Rethinking the Fashion Collection as a Design Strategic Tool in a Circular Economy

Ulla Ræbilda*, Anne Louise Banga

aDesign School Kolding, Denmark
*Corresponding author e-mail: ur@dskd.dk

Abstract: The fashion industry is currently undergoing a radical change towards an overall sustainable paradigm shift. This paper investigates how the fashion collection, as a particular design framework, might be reconfigured as a strategic driver for garment longevity furthering sustainable fashion design. The study builds on a case study of a company offering a subscription service for baby clothing, exploring in detail whether and how the collection is used as a strategic design tool. In the analysis and discussion, feedback from users, manufacturers and the garments themselves plays a crucial role in the development of the collection. To some degree this differs from the development of a linear fashion collection. The paper concludes by suggesting a framework for using the collection as a strategic design tool designing garments for a product service system while adopting a circular economy thinking.

Keywords: Circular Economy, Sustainable Fashion Design, Fashion Collection, Strategic Design, Garment Rental Systems

1. Introduction

The fashion industry is currently undergoing a radical change. On the one hand, ever faster speed to market is driven by fast fashion logics and social media. Simultaneously there is talk and signs of an overall sustainable paradigm shift driven by the increasing body of data on the negative environmental and social impact of fashion production and consumption (e.g. Fletcher & Grose 2012; Fletcher & Tham 2015; Gardetti & Torres 2013).

Yet, within this setting of change, the notion of the fashion collection (i.e. a range of garment designs that are seasonally determined, Renfrew & Renfrew 2009) seems to prevail as a predominant format for designing and marketing fashion garments, even though fast fashion’s continuous and rapid influx of garments has brought about an acceleration in the industry at large.

Whether this is due to industry conservatism and reluctance to innovate, or whether the collection format lingers for other reasons is hard to determine, as the subject of the collection is under-researched. While there is a large body of research on the topics of fashion design process and creativity, (e.g. Le Pechoux et al. 2012; Sinha 2002) little attention has been payed to the role the collection might play within fashion design practice and consumption, let alone its possible strategic potential. This is somewhat of a paradox, since the notion of the collection seems to be key to the way fashion is communicated. However, we find that not only the fast fashion system but also the
seasonally tied collection system can be viewed as problematic from a sustainability perspective, as both build on a linear logic of continued replacement of old garments with new. In this paper we will refer to the seasonal collection system and the fast fashion system collectively as *linear systems*.

This study investigates how the *collection*, as a particular design framework, might be reconfigured as a strategic driver for garment longevity furthering sustainable fashion design. The paper is based on a case study of Vigga, a Danish company that has adopted a circular business model, offering a subscription service for eco-certified baby clothing. Due to the limited data (single case) and the highly segmented field (children’s garments) we propose to view the outcome of this investigation as indicative – pointing to potentials.

### 2. Theoretical Framework

The topic of the paper addresses issues relevant for the sustainable development that is currently taking place within the fashion and textile industry. Therefore the fashion and sustainability research field constitutes a contextual backdrop, as explicated in the introduction.

More specifically the paper addresses ways in which fashion and garment design can be conducted within a *circular* business model. Hence the paper enters the discourse of new evolving business models building on services and a circular re-use of products and resources. Although designers are often bound by the objectives and strategies of companies which may lie far beyond the designer’s reach we align with the viewpoints of Botsman & Rogers (2011) that designers must ‘stop focusing on ‘thingification’ and address the ecological impact of the products they design’, thus they ‘must help find a balance between the needs of the consumers and companies and the collective interest of society’ (ibid: 187). The authors propose three overall strategies to support such a development: product service systems; redistribution markets and collaborative lifestyles (ibid: xvi). A further understanding of how such circular strategies can be carried out on a practical level from a business perspective has been adopted from Lacy & Rutquist (2015), who view the transition to a circular economy as perhaps ‘the biggest revolution and opportunity for how we organise production and consumption in our global economy in 250 years’ (ibid: xv). The key element in the authors’ thinking is to turn ‘waste into wealth’, and they identify four areas where waste holds potential for circular business (ibid: xvii): 1. Wasted resources (materials and energy consumed and lost); 2. Wasted lifecycles (artificially short lifecycles); 3. Wasted capabilities (unused or idle products) and 4. Wasted embedded values (unrecovered components, materials and energy from disposed products). From the many presented models, we find that *The Product Life-Extension Business Model: Products That are Built to Last* reflects the present case, as the model implements Resell, Repair & Upgrade, as well as Refurbish & Re-manufacture practices (ibid: 68-70).

