

## Sustainability Cards: design for longevity

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Product Longevity  
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### Abstract

Product longevity is considered widely as a relevant strategic approach, amongst many, within the field of sustainability. Yet, how to design for increased product lifetime may not be so obvious for practitioners. The complexity of the surrounding issues can constitute a barrier for designers and companies, in terms of adopting and implementing the approach in the design process. This paper explores whether, and possibly how, the 'design card' format (i.e. method card or alike), can be a way to support dissemination, application and communication of knowledge related to the notion of product longevity for designers and other stakeholders in the design process. The paper is based on a developmental project carried out in the Autumn 2017, within a larger research and collaboration project between raw fur manufacturer Copenhagen Fur and Design School Kolding investigating sustainability perspectives. The paper describes the development of a deck of sustainability cards aiming for product longevity and presents the final deck. Furthermore, the paper contributes with insights on how designers may apply design cards in the design process and how this practice can further sustainable considerations and strategies in terms of product longevity. As the paper builds on a single case study and is situated within a single discipline (fashion and apparel), the outcome should be considered as tentative indications of future potential.

### Introduction

To design for product longevity seems an obvious place to start, if we are to reduce our use of resources and further a more sustainable production and consumption. Yet, the question of how to design for increased product lifetime may not be entirely clear for the uninitiated, as the manifold terms and strategies can seem overwhelming and difficult to penetrate. Furthermore, it has been found, that multiple competences must be developed; normative, interpersonal, systemic, anticipatory and strategic, in order to understand and work with the concept of sustainability (Wiek et al. 2011). The sheer complexity can pose a strong barrier, in terms of designers' engagement, for those without formal training on sustainability. The deck of design approach cards presented in this paper are intended as a navigation tool to inspire designers and other actors in the design process to work with longevity as a sustainable strategy. They have been developed specifically with the aim to influence and extend product lifetime in order to reduce environmental impact. The question we investigate is how the development and application of design cards might, or might not, further designers' understanding of - and ability to design for - extended product lifetime?

### Background

The background for this paper is a research project carried out between raw fur supplier and auction house Copenhagen Fur (DK) and Design School Kolding

(DK) between August 2014 and March 2016 (Skjold et al. 2016). The study comprised four different research perspective on fur and sustainability: cultural heritage, material processes, design approaches and user practices. A main finding of the project, across perspectives, is the long-lasting quality of the fur material, which potentially could be developed strategically through design thinking in relation to sustainability. As a consequence, a present follow-on project, conducted with two fashion designers August - December 2016, looked at ways to approach sustainability through the perspective of product lifetime in design practice and if and how design method cards in particular could be a useful tool for designers and organisations.

We will in the following clarify the theoretical foundation, on which the cards are build and describe the methodology involved in prototyping, testing, evaluating and adjusting the deck. Thereafter we present the resulting cards and emerging findings. Lastly, we offer some reflections on the process and outcome. As this paper builds on a single case and that both participants are fashion designers, any outcome must be viewed as tentative, in terms of generalizability.

### Theoretical Framework

We have employed a three-fold theoretical base in the research and development of the cards. In order to understand, on a meta-level, how enhanced product

lifetime is situated within the larger theoretical field of design and sustainability, we draw specifically on an evolutionary framework (Ceschin & Gaziulusoy, 2016). The framework offers an overview of the development taking place between 1990-2010 regarding ways in which sustainability is perceived and approached. The development is characterized by an increased understanding of the many complex and interacting issues that must be taken into consideration, in order to obtain a real and lasting impact from an initial focus on the product level, to a product service system level, then a spatio-social level, and finally a socio-technical level (Ibid.: 144). Enhanced product lifetime can bear relevance at all levels, but considering the general scope of designer influence, perhaps in particular at the product and product service systems levels.

Furthermore, the framework builds on two dimensions that describe issues on a technology-people scale and an insular-systemic scale. The framework is thereby in line with former and present developments within this domain as proposed by Bhamra and Lofthouse (2007), Keitsch (2015), Lilley (2009), Manzini (1989, 1995, 2015), Vezzoli and Manzini (2008), Vezzoli et al. (2014) among many others.

