

Empathic fashion product-service systems for sustainable development

Cosette Armstrong

Oklahoma State University, USA

cosette.armstrong@okstate.edu

Kirsi Niinimäki

Aalto University, Finland

kirsi.niinimaki@aalto.fi

Introduction

The clothing industry currently begs for innovation to better support sustainable development. Fashion (newness and change) makes sustainable design principles like durability seem naïve in the context of clothing (Fletcher, 2012). Alternative methods that permit consumers to continue to utilize clothing to meet psychosocial needs like self-expression without harmful environmental consequences must be identified. Product-service systems (PSS) may provide a key conduit for revenue generation as well as value creation for a new business model that does not create environmental poverties. Yet, to be effective for large-scale development, the PSS must be responsive to the human experience with clothing, empathically developing concepts responsive to human needs. However, the viability of PSS to support sustainable development in real terms has recently come under scrutiny as another potential utopian theory for sustainability.

The purpose of this paper is to utilize empathic knowledge from a variety of consumer studies to identify pathways to practical PSS opportunities that are more responsive to human needs related to clothing, exploring the possibility of moving this theory from utopian dream to reality. These pathways punctuate the imperative to move the traditional production-consumption cycle from product- to use-oriented revenue generation concepts that are inherently human-centered in real and practical terms.

Product-Service Systems

PSS have been proposed in the recent decade as an assortment of potential business models with sustainability in mind. These systems provide a unique combination of products or product concepts and services that emphasize a move away from consumption that relies on personal ownership and material

consumption (Briceno and Stagl, 2006) and transitions need satisfaction to utilization options via service offerings rather than always through the sale of a material good (Mont, 2002; Tukker and Tischner, 2006). For example, some product-oriented services may sell a product with related services that adds value to the product, such as repair/maintenance, return/exchange plans or participatory/co-design options. Other, more use-oriented services build value by assisting the consumer in utilizing existing products in new and different ways and may remove personal ownership altogether through services such as renting, swapping or consultancy. The potential sustainability of the PSS value proposition lies in the separation of value from material consumption (Maxwell and Van der Vorst, 2003; Mont, 2002).

Services have been a mainstay in the clothing industry, used to clean, repair or alter textile products, though these may experience much less frequent use due to the economic obsolescence that is currently built into the fast fashion model: It is cheaper to replace than to repair. Services designed to increase material utilization over a product's lifetime and dematerialize industry revenue generation, are aims not yet realized in the clothing business. However, a recent report from the UK argued that some of the most compelling alternative revenue streams for the clothing industry are the sale of pre-owned clothing, services that assist consumers in getting more use out of items already owned, alterations and repair, and used clothing collection for recycling and reuse (WRAP, 2011), making a revival and reconceptualization of such traditional services a compelling invitation to innovate. Here, empathic knowledge about human behavior in regards to clothing is essential for true innovation.

Empathy and Design Thinking

In the historical context, designers' tasks have changed dramatically. Traditional industrial design and engineer driven linear way of approaching problem solving has not been enough, and a user-centered approach emerged since the 1990s. Simultaneously, researchers, designers and even industry interested about users' emotions and experiences and how to use this information in the design process also emerged. Leonard and Rayport (1997) proposed empathic design as a way to tackle these new design areas. According to the authors, empathic design challenges the designer's role as a more collaborative and open process that emphasizes curiosity.

Curiosity relates to design thinking and a creative and open process in problem solving. Design thinking is more of a process for problem solving rather than an end result. Design thinking is best described as "productive reasoning", combining both practice-based and theoretical knowledge (March 1976, cited by Cross 2007), thus integrating skills and knowledge, actions and intellectuality (Trotto et al. 2010). It applies empathy and creativity in the problem-solving processes. Design thinking utilizes a human-

centered approach and abductive reasoning, suggesting that something may be more than its initial impression (Cross 2007). Design thinking provides an important conduit for empathic design.

