore how service designers with an interest in fashion retail could learn from movements like Labour Behind Label and Fashion Revolution in the UK parliament and how these movements might use service design as a tool of innovation.

- *Building sustainable bridges between fashion retail and service design*

Fundamentally we conclude that more structures and forums are needed for knowledge exchange between service design and fashion retail. The two worlds are engaged in parallel endeavours to bring systemic change to make fashion more sustainable, but dialogue between them is limited.

Building on this work, we plan a second phase of research, involving interviews with fashion experts, who will respond to and critique these service design interventions in the fashion retail system and explore opportunities for bridging the gaps identified between service design and fashion retail.

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