Lastly the paper addresses how the collection might be a strategic tool in a design practice aiming for circularity. Renfrew & Renfrew (2016) offer practice-based ‘how to’ guidelines for the development of collections. They see the collection as ‘a range of garments brought together to tell a story’ and ‘designed for a season or particular occasion’ (ibid: 9). Their understanding of the collection is closely tied to the practised design and manufacturing process, i.e. the different stages that garments undergo from initial inspiration to the final showcase of a finished collection. It is thus focusing on the processual aspects of the development, leaving out the question of how the actual content of the collection is decided upon. Nixon & Blakley (2012) see the notion of ‘collection’ as a broader methodological approach, as both a noun and a vowel, a sampling and collecting in time and space, for a collection purpose, within what they view overall as a particular fashion thinking methodology. The question of how the collection might work as a design tool is addressed within a larger study on fashion design practice (Ræbild, 2015). That case study comprises five companies of varying type and scale that design between 2 and 12 collections per year within a linear structure. It proposes a framework for collection building consisting of 11 interlinked parameters (represented in section 5,
Table 1 below). The larger study thus offers insights into the concrete elements that fashion designers, working in the context of a linear business model, take into consideration, when they strategize and design collections.

3. Methodology

The case on which this paper builds is the Danish company Vigga, which offers a subscription service for baby clothing. The company was founded in 2014 and entered the market in 2015 with the explicit purpose to contribute to a sustainable development in the garment sector for children’s clothing through longevity and eco-certified materials.

The core data in the paper derives from a 60-minute semi-structured interview (Kvale & Brinkmann 2009) conducted in November 2016 with one of the founders of the company. It took place at Vigga’s premises located in the Copenhagen area in Denmark. Previously we had collaborated with the company over a two-year period studying and prototyping materials for longevity and conducting user studies to further understand the product service system and aesthetic preferences in terms of garments and materials in a circular system (Riisberg & Petersen 2017 and Ravnløkke & Bang 2016).

The interview guideline comprised questions that centred on how Vigga’s designs are developed, how its garment range is structured, and how the company decides on the different subscription packages. The purpose was to clarify overall design parameters and strategic considerations in its practice. The interview data on the design and collection practice within a circular business model was analysed against design parameters pertaining to the linear and seasonally tied collection building practice in order to explore similarities and differences between the two. We have deliberately refrained from using the framework parameters in the interview guideline. This decision was made in order to let the case participant answer based on the company’s own practice perspective and thus prevent a particular direction in the answers. To support the comparative analysis, we have used tables and manual colour coding. The focus has been on contextual meaning as advocated by Schembri & Sandberg (2011), as opposed to using a computational approach to search for particular words.

4. Collection Building in a Circular Business Model

There are several challenges connected to designing and maintaining a collection that spans over a relatively long period of time compared to linear fashion collections. In a traditional linear fashion system each collection will be replaced by a new collection following a temporal loop that often follows the seasons. In a product service system based on subscription each item is expected to be used by different subscribers for a certain, longer period of time.

In the case of Vigga the active period of each item is estimated to be 82 weeks. The Vigga collection spans approximately 2.5 years. The smallest size, Newborn, as shown in Figure 1, comes in one variation common for boys and for girls. There are 7 sizes following the Newborn size, and each size comes in two series for boys and two series for girls, i.e. a total of 29 packages. Each package contains between 15 and 20 items, depending on size, covering the basic baby wardrobe. Each size is estimated to be in the subscriber’s possession from one to six months depending on the child’s age and how fast the child grows. Figure 2 shows an example of different sizes. According to Peter Svensson, Co-Founder and Chief Customer Officer, this means that the customers have to adapt to the garments in a different way than in the linear fashion system where you basically buy a new item to replace or supplement your wardrobe. Thus, a crucial design challenge for Vigga is that the
renewal and maintenance of the collection is slow and fluent, since the items are replaced stepwise as they are worn out. This puts a lot of pressure on the design of the total collection as well as renewal and adjustment of the series.

Figure 1. The Newborn collection. Courtesy of Vigga.