Mattelmäki, Vaajakallio and Koskinen (2014) have divided empathic design into four following layers: sensitivity towards humans, sensitivity towards design, sensitivity towards techniques and sensitivity towards collaboration. In the first layer, sensitivity towards humans, the designer works with the information and inspiration from the users. Designer makes sense of people and their context. In the second layer, sensitivity towards design, designer points out “what if” questions while looking for opportunities and a potential design direction. The future view is strongly present. In the third layer, sensitivity towards techniques, designer creatively adapts and applies tools to not only collect information but also to communicate his/her ideas. In the fourth level, sensitivity towards collaboration, designer will focus on co-design methods to solve the problem under study (ibid.).

Mattelmäki, Vaajakallio and Koskinen (2014) further argue that empathic design is an interpretive creative process, where solutions emerge through interacting with people. In the center is the construction of contextual understanding, which is built on design competencies; design thinking and creative problem solving in collaborative manner. The designer interprets the knowledge gathered from, or constructed together with users or consumers to build new solutions, innovations or even transformations for current systems. Design thinking can enable transformation or transition by design. It can benefit organizations or even societies by focusing on problems with a wide perspective and applying systems level thinking, not only product development (Cooper et al. 2009).

The abundance and accessibility of consumer goods in the Western world has dramatically altered market place, now sending the consumer looking for deeper meaning behind products or behind contemporary consumption practices. Experiences and emotions are at the core of the current consumer society. Market-driven research has taken us only this far, emphasizing current design and manufacturing practices, which leads to unsustainable consumption habits. If designers and manufacturers rely only on this kind of data, it will blind us from the opportunities of the future. An empathic and design thinking approach to solving our contemporary environmental problems may provide a more interpretative and creative way to innovate. One future opportunity is PSS innovation for transition towards more sustainable design and consumption of fashion clothing and related products. This development needs a more interpretive approach in research and design to utilize empathic sources of information.

Empathic Knowledge

The purpose of this paper is to utilize empathic knowledge from a variety of consumer studies to identify pathways to practical PSS opportunities that are more responsive to human needs related to clothing. The use of human-centered knowledge provides the advantage of generating deeper connection and meaning between new business models and consumers by using reflective rather than operative parameters.

Problem-driven opportunities

There is a plethora of data regarding the reasons why clothing items are most frequently discarded, the most cited being functional reasons such as fit and damaged or worn out as well as more emotional reasons such as fashion change (Koch & Domina, 1999; Hawley, 2000; Birtwistle & Moore, 2007). When comparing justifications for disposal in studies conducted in the 2000's to those from the late 1990's, we observe a greater frequency of justifications such as quality issues, infrequent wear and the need to make room for new purchases being cited (Koch & Domina, 1997; Bianchi & Birtwistle, 2010; Ha-Brookshire & Hodges, 2009), indicating a troubling transition into a production-consumption cycle characterized by frequent acquisition and disposability. This knowledge provides sources of disappointment in and detachment from these products, which often leads to premature disposal, an ever-increasing environmental problem.

Further, young women present the most significant environmental dilemma by way of their consumption and disposal patterns. A survey with 555 men and women, ages 18-66 revealed that younger women are both more interested in fashion and shop more frequently for clothing, and that these attributes are positively correlated with more frequent clothing disposal (Lang, Armstrong and Brannon, 2013). Fletcher and Grose (2012) argue that women are generally acknowledged as the primary target for fashion business, receiving the largest portion of retail offerings as well as advertising dollars allocated on their behalf. In a sense, this is a vulnerable population, playing to the whims of the industry with few alternative models to choose from. Thus, this market segment, particularly the youngest sector, deserves the greatest attention for PSS innovation to more responsively address both the functional (e.g. fit, damaged/worn out) and the emotional (e.g. fashion change, boredom, infrequent wear) factors that drive premature disposal.

