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The Aesthetics of Sustainable Design

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The question of sustainability in design is at the heart of contemporary design discourse and design development. Sustainable concerns pervade design in a degree where it often is difficult to detect, at least from outward features, whether the product is sustainable or not. As an example, the Swedish company Fjällräven in 2016 launched Re-Kånken as a sustainable version of the model Kånken from 1978. Re-Kånken is made of 100% polyester derived from recycled plastic bottles. In its visual expression, it is entirely monochrome and available in a series of intense colours. Apparently, it does not bear a visible mark of being a sustainable product.

In this paper, we will raise the question of how – from a consumer perspective – the sustainable aspect is present and detectable in design. We will address this question by investigating the aesthetics of sustainable design by exploring different strategies of communicating products as being sustainable. Is sustainability merely a principle of internal construction, does it operate as a strategy of emotional commitment and subsequently prolonged use through employing symbolic elements, or is detectable through ‘external’ signs e.g. through the use of specific colours? In this way, the metaphorical use of “green” has been a part of the discourse since 1980s (Madge 1997). Further, how is the sustainability of the design product dependent on mediation in order to be comprehensible?

We will start out presenting the concept of aesthetic coding as central methodological concept for our approach and relate this to discourses of sustainability. On this basis, we will pose the question of which types of aesthetic coding are in play, and how they relate to different notions of sustainability in design. We will propose a matrix of aesthetic strategies in relation to sustainability and discuss this through selected examples of mostly contemporary design.

Aesthetic coding

We cannot talk about aesthetics in design in a unitary way. Recent approaches aim to describe the aesthetics of design as the experience of dependent beauty and use (as opposed to the non-interested experience of art, Forsey 2013) or as designers’ use of sensual means to create sensual and emotional appeal (Stockmarr 2014), an approach that aligns with the trend of investigating how the appeal to emotions and pleasure may be made applicable in design practice (e.g. Hekkert 2006; UMA 2017).

In this context, however, aesthetics will be employed as an entry to conceptualizing how design objects may appear and whether and how their appearance is founded in either the meaning or the purpose of the design. This approach is inspired by Kantian aesthetics where the relation of sensual manifestation and meaning-giving

concepts is at stake (Kant 1995, see also Forsey 2013). As a central concept for methodology, we will talk of *aesthetic coding* in order to describe the relationship between outer physical manifestation and inner idea of the object in the question of how the specific meaning content can be physically manifested and reflected in a variety of ways in the object (Folkmann 2013). In this way, the expression and appearance of sustainability in design may be contested along with the notions of sustainability in and behind the design.

A similar approach to aesthetics can be seen in a discussion by the design historian Catharine Rossi, where she points to the question of the aesthetic appearance of critical and conceptual design objects in relation to production strategies (Rossi 2013). She points to the sometimes calculated and polished aesthetic appearance of objects that draw on principles of the homemade and/or avant-garde intervention, that is, where the outer appearance stands in a contradiction to its inner principle.

Whereas Rossi aims to morally judge the ‘right’ fit (the good design is the honest design), we will openly contest the relationship between outer appearance and inner idea. In this way it can also be investigated what the role of the inner idea plays for the evaluation of aesthetic qualities. It may be that people evaluate the aesthetics of an object as better if they have knowledge about invisible aspects of the design, e.g. the ethics of sustainable production: If design objects are seen as “good”, will they also be regarded as more “beautiful” (da Silva et al. 2014)? Also, certain conventions may exist for the appearance of sustainable design, even if it may also attempt to break free of what Stuart Walker calls the ‘cage of aesthetic convention’ in relation to sustainability (Walker 2006). What we may look into, then, is the relationship of outer, more or less established visual-tactile codes and the idea of sustainability.