Secondly, we have grounded the work in literature that specifically addresses extended/optimized lifetime and product longevity broadly (Bakker, den Hollander, van Hinte, & Zijlstra, 2014; Cooper, 2010), as well as the emotional, (Chapman, 2009; Fletcher, 2016) functional (Clark, 2008; Gwilt, 2015; Niinimäki, 2013) and technical domains (Callister, 2006; Hatch, 1993), with product and garment design in mind.

Lastly, to sustain our choice of the card format, we lean on knowledge on methods use (Badke-Schaub et al., 2011; Roozenburg & Eekels, 1995; van Boeijen et al. 2013) and on the practice of using cards in the context of design processes in and with organisations (IDEO, 2003; Laboratory for Sustainability, 2015). The participating designers will be faced with new situations and challenges. In our institution, we have a long experience with using training cards, such as inspirational, methods or process cards, as tools to promote active learning in non-routine situations. Here they have shown to help making things concrete and outline relevant topics (Friis & Gelting, 2014, 2016). Furthermore, 'game pieces' can speed up the process and create common ground when working in teams (Hornecker, 2014).

### Methodology

The overall project was carried out as two intertwined strands. On the one hand, two fashion designers were employed to develop fur designs from design briefs centered on product longevity. Parallel in time, we, the authors, developed the deck of cards in a process that played out in four stages.

During August 2016, a prototype deck of cards was

developed, by merging recommendations on how to drive fur product longevity through design (Skjold et al., 2016), with existing knowledge obtained in the literature presented above. This work was carried out in an iterative process of mapping, grouping, visualizing and writing the content (see figure 1 and 2).

We presented the cards to the two participant designers primo September 2016 at a bigger project meeting taking place at Design School Kolding (see figure 3). The objective was to introduce the deck, in order for the designers to be able to use it in their design process and communication of ideas. At this initial presentation of the cards, we were able to receive immediate responses and questions to the visual layout and the cards' general 'readability', which furthered our precision regarding the various card elements.



Figure 1. Mapping approaches from existing collections of cards.



Figure 2. Mapping approaches in a Design for Longevity Compass.



Figure 3. Discussing the deck of cards with two designers collaborating with Copenhagen Fur.



Figure 4. Example of cards in use.

In the third stage from September – November 2016, we followed the two designers collaborating with Copenhagen Fur, during the design developments (see figure 4). In order to gain insights on how the deck of cards was perceived and possibly adopted, we have engaged in informal conversations and used ethnographic observations (Crouch & Pearce, 2012; Denzin, 2003), as well as conducted semi-structured interviews (Kvale & Brinkman, 2008) during and after design completion. Furthermore, we have presented and received feedback on the prototype deck broadly within the Copenhagen Fur organisation.

In the final stage, December 2016 – February 2017, we have iteratively adjusted the deck in terms of content and visual structure, in line with participant feedback. Lastly, in order to test the general understanding of the cards on a larger group of people, we have obtained feedback from colleagues, students, external stakeholders and research networks.

*The Deck of cards*

The final deck comprises 29 cards, each informing on, and describing an approach to product longevity. On one side of the card, there is a visual compass (see figure 5) showing

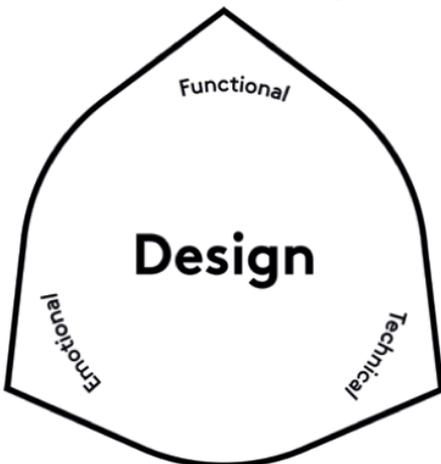


Figure 5. The Design for Longevity Compass.

how the individual card links to three overall approaches to design for longevity defined as:

- Technical lifetime i.e. the length of time a product stays in use before it breaks or wears out
- Functional lifetime i.e. the length of time a product stays in use before its functionality no longer meets the user's expectations or needs and
- Emotional lifetime i.e. the length of time a product stays in use before the user stops having any emotional attachment to it.