Another big challenge for the company is to adapt to the seasons and at the same time secure that each item is used for 82 weeks. Due to the Danish weather with a significant seasonal difference it is necessary to vary the collections over a year. At present the content of each package is adjusted in April and October. The combination of garments in each package is essential. Since the start in 2015 the company has added extra product lines to the service, among them a package with basic wool wear and supplementary outerwear. This is another way to add a seasonal touch to the collection. According to Peter Svensson the company is continually focusing on developing the brand and additional choices for the basic collections are one direction, for example the option of party wear. In the long run the company plans to offer a level of package customization that allows the subscribers to mix and match across the items responding to individual needs and aesthetic preferences. Lately Vigga has expanded the concept of catering to changing needs due to physical growth by adding a line of maternity wear.
The importance of design aesthetics and design choices was emphasized several times during the interview. For example, the choice of style, colours and materials are as important as in the linear fashion system, since the design profile and the concept is the entrance point for many subscribers. It is important to define the concept and brand it in a way that attracts the subscribers. Interestingly, this also means that there may be some potential subscribers that are attracted by the concept but choose not to subscribe due to the aesthetics. The design of a linear fashion collection is highly influenced by trend and prevailing style, colour and shape, whereas the Vigga collection is more focused on enhancing product longevity through the design. However, the company has a certain style when it comes to colours, patterns and materials, cut and details. Furthermore, it is crucial that each style functions as a part of a series (the packages).

Initially the company emphasized details and variations both within and across the sizes. This resulted in a highly complex range of products that turned out to be difficult to maintain. For example, some details were worn out or damaged long before the estimated 82 weeks of use. Therefore, a set of durable and wear-resistant details that secure longevity in wear and maintenance were developed. Furthermore, customer feedback showed a wish for some repetition of design elements across the sizes, e.g. cut, shape, details, patterns, and colours. However, Peter Svensson underscored the importance of designing for flexibility in sizes and fit (multiple consecutive users). In the actual collections there has been an emphasis on recognition between the series and at the same time creating universes that fit the actual size and thereby the age of the children. There is also an increased focus on solutions that fit many body types. This means that the children can use the same style and not depend on narrowness, length etc.

Sustainability is one of the key parameters in the Vigga service, which has a GOTS certification (Global Organic Textile Standard) ensuring that 95% of the fabric fibres are certified organic. This standard is often referred to as the highest standard within sustainable textiles. When working with a collection that has a presumed lifetime of 82 weeks and are meant to be used by many different users, mechanical wear also plays an important role in the choice of materials. Vigga continuously seeks to develop design solutions that counteract mechanical wear by analysing wear and tear in returned items. Peter Svensson mentioned potential future initiatives, such as design for repair and disassembly as parameters worth considering on a more formalised level.

Refinement of the circular business model system is dependent on feedback. Vigga gains insights from feedback from three different sources: Firstly, from its subscribers. Vigga has a very active user
community, and feedback is obtained through the company’s Facebook page. Here the company poses questions to its users on specific issues regarding the design, but it also feeds off the questions that the customers pose to the company. Furthermore Vigga holds workshops and events to gain insight into user experiences and preferences from subscribers as well as potential customers. Secondly, feedback from manufacturers is crucial. The materials suppliers are partners rather than traditional suppliers. They are involved in the development and testing of the materials. The importance of sharing values and goals is stressed, and hence the manufacturers enter into a collaborative ‘community’ centred on knowledge sharing as opposed to a traditional linear supply chain. Finally, the garments themselves provide feedback when they are returned for washing and maintenance. The wear, tear and abrasion in returned garments is scrutinized and considered to be crucial information. Which part of the garment is usually ruined, which part has a good durability etc. Altogether the feedback and insight enables Vigga to conduct continuous development and refinement.

The question is whether designing and maintaining a garment collection in a circular system shares some similarities with designing and developing collections in the linear fashion system. Furthermore, it is important to know whether there are additional parameters worth considering when designing for longevity with a sustainable mind-set. In the following section we analyse the case study looking at design practice in a circular system comparing it to a framework based on design practices in a linear system.

5. Comparing Circular Practices to Linear Parameters

In this section, we have placed tentative findings identified in the data in a table (Table 1). The left column lists the linear collection parameters as defined by Ræbild in her larger study (2015) referenced above. The right column lists circular design practice examples that refer to the same parameters.