Inner and Outer Sustainability

In her seminal article on the historical development of concepts of ecological design from the buzzword “green design” in the 1980s over the ideological and eco-structural models of “eco design” in the 1990s to the contemporary term “sustainable design”, implying a broader, global and more long-term envisioning of sustainable development, Pauline Madge demonstrates that this transition “represents a steady broadening of scope in theory and practice” (Madge 1997: 44). With the global perspective of production, consumerism and pollution, the complexity of sustainable matters has only increased since it came to the fore in the 1960s. Working with sustainability today is not only a question of “right” production in terms of optimal life-cycle models of products, but also of addressing the difficult, but necessary “changes of lifestyles that challenge the current global model of development” (54). Seemingly, however, the flipside of this increased complexity is a disappearance of the visibility of the sustainable element of design; whereas “green” is the readable metaphor of the sustainable design in the 1980s, the expression of sustainability is difficult to detect in the system-complex solutions. In addition, the mediation of design in ads and promotion material gets more important in order to communicate sustainability and make it more readable for consumers.

On this point, we may differentiate between an *inner* and *outer* principle of sustainability. This may be seen as a spectrum; which not only can be employed in a historical description (from outward expression to inner design of the product) but also in a wider typological conceptualization. Before coming to a description of different strategies of aesthetic coding of sustainability, we will briefly describe the basic positions of inner and outer sustainability.

Inner Principle of Sustainability

As one extreme, the element of sustainability is not detectable at the surface of the design object but operates as part of its internal construction principles. A paradigmatic example of this “inner” strategy of sustainable design is the Cradle-to-Cradle approach, propagated by architect William McDonough and chemist Michael Braungart in the beginning of the 2000s (Braungart & McDonough 2008). At the core of Cradle-to-Cradle is the assumption that everything can be designed in a way to enter larger circuits of metabolism where all materials either degenerate or are reused. Design should, according to this approach, mimic nature, not on the surface (as a certain palette of colours), but on a structural and material level. In other words, we may take inspiration from principles in nature to produce things in a radically new way that acknowledges growth, production, and consumption and where waste is not problematic but “equals food” in a new recirculation of materials. Here, the solution is to let “form follow evolution” to acknowledge the high level of industrial production and to let “the valuable nutrients in the materials shape and determine the design” (104). Interestingly, cradle-to-cradle is both a vision that demands the realization on a global scale, which may be difficult, and has led to the foundation of a consultancy practice advising and giving licence to so-called certified Cradle-to-Cradle products.

The Cradle-to-Cradle approach claims that sustainability could be integral of core aspects of the creation and production of design. *All* products could be sustainable without us as consumers detecting it at the surface of the products. The inner idea of sustainability stands in an arbitrary relationship to its representation on the surface of the design. To let concerns of sustainability be embedded in the “inner” design of products, as an element always to be considered and integrated, marks also the approach to sustainability in much design education, e.g. at the Design School Kolding.

This kind of “inner” sustainability may, however, require some explanation. This can be offered along the product in labels such as being cradle-to-cradle certified or in mediations communicating the sustainable features of the product. Also, the name may contribute to the meaning of the product. To take our initial example, the “Re” in the name “Re-Kånken” signifies that the company has some kind of a sustainable strategy; the informed user might further associate the “Re” to the use of recycled polyester. The “Re” could also point towards re-launching an iconic design expressing the sustainable principle of longevity through the aesthetics of form, function and durability of the material.

Outer Principle of Sustainability

As the other extreme, the element of sustainability may be “readable” directly at the surface of the design. This can be in form of colour or material, e.g. in “nature aesthetics” in 1970s and 1980s with the tendency to “jute instead of plastic” (Tischner 2011: 89). It should, however, then be questioned how the surface appears and how it relates to different principles of sustainability. As Ursula Tischler precisely states, “hand-knit socks of nature wool and grey waste paper are far from reaching a wider group of the population”; sustainable products today must also be “sexy, good looking and cool” (89). Also, the link of a specific colour pallet and principles of sustainability is not obvious. In the case of Re-Kånken, the new colour pallet does not signify sustainability as such but rather indicates changing aesthetic preferences linked to time. Further, the advertising campaign of Re-Kånken includes huge posters presenting the product on a background of a Nordic landscape which, besides mediating “we care for nature and planet”, also is a traditional framing for most outdoor companies.