In combination with the longevity compass, each card, i.e. approach to product longevity, is related to six sub-categories represented by visual icons (see figure 6). To work across the product lifecycle, each card is linked to between one and four categories.

- Material relates to aspects concerning raw materials.
- Production relates to aspects concerning production.
- Transport and Retail relate to logistic and handling aspects.
- Practice and Use relate to aspects in use.
- Recovery relates to the recovery, reuse or recycling of a product in post-use.
- Design and Concept relate to aspects in the design.

The other side of each card presents the user with information on the specific approach, including descriptions of what the approach is about, why it is useful, particular challenges, real life examples, links to other approaches and further reading. A card example is shown in figure 7.

The result represents a concluded first phase aimed at professional design practice in companies and organisations, here specifically designers of fur. The second phase of the project, to be conducted in the spring 2017, has addressed the development of cards for design education.



Figure 6. The six Design for Longevity categories: Material, Production, Transport and Retail, Practice and Use, Recovery, and Design and Concept in relation to a product life cycle.

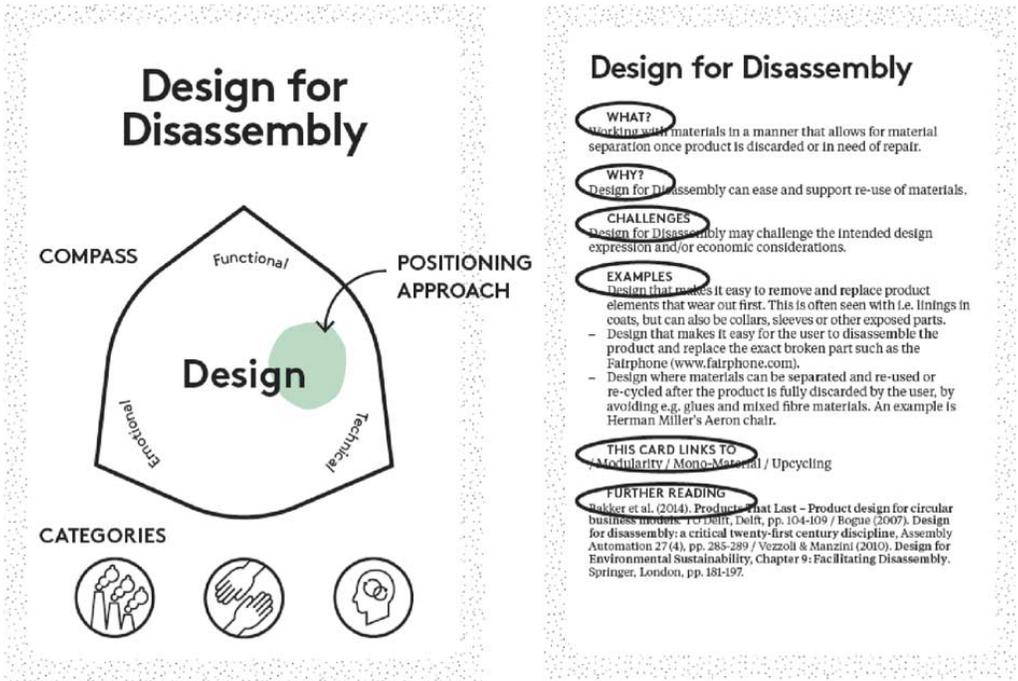


Figure 7. An example of a card for the approach 'Design for Disassembly' with a graphics side (left) and an information side (right).

**The cards in use**

The two designers came to the project with different backgrounds. Designer A graduated from Design School Kolding in 2010 within menswear, and has since worked in small and medium sized fashion companies in Denmark.

Designer B holds a BA from Central Saint Martins, 2004, and a MA from Royal College of Art, 2007. After working for big international fashion brands, she formed her own company, doing consultancy work.