Table 1. Linear collection parameters compared to a circular practice.

| Linear Collection Parameters (Ræbild, 2015) | Circular Practice Examples (Vigga case) |
|---------------------------------------------|----------------------------------------|
| 1. Inner to outer                           | The collection is similarly graded from the body and out, but in this case outerwear is an optional add-on choice. |
| To grade styles in collection with regard to proximity to body | |
| 2. Cool to warm                             | Temperature is regulated through cotton garments that can be layered and supplemented with seasonal add-ons, which can be either a material, say wool, or a garment type, say outerwear. |
| To grade styles in collection with regard to temperature: a. material properties | |
| b. shifting seasons                         | |
| 3. Basic to complex                         | The collection is made up of relatively ‘classic’ and basic design that is interpreted in the current zeitgeist. The right balance between aesthetic longevity and in the moment relevance play a big role. |
| To grade styles in collection with regard to level of design complexity | |
| 4. Colour range                             | Colour range is continuously developed in an organic process in which company aesthetics, user preferences and the longevity |
| Section | Description |
|---------|-------------|
| **within company expression** | perspective are weighed against each other. |
| **5. Material range** | The material range is built with a focus on longevity, i.e. a choice towards ‘classic’ materials of high quality and durability. Say, good cotton quality that can stand heavy treatment in the homes. Furthermore the materials must be Eco certified (GOTS). Also, focus is on materials that have flexibility and form stability (of shape). |
| **6. Price range** | This issue is not specifically addressed in the data. The packages are set at a specific price level that reflects the price range. |
| **7. Style role** | Primary focus is on basic garments, where all items in the collection cater to specific basic wardrobe needs. Each style has to fit into a package solution and thus has a particular role in the specific package which must be easily understandable to the user. Additional style roles are developed as optional add-ons such as outerwear. |
| **8. Temporal role** | All styles are developed from a ‘longevity’ perspective with an overall ‘fluent’ temporal loop within the same universe/style. Styles are replaced with new styles when the old ones are worn out. Design elements can ‘carry over’ between styles and sizes (e.g. closure details), thus there is a strategic temporal use of design features for user recognition. It must be possible to mix all styles, while at the same time there is an attempt to vary the collections according to the seasons. |
| **9. Material groups** | There are two main material groups: Cotton for basic packages. Wool for add-on choice. It is basically knitwear. Weave and print is used to a lesser degree. |
| **10. Performative groups** | Singular strategic focus: To develop garments for longevity, circulation and re-use. Sub-groups pertaining to the 29 different subscription packages; newborn, boy, girl x age groups. Sub-groups pertaining to add-on options. |
| **11. Feedback loops** | Multiple strategic feedback loops, e.g. material tests, user surveys, user workshops, social media communities etc. Feedback information is also gained from studying the garments themselves, in the constant flow between company and user. All feedback implemented in the development of the design. High focus on preventing the customer from having to face the same error several times. Tight collaboration with suppliers sharing the same values in order to prevent errors and secure quality. |
From the above comparison (Table 1) it can be argued that the collection parameters used in the linear fashion system are similarly relevant within a practice focused on circularity (as opposed to linearity) and product longevity (as opposed to product obsolescence). Yet, the parameters are applied in different ways in order to cater to the circularity, product longevity and re-sale aspects central to the business model. This issue will be addressed in the following section along with a number of new emerging parameters that seem unique to the circular design and collection practice.

6. A Guideline for Circular Collection Building

An important part of the overall circular design strategy is the development of a number of systems that differ from the season-based and linear systems. The first one is a product service system (rather than a product system) that enables easy identification of the right product, easy access, easy use, easy maintenance and easy replacement of garment packages for users. Secondly, the practical design work is highly dependent on feedback from different stakeholders in a two-way and interactive format to support the refinement of existing design (rather than a one-way system to support sale of new design) – in other words, a system of different feedback loops, where users, items and manufacturers impact the design. Lastly, the concept of the ‘collection’ is visibly present and applied in the circular design practice, but the collection represents a new type of collection system thinking that involves long-term temporal planning and, in this case, a grouping of garments in specific age and gender packages. It is a system that defines garments within groups of basic wardrobe needs supplemented with individually chosen add-ons. Hence, overall the service system, the user-interaction platforms and the garments must be designed as a whole. Temporal planning is also necessary in the linear model, in the sense that it is a logistical and designerly challenge to develop and launch consecutive collections and/or garments at a high speed. The difference lies in the contrasting approaches to how ‘the temporal’ aspect can be applied as a strategy, namely to aim for longevity or the opposite – fast product replacement. That said, many groups within the fashion industry now do not necessarily agree with the concept of fast fashion, and durable products and good quality is not exclusively an aim within sustainability focused companies.