Further, employing certain colours may appear as a marketing trick, as exemplified by the 2002 redesign of the BP logo as green and yellow flowerly sun (or a sunny flower). In analysing cultural connotations and context of the BP logo, design historian Rebecca Houze points out, that “the word and the color “green”, in addition to signifying springtime and Islam, also connote environmentally friendly policies for sustainable production, and use of clean and renewable energy resources, such as solar and wind power” (Houze 2016: 8). Oil is, obviously, not a clean and renewable energy resource, and BP’s use of the colour green may (apart from the green also referring to the company’s origin as the Anglo-Persian Oil Company in the 1910s and 1920s) have an element of dishonest “greenwashing”, which also came to the fore in the 2010 BP oil rig explosion and subsequent massive oil spill in the Mexican Gulf.

When the design aims to signify “sustainability” at its surface, the question of the aesthetic coding of the design is at stake: What is the relationship of outer physical manifestation and inner idea? This question may also be raised to the kind of design which aims to be indirectly sustainable through evocation of emotional attachment and subsequent prolonged use through employing symbolic elements (Chapman 2005). In his discussion of “the shape of green”, Lance Hosey points to three central principles for sustainable design: the connection with other things, being shaped for efficiency and being attractive as shaped for pleasure. In Hosey’s view, beauty and sensory appeal in design may lead to sustainability, as in “both nature and culture, shape and appearance can directly affect success and survival”, whereby, in the end, “the divide between “good design” and “green design”” may be bridged (Hosey 2012: 6, 179). Also the concept of “Aesthetic Sustainability” is being propagated in this context: Products may be sustainable because they through their aesthetics lead to greater attachment and satisfaction (Harper 2017).

Thus, over the past three decades a great number of various tools and theories supporting sustainable considerations in product design – including fashion and textiles – have been developed. Scholars apply more or less holistic approaches including

environmental, economic, social and cultural aspects of sustainability (Walker 2006; Braungart & McDonough 2008; Black & Eckert 2012; Chapman, 2005; Fletcher & Grose, 2012; Hasling, 2015; van der Velden 2016). In her PhD dissertation, *Learning through materials*, Karen Marie Hasling focusses on how holistically to "evaluate interactions between physical, experiential and sustainable aspects of materials used in product design." Experiential aspects are here described as the imaginative, sensorial and emotional effects evoked by a product that is perceived subjectively by the user (Hasling 2015: 2). Hence experiential aspects might be considered to overlap the notions of aesthetic attributes and aesthetic experiences.

Strategies of Aesthetic Coding

In this section we will point to different strategies of aesthetic coding. We will propose a matrix which provides a rough structuring of strategies. There may be, though, many variations and transgressions of dividing lines in the matrix. The matrix relates the idea (which may be of many kinds) with the expression on the surface of the design (Fig. 1)

		Surface (form, material, texture, etc.)	
		No immediate expression of sustainability	Immediate expression of sustainability
Idea	No relation to sustainability	-	<i>Greenwashing, sheer cynical marketing</i>
	Sustainability is part of the design itself	<i>Sustainable construction principles, e.g. Cradle-to-Cradle [Fairphone]</i>	<i>"Green"; "jute"; metaphorical expression: [Vegetal] Signifying marks in up-cycling [Trashion] Explorations of expressions in material and form [Nobody chair – may also cross the line to 'no immediate expression']</i>
	Sustainability is part of the meaning context of the design, e.g. in use or systems context	<i>Emotional durability</i>	<i>The concept/system is the basis of the meaning of sustainability in the products [Vigga]</i>

Fig. 1

We will select a series of paradigmatic example to discuss the variety of aesthetic coding and how they relate to different notions of sustainability in design.

1) Sustainable Construction Principles

A central strategy for obtaining sustainability in design is working with sustainable construction principles. This can be seen in modular design for disassembly when material selection and construction are carefully considered in the design phase. It is also essential to the implementation of closed loop systems where components and materials are reused or recycled as described in Cradle to Cradle thinking and Circular Economy (Braungart & McDonough 2008; MacArthur 2017). In this type of approach to sustainability, the element of sustainability is not necessarily detectable on the surface of the product, and the question is then, how the aesthetic coding of the product operates.

The Fairphone 2 is an example of modular design developed by a social enterprise based in the Netherlands. The core value of the company is fairness with the goal of making long lasting products founded on ethical considerations. Thus the company provides total transparency in the supply-chain including the break-down of costs in fair production of materials, good working conditions, as well as in their strategy for repair, reuse and recycling (Fairphone; van der Velden 2016).