The designers' initial response to the deck, and the subsequent implementation of the deck in their design processes differed to a high degree. Designer A showed openness towards the deck as a design tool, and engaged from the early stages with the cards as well as she up kept a dialogue with us on their use. Based on her experience, she saw the cards as a useful way for fashion designers, to understand different approaches to product longevity, to identify relevant approaches for specific contexts and to work with them in the design process, both prescriptive and descriptive. She furthermore saw a potential in the deck, as a tool used by design teams and company organisations to further dialogue on sustainability strategies.

Designer B expressed a rather more skeptical point of view towards the deck, which she saw as an unwelcome creative interference – something that would limit her own idea development and creative conceptualization. Therefore, her interaction with the deck throughout the design process was limited. She was also more doubtful of the cards as a means for dialogue in teams and within

companies, as dialogue in her experience, does not take place between the different levels in hierarchical structures of fashion brands, where designers are seldom represented at the strategic top level. Yet, what we could observe, was that the cards were used by other participants in the project, to understand how her design embedded approaches to product longevity, and they were in this respect applied as a dialogue tool after all.

With regard to the company, they broadly found that the cards functioned as a way for them to understand themselves, within the organization, and to disseminate to external stakeholders, how the designers had implemented approaches to product longevity in the design process and how the finished designs could be articulated as supporting sustainability through enhanced product lifetime. I.e. the cards became a way to break down some of the complexity surrounding the notion of sustainability by making it more concrete.

These findings are strongly in line with the keynote presentation recently made by Prof. Manzini at the Cumulus Conference in June 2017. Here he argued that in order to work with the complexity of sustainable development, we need to make things tangible by simplifying this complexity, and we need to conduct experiments in semi-safe spaces that can be dispersed to embrace larger groups of actors.

**Reflections**

The above findings could indicate, that the practice of using cards in a design process, to some extent depends on

educational background and previous work experiences. Designer A had been exposed to design cards during her studies, and was therefore familiar with their different use possibilities, whereas designer B had no previous experience with cards as a design process tool. What is also noteworthy, is that designer A had an articulated interest in creating sustainable change in the industry, whereas designer B was introduced to sustainability thinking through the design brief and during the project period. In a way, the two designers seemed to represent the ongoing dichotomized stance towards design methodology i.e. either pro methods, because methods form the basics of how we conduct design, from which improvisation and excellence can spring (e.g. Cross, 2011; Hallnäs, 2009), or contra methods, because they are seen to be to prescriptive, limiting to creativity and projecting a false understanding of design as something that can be done by recipe (e.g. Alexander, 1971; Jones, 1977). Interestingly, the stakeholders surrounding the project within the company, approached the cards from a neutral ground with regard to design traditions, and basically made use of them to dissect what was going on in the designs, from a sustainability perspective.

## Conclusions

We have asked how the development and application of design cards might, or might not, further designers' understanding of - and ability to design for - extended product lifetime?

Based on the findings we conclude that the deck of 29 cards can be used in multiple ways by designers when developing design for longevity. Although type and depth of application seems to be influenced by designers' prior experience of using tools such as cards, and hence educational background and tradition, the paper shows that the cards can be a way to inspire the early stages of a design process in brainstorming sessions as well as a frame for developing concepts. Furthermore, they can be a way to mediate knowledge and values in multidisciplinary teams, through discussion of knowledge and values that relate to the specific cards. Lastly, they can be seen as ways to reflect and create analytical awareness of own, as well as other companies' or designers' processes and products.

## Further perspectives

As mentioned, the deck is currently in the process of being developed for education and thus a broader understanding of design, where after they will be tested in a teaching context. As for the Copenhagen Fur, they have decided to use the cards this spring within their fur design course and accompanying design competition, and thus focus the student design brief on product longevity. Moreover, they have produced small video 'explainers' to be put on their website, that clarify the cards and how they can be applied for potentials interested parties. Lastly, the company have chosen to disseminate the cards to their collaboration partners. Hopefully this example can inspire other brands to engage with and apply research in their strategic work with sustainability.

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