Service- and utilization-driven opportunities

Yet, underneath the many reasons for clothing disposal area a host of idiosyncratic relationships with clothing with varied environmental implications. Further investigation reveals contextual nuances that provide more pointed empathic knowledge about the human relationship with clothing. A survey

conducted with 401 men and women ages 18-67 about emotional attachment to clothing items revealed that there is a weak relationship between emotional attachment and length of ownership as well as frequent use of clothing (Niinimäki & Armstrong, 2013; Armstrong, Niinimäki and Lang, in press), two factors most cited as part of emotional product attachment theory often promoted as a conduit for sustainable design (Baldwin *et al.*, 1996; Kleine and Baker, 2004; Mugge, Schifferstein and Schoormans, 2006). Many of the items discussed by study participants as objects of attachment were purchased new, owned for less than six years, and were used infrequently. The determinants of what bonded the consumer to the object also varied depending on the type of clothing in question. In this study, the researchers identified two primary scenarios where an emotional relationship with clothing is fostered, providing entry points for PSS innovation: 1) lengthy user-clothing relationships that evidence infrequent use that leads to storage (e.g. T-shirts or dress clothing); and 2) moderate to shorter user-clothing relationships characterized by frequent use (e.g. jeans or activewear) where more frequent disposal and replacement is anticipated (Armstrong, Niinimäki and Lang, in press).

Both scenarios have implications for the environment but command a different industry response. The former may indicate the need for service-oriented opportunities that better foster long-term user-product relationships, keeping engagement alive and detachment low while the latter suggests the need for utilization-oriented opportunities that encourage active use with environmentally friendly replacement and disposal solutions. Again, this human-centered knowledge may focus future PSS innovation.

Needs-driven opportunities

Fletcher (2012) recently argued that design strategies utilized to increase the durability of clothing are only as viable as the human agency available to fully exploit this attribute. If one is not knowledgeable or skillful about how to maximize their use of a well-made garment, the embodied durability is of no consequence. Thus, durability as design strategy alone may be too simplistic given the way in which humans interact with their clothing. The author investigated the idiosyncratic use practices associated with clothing, finding that garments that enjoy longevity do so by way of unintentional and informal methods of use and not necessarily premeditated product design attributes (*ibid*). Similarly, Fuad-Luke (2009) discusses the need for design to better contribute to human capital, the set of unique human capacities; intellectual, psychological and physical in nature. It could be argued that without a rich bank of human capital the cultural capital required for a values shift in consumption will remain impossible. Projects such as Otto Van Busch's Fashion Hacktivism indicate an entry point for such innovation, by employing various human capacities to alter and manipulate clothing at will, empowering consumers to make different choices. Thus, sustainable consumption may be found less in product design and more via

tools to engage consumers in unique consumption experiences that are more active and mindful (Fletcher, 2012). Clothing-related PSS innovation may be found by identifying mechanisms to enhance human capital.

The basis of these mechanisms is the need to tap delivery of fundamental human needs. Fletcher and Grose (2012) propose the use of the Max Neef taxonomy of fundamental human needs as design inspiration. Utilizing such a framework removes pressure from the designer as well as the consumer to subscribe to the fashion system and its proclivities. Here, the basis of design innovation is the delivery of human needs, enabling the consumer to *be* and *do* with or without having.

Further, a study recently conducted by the first author of this paper highlights how human capital may be enhanced when the opportunity to acquire new is removed, prompting consumers to become more engaged in the use rather than acquisition experience (Armstrong, Hiller Connell, Lang, Ruppert-Stroescu and LeHew, under review). A qualitative study was conducted with 97 young women who stopped acquiring clothing for 10 weeks and blogged about their experience. The study illustrated a creative spark stimulated via withdrawal from the fashion system. Notably, participants most frequently cited an increased engagement in creative activities, such as restyling and redesigning clothing, and reported a renewed interest in activities more social in nature, like exercise and other recreational activities.

Conclusion

The sum of this empathic knowledge provides an important window into consumer needs and highlights various entry points for PSS. Most recently, the authors conducted a study in Finland and the US to gauge interest in a variety of PSS concepts (Armstrong, Niinimäki, Lang and Kujala, under review). Focus groups conducted with fashion-oriented female consumers revealed that though there is a high level of interest in PSS models like clothing rental, swapping, repairing, redesigning, and style consultancy, this interest is tempered by the perpetual desire for newness. This aspect of human experience with clothing must be a central consideration in PSS innovation for clothing. To conclude, the authors have utilized empathic design thinking to identify myriad pathways to innovative clothing PSS opportunities that are responsive to the context provided above (Table 1).