After three years research and crowd funding 5000 units the Fairphone 1 was released in December 2013, followed by Fairphone 2 in 2015. According to the company it was designed from the inside out with focus on openness in order to engage users more deeply with their products. Examples of this strategy are access to the open source code of the operating system, access to repairing the device and multiple choices for the removable back cover and digital files for 3D printing protection covers locally.

The Fairphone 2 looks like most smart phones, but has a few unique aesthetic features. The most striking is a completely transparent plastic back cover also available in translucent blue or black. These cover types reveal the electronic parts, screws and battery; and in combination with the text FAIRPHONE and YOURS TO OPEN– YOURS TO KEEP it makes up a distinctive visual expression merging the inner idea and outer aesthetics. Users with more traditional taste can choose a matte back cover in blue turquoise or black. In October 2016 new cover options were launched allowing customers to select from a slimmer back cover in Red, Indigo, Turquoise and White in translucent, transparent and matte material. These new options can be characterised as a traditional aesthetic strategy meeting user desire for changing look in this case with minimal environmental impact compared to the current cycle of replacing mobile phones every 18th month (van der Velden 2016). Mickletwaite describes the Fairphone as: "... an example of ecomodernism because it makes little significant challenge to the existing design language and typology of the phone itself" (Mickletwaite 2017).

The company also offers a range of protection cases in different designs with a pregnant haptic element due to the raised parts of the surface. This adds a different aesthetic touch experience contrasting the otherwise smooth materials. Some designs were developed for 3D printing by members of the Fairphone community during the Design A Day Challenge. When ordering, colour and material can be customized before sending the digital file to a local 3D printer (Fairphone 2017).

Mugge et al. has proposed that sustainable behaviour is closely connected to product attachment identified by four determinants: Pleasure, Self-expression, Group affiliation and Memories (Mugge 2017: 378). Following this it could well be argued that the options for customisation and participatory approaches described above are important manifestations supporting product attachment and the sharing of sustainable values in the Fairphone community.

The name “Fairphone” is in itself an indicator of the company’s sustainable commitment based on the principle of fairness including social and environmental responsibility. Furthermore the company sees social innovation as the main driver for design and development, thus building a strong user community ready to share their values (Fairphone 2017; van der Velden 2016). Hence the inner idea of sustainability is expressed through the name and only detectable as outer aesthetic expression if the user chooses a transparent or translucent back cover. However Walker has suggested that:

“The aesthetic experience of an object is not simply an experience of the sensuous pleasure but is, in part a reasoned response that draws upon, or refers to, values [...] [K]nowledge of the ethical aspects of product design and production, and how these affect the designer’s decisions, can be linked to the aesthetic definition of the artefact.” (Walker 2006: 188)

We may conclude that Fairphone by engaging the user community in the development of the operation system, offering spare parts, supporting repair and return schemes are likely to prolong the lifetime of the product and also create emotional attachment that supports sustainable behaviour.

2) Metaphorical Expression of the Idea of Sustainability.

A central approach to let sustainability be reflected on the surface of the design is through metaphorical expression. Originally, a metaphor is a figure of speech, where an object (the “tenet”) is being implicitly compared to something else external of the object (the “vehicle”), e.g. “love [tenet] is a rose [vehicle]”, where love comes to bear the meaning of flowering and decay of the rose. In the metaphor this transference of meaning is implicit whereas it in a comparison (“love is *like* a rose”) is explicit. In design, metaphors most often appear when objects are overlaid with a meaning entity from outside of the object, e.g. when a corkscrew (tenet) looks like a woman (vehicle), such as Alessi’s Anna G (jf. Markussen et al. 2012).

An example of metaphorical design with a meaning content related to sustainability is the chair *Vegetal* designed by Ronan and Erwin Bouroullec and marketed by Vitra in 2008. In many ways, the chair resembles a traditional shell chair, but the shell is open-structured in an asymmetric web of interconnected strings. Thus, the chair is conceived to mimic an organic principle, which is clearly stated by the name of the chair, *Vegetal*, French for plant, and by the marketing material from Vitra, e.g. in stating “planted by Ronan & Erwan Bouroullec, grown by Vitra”. The chair is 99,3%

made of recyclable polyamide in a certified, energy-efficient production (Vitra 2017a) and is available in six colours where the green is most often used for marketing purposes.