Regarding materials, the choice of range seems as vital in the circular system as in the linear. Vigga has some specific material properties on which the company’s choices are based (e.g. flexibility and certification), but such specifics can generally differ, also within the linear system. The biggest difference here is that: A. The materials must all be easy to maintain for the user in the daily caretaking (not always a criterion in the linear system), as well as on return, when they must be cleaned by the company before they are sent out again (not a criterion in the linear system). B. The range of materials is limited, and changes in the range happens slowly (this is not a predominant issue in the linear system, as focus is on newness).

A number of parameters that exceeded the existing linear one emerged from the data (Table 2). For this particular case (Vigga) they represent important issues, but the level of implementation differs, from highly embedded, such as e.g. flexibility and durability, to aims for the future, such as e.g. design for disassembly and repair.
## Table 2. New emerging parameters for strategic collection building within a circular system

| Parameter                                           | Description                                                                                                                                 |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Flexibility in fit and function                  | Design for high level of flexibility in both function and fit to secure the highest degree of user satisfaction and to reduce the number of overall styles in the collection. |
| 2. Technical durability                              | Address the challenge of mechanical wear while in the user’s possession through material choice and garment design.                           |
| 3. Logistics vs. user preferences                    | Balance logistical challenges with user preferences by analysing different impacts regarding sustainability. Design and develop the service in parallel with the products. |
| 4. Package range                                     | Continued development of the product service system and the package ‘collections’.                                                            |
| 5. Design for repair                                 | Future goal: to investigate how to design for repair.                                                                                         |
| 6. Design for disassembly                            | Future goal: to investigate how to design for disassembly, recycling and re-design.                                                            |

### 7. Implications of Guideline – Discussion

Even though the parameters for designing fashion collections in the linear fashion system can be used as a guideline when designing in a circular product service system there are specific design challenges as exemplified in the above analysis. With this in mind it seems especially relevant and necessary to discuss designing for longevity and the necessary interaction with stakeholders (e.g. users and suppliers) in a circular system.

We argue that the parameters above (the existing as well as the newly identified parameters) may serve as a tentative guideline for designers embarking on the journey of designing for sustainability. In addition we wish to emphasize the following design challenges in designing for sustainability in a circular product service system:

Firstly, there is a need for thorough interaction with the customers in order to gain as much knowledge as possible for further development of the collection. It is crucial to develop ways to engage users and interactive meeting ‘spaces’ for exchange of knowledge when designing for longevity.

Secondly, there is an increased need for a close and trust-based collaboration between design companies and manufacturers. Manufacturers, moving from a linear supply chain thinking towards a circular model, can benefit from being innovation partners rather than merely suppliers. Design company and manufacturer may share the same goals and values to a higher degree than in a linear system thinking. Therefore the development regarding design for repair and disassembly may well be situated here and build on knowledge developed within other sectors. A good example is the technology sector, for example the phone company Fairphone (fairphone.com). They offer a modular phone design and spare parts which make it easy for anyone to make repairs.

Thirdly, there is an increasing need for fashion companies to see fashion design as a process of gradual refinement rather than replacement. Besides, in terms of a reduction in the sustainable footprint, there is also a huge market potential in the circular models. There are numerous target groups and aesthetic positions to choose from that further the development of a circular economy in fashion and textiles.
8. Conclusion

In the beginning of the paper we set out to investigate how the collection, as a particular design framework, might be reconfigured as a strategic driver for garment longevity furthering sustainable fashion design. We have used the case of Vigga to argue that designing garment collections for a circular product service system includes many similarities with traditional collection building. Furthermore, we identified a set of additional parameters relevant to consider when designing for a garment collection in a circular product service system.

This paper has focused on a study of a subscription service for baby clothing; there may be other differences within other target groups or garment groups. However, we suggest that this paper may serve as a starting point for discussions of key questions regarding how to design the fashion collection in a circular product service system; how to transfer good practices to other enterprises and also to what extent the designer exerts strategic influence. In order to further generate and strengthen the knowledge about designing fashion collections for circular systems it will be highly relevant to add cases to this example.

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About the Authors:

Ulla Ræbild is an Assistant Professor in Fashion, Method & Sustainability at Design School Kolding, Denmark. She earned her PhD degree in fashion design methodology in 2015 and has since pursued research and development at the intersection of fashion design practice, design education and sustainability.

Anne Louise Bang is an Associate Professor in Textiles, Co-Design and Sustainability at Design School Kolding, Denmark. She earned her PhD degree in applied textiles in 2011 and has since pursued research at the intersection of textiles, dialogue tools and sustainability.

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