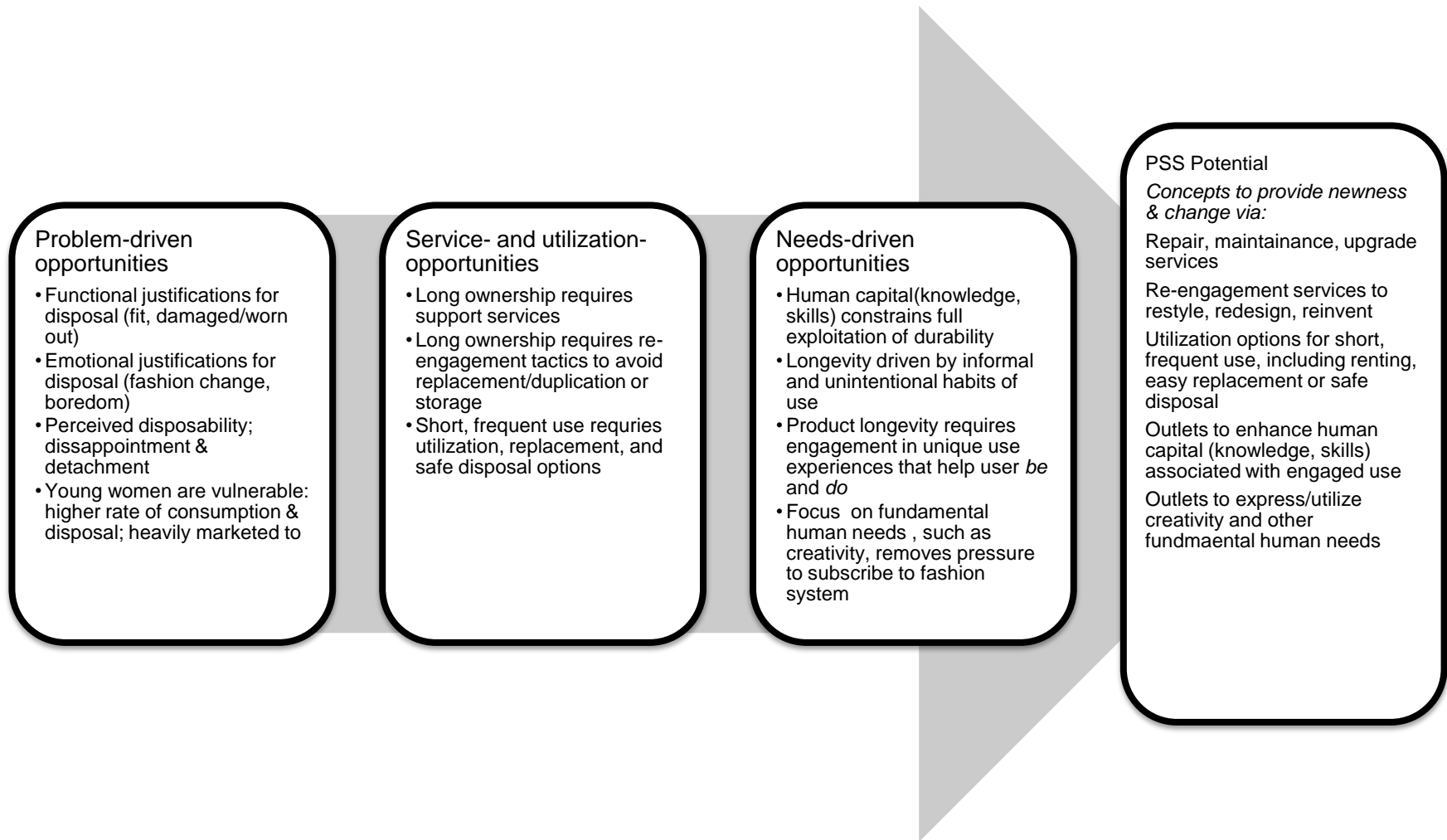


Figure 1. Sources of Empathic Knowledge for Clothing PSS Opportunities

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