The meaning content of the chair is, however, more complex than it simply signifies “sustainability”. The chair is the tenet, but the specific vehicle is more difficult to detect. It can on a concrete level be a “plant” (at least when the chair is green) or a more abstract principle of “organic growth”. In this way the chair appears not as a replica of vegetative structures as found in nature (as was attempted, for example, by the Arts and Crafts movement and Art Nouveau) but instead presents itself as a visual abstraction of nature. In Peircian terms, it is less an iconic representation displaying a likeness with nature than an indexical sign that points indirectly to a principle of nature (that is, not branches or leaves in themselves but rather their principle of growth).

The company presentation stresses the “concept of replicating structures found in nature”, that is that “Ronan and Erwan Bouroullec took their inspiration from natural vegetation” (Vitra 2017b). Further, the principle of growth not only testifies a principle of organic growth in nature, but also an artistic process. In a three-minute presentation film made to introduce the becoming of the chair and its basic principle of form, the chair is shown as the result of organically growing lines that emerge as watercolours on paper and intersect and thus cause the form, structure and appearance of shell of the chair (Bouroullec 2009). The film follows the becoming of the chair as the becoming of its principle of imitating vegetation and growth. Also, the film show how the chair in its core is based on an initial negation of nature (as “real” nature”) and the becoming of an abstract version of nature on a white background as the formation of a structure of new meaning (Folkmann forthcoming) – the becoming through an artistic process.

In its metaphorical construction, the chair can be seen as sign of sustainability. In the reference to nature (and by being made by a recyclable material in a certified energy-efficient production) we can say that the chair is aesthetically coded to express *an* idea content of sustainability which, then, by the abstract sign of the chair is a rather non-specific notion of sustainability as something just related to nature and the natural-ecological principle of growth. As stated, the chair can also be read to testify an artistic process. On general level, then, *Vegetal* also displays the difficulties of abstract object metaphors for conveying meanings of specific principles or ideologies of sustainability.

3) Upcycling as a Strategy in Sustainable Design.

Upcycled objects are often identifiable by the aesthetic coding displaying the inner idea through the outer appearance e.g. marks of use, patina, sampling of materials, colours, patterns or other elements revealing traces of the original object. Upcycling is generally considered a sustainable design strategy because it helps to protect the ecosystems, saving resources and preventing waste by using existing materials to create a product of higher quality or value than the original.

Trashion a BA project from Design School Kolding 2015 by Solveig Berg Søndergård is an example of upcycling 2nd hand garments. The project includes

participatory design in workshops with school kids age 12-15, outlines a concept for mediation on a digital platform, and experiments with new aesthetic expressions in a fashion collection. According to Solveig the aim of the project is to create a social community around fashion and clothing as a sustainable alternative to the consumer society and overconsumption. Solveig thinks fashion should be fun and for everyone and that it is a: "...great thing to use clothes to communicate a message and to show one's personality" (Søndergård 2015).

The overall aesthetic expression of the *Trashion* collection is intriguing and playful with a strong visual and tactile appeal. It is made up of eight unique hand crafted outfits. The look is influenced by the constraints of using existing garments. This can be observed by the way most styles are composed out of two or more different fabrics. All outfits consist of two pieces including various tops, a shirt, a cardigan, a sweater, shorts, tights, and different skirts allowing many combinations. The colour palette is dominated by black and white, supplemented with bright reds and jade green. Some styles are decorated with fringes and Swarovski crystals. These elements, not only add to the aesthetic tactile expression, but also catch attention by the kinetic effect underlining body movements and reflecting light. The materials are diverse ranging from humble cotton jersey and shirting in plain weave to shiny silk like fabrics with a feminine drape, a fancy woven jacquard pattern in white with 'gold threads' and coarse knitted textures. The colour contrasts and great variety of fabrics, along with the decorative fringes and crystals make up a rich sensorial experience.

The photos intended for posters and the digital platform mediates a conscious aesthetic coding where the clothes are supported by makeup, hair style, accessories, shoes, the model's postures and the two locations – a playground for skateboarders and a tunnel decorated by graffiti artists. This styling was an attempt to catch the attention of a young target group. Another approach to create a bonding to the target group was the staging of several workshops with different numbers of participants ranging from 1 or 2 to a whole school classes. For these workshops a variety of textile samples and participatory tools was developed to test the participants basic skills, initiate dialogue prior to transforming a garment and determine its new aesthetic expression. The insights gained were used as background to create content and aesthetics of the digital platform and the DIY instructions.

The aesthetics of the *Trashion* collection celebrates joy of life and encourages creating ones own style. Thus it is far from the "nature aesthetics" of the 1970's and 80's, mentioned by Tischner. The "nature look", often mentioned by the students at the design school, is perceived as dull, undesirable and something they definitely do not want to be associated with. Instead most of them seek an aesthetic counter to it where the signs of sustainable considerations are often coded and only explicit in information on a special designed hang tag, a marketing brochure or digital platform mediating the product and concept (Folkmann & Riisberg 2015). However those choosing upcycling as sustainable strategy more or less reveals the inner idea through the outer appearance but always in new unique aesthetic expressions.

4) Representation of Sustainability as a Principle for the Design

In much contemporary design, the expression of sustainability is not given in a fixed structure of signification, but is indirectly given in new or unexpected elements in the design signifying something “new”. This may also leave the degree of expression of the sustainable idea on the surface of the design hard to determine.

A theory for this approach can be found in Stuart Walker’s book *Sustainable by Design* where he points to the disruptive aesthetic strategies of the artistic avant-garde as an inspiration for obtaining methods for searching for not-yet-existing solutions and expressions of sustainability (Walker 2006). Walker points to the importance of experimental, explorative strategies of emerging meaning, even for a field as often technical in construction and material as sustainability:

“We do not know what a sustainable approach looks like. This is truly a journey of exploration. [...] To be a designer is to be on uncertain ground. [...] It is the role of designers as well as design educators and researchers, to be in the vanguard of this exploration – to visualize new possibilities and offer new responses” (32)

Walker does not offer many concrete examples of his conception and it may be difficult to see for oneself what the implications are of this thought. New responses must be given, but how? One option is to attempt to create a new aesthetics by working with the effects of the fabric of the material, as the fabric is not only a medium for creating the design but also a design object in itself, where aesthetic appeal is achieved by means of the tactility, form, colour and decoration of the fabric (Folkmann & Riisberg 2015).

An example of a new kind of expression of sustainability can be seen in the chair *Nobody*, designed by Komplot Design and marketed by HAY in 2007. The chair is made of PET felt mat which is pressed in one process in a way where the chair does not need an inner frame or use of “any additives like glues or resins, nor any additional materials like screws or reinforcements” (Komplot 2017). In many ways, the *Nobody* chair could be a paradigmatic example of a product being sustainable by upcycling materials; PET felt is mostly produced on the basis of used soda/water bottles and is, further, 100% recyclable.

What is remarkable about the chair is its expression of form and material. In its “radical form” it lets the textile, which is normally soft and used for upholstery, be identical with the carrying construction of the chair (Dybdahl 2016: 164-5). What looks like a cover for (another) chair *is* the chair. If we take aesthetic coding to describe a specific relationship between physical manifestation and idea we may in this case ask what the “idea” is. On a general level, the *Nobody* chair challenges given conceptions of what a chair is and places itself in resemblance with other chairs made in one piece of synthetic material, e.g. the Panton chair made as a single form of injection-molded plastic. In this way, the chair can be placed in a line of experimental design pushing the

understanding of what a “chair” is. On a specific level we can ask how it reflects an idea of sustainability. On the one hand, the unusual use of an unexpected material may let us suspect that the chair is special in the way it is made. The material construction of the chair is accentuated. On the other hand, we cannot attach this to sustainability just by decoding the chair in isolation. That we may suspect that the chair is sustainable in some way merely through its accentuated material is due to broader ideological trends of sustainability which may be effective for our perception of new materials today but, in comparison, not necessarily was effective in the 1960s or 1970s. Further, this kind of “cultural knowledge” of the chair being made of sustainable material is nurtured by and dependent on the mediations related to the chair: Each time the chair is presented, the story of its sustainable construction is being told.

The *Nobody* chair is interesting as a case of an explorative representation of sustainability as a principle of the design. In terms of our model of aesthetic coding, it can be placed in the middle of “No immediate expression of sustainability” and “Immediate expression of sustainability”: It testifies being something new which can be related to principles of sustainability but the chair itself only hints at this through its unusual form and material. This indirect, explorative relation of physical manifestation and idea in the chair does not, as we see it, mean a deficit in signification (the chair signifies badly as we cannot directly detect the sustainability-ness in the chair) but can be seen as a trend of openly exploring new possibilities and expressions of how sustainable products may look today.

5) Sustainability of the Product-Service Systems

Over the past decades a number of new business models have been developed. One of the most promising is sustainable product-service systems (SPSS); that is defined as a system of products and services supporting networks and infrastructures; which are designed to be competitive, satisfy customer needs and have lower environmental impact than traditional business models (Mylan 2015: 1). However this type of business model challenges ownership as well as traditional consumption and use patterns, e.g. by offering limited personal choices, the absence of shopping experiences and the sharing of personal items such as clothes (Riisberg 2018).

The Danish company VIGGA launched in January 2015 is an example of a sustainable product-service system. The company offers leasing of baby clothes package of 15-20 pieces from size newborn up to two years delivered in intervals that match the growth of children. Customers sign up for minimum three months and pay DKK 359 (approx. € 48) per month. The clothes are made of GOTS (Global Organic Textile Standard) certified organic cotton and are delivered by post in a special bag also used for returning them. Before being circulated again the clothes are cleaned by a professional laundry service, carefully inspected and, if necessary, repaired. After circulating among 5-8 subscribers clothes that are still usable but look too worn are donated to a children’s home, up-cycled e.g. to toys or handed in for recycling.

On the website the whole collection is presented and subscribers are given multiple options to combine various styles for their next package. The idea of sustainable consumption through sharing is carefully explained along with transparency of environmental steps in choice of materials and production. The collection is designed by VIGGA with a recognizable aesthetic profile supported by the website layout, colours and styling of photos. The look of the collection is slowly shifting as worn out models are replaced with new ones in different colors, patterns and materials. The unisex newborn package is in subdued ‘natural’ tones and white, whereas the rest of the assortment gradually adds more colours and patterns as the child grows (Petersen & Riisberg 2017).

As mentioned earlier, Madge noted that working with sustainability is not only a question of “right” production in terms of optimal life-cycle models of products, but also of addressing the difficult, but necessary “changes of lifestyles that challenge the current global model of development” (Madge 1997: 54). The VIGGA concept addresses this complexity in several ways. As a company, it demonstrates its holistic approach through transparency of all their actions, high CSR standards, GOTS certified materials as well as providing new alternative ways of consumption that supports changes in lifestyle. *And* the company provides the communication of this approach on the website; otherwise it might be difficult to detect only from the aesthetic appearance of the clothing itself. As a consumer you buy not only practical packages of baby clothes but you also buy into a possible consumption model of the future.

Conclusion

As demonstrated above, no direct connection between the “inner” sustainability of a product and its “outer” expression can be shown. If so, all sustainable products should submit to a specific code, e.g. of having a green colour, but, luckily no singular established code exists. Instead, we may talk of a variety of different kinds of aesthetic coding, which come into being as different combination of products containing an idea of being sustainable and expressing this idea.

It is difficult and problematic to attribute specific aesthetic codes to specific historical models of sustainability in design, and no linear or successive development can be verified. We may, however, detect an increasing complexity in ideas of sustainability and the relation to patterns of consumption and, accordingly, an increasing variety in the aesthetic coding. The principle of sustainability may take indirect, but still detectable, expression in product metaphors (e.g. in *Vegetal*) but also be dependent on mediation in order to make the character and quality of the product understandable (e.g. in the *Nobody* chair). When we enter a systems approach to sustainability, we can question whether the element of sustainability comes to immediate expression in the design. But in the paradigmatic example of Vigga, the product, the system and the communication is an integrated whole which cannot be seen apart from each other – in this sense, the aesthetics of sustainability will probably take even more complex and systems-oriented forms in the future.

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