Design for Collaborative Consumption

What can Emotional Design Teach us About Attachment and Value in a Sharing Economy?

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ABSTRACT

The rise in popularity of a sharing economy, based on peer-to-peer exchange of services and products, has coincided with an increased social desire to develop alternatives for unsustainable economic models of use and consumption. Mechanisms such as Collaborative Consumption and Product Service Systems (PSS) provide a possible way to reduce consumption in a sustainable way. There has been a great deal of research surrounding the challenges involved in consumer adoption of ownership in the stated reduced consumption models, and separately regarding product attachment. This paper intends to combine existing work in both fields, examining the topic of attachment and the main barriers found in the implementation of user-oriented systems, which are a subsection of Product Service Systems (PSS). These systems will be discussed in detail, as they are particularly applicable in Collaborative Consumption. The author will then suggest a number of hypotheses that aim to propose the existence of important links between sharing based models and our emotional response to design. The resulting discussion intends to explore the suitability of emotional design in its current state for aiding our understanding and consideration of attachment when designing new products and services in a sharing economy, before providing suggestions for further research.

KEYWORDS: emotional, product design, sharing, collaborative consumption, attachment

1. INTRODUCTION

Research and knowledge surrounding sustainable design methodologies has increased dramatically since the latter part of the 20th century [1]. However, adherence to the 'status quo' of linear consumption and the prevalence of marketing strategies such as planned obsolescence [2] mean sustainable practices remain marginalized. Historically, this area has relied heavily on increasing technical innovation while neglecting motivational drivers. However, design for behavioural change using a deeper grounding in emotional response points to a promising alternative approach to this [3]. The author thus intends to develop understanding around the potential to apply knowledge gained through the research of emotionally driven design to achieve this.

Emotionally driven design has been successfully used to create feelings such as enjoyment and brand connection [4] but its capacity for influencing the concept of collaborative consumption has not been adequately covered. It is vital that designers explore the complex patterns of material consumption when creating new sustainable design agendas. Previous methodologies have failed to look at this deeper meaning and the place of products in our lives

[5]. This article will examine collaborative consumption, and introduce Product Service Systems to the reader. It will then further explore existing literature on emotional design, examining the role of attachment in both cases and its relationship to a curated choice of factors. It should be noted that understanding "what types of goods and services are amenable to collaborative consumption" [6] is an avenue that needs to be looked at to formulate a complete analysis of this topic, but is beyond the scope of this article. Therefore this article proposes to hypothesise the possibility of links between emotional response and sharing-based consumer models to create discussion within the design field.

1.1. Methodology

The content of this article is formed from a review of existing literature about topics relating closely to emotional design, collaborative consumption, and behavioural psychology. Content surrounding emotional design was found primarily in academic papers from the Industrial and Product Design fields sourced on Google Scholar and NTNU's online library 'Oria', but additionally a degree of the information was obtained through consumer business and marketing papers. Content relating to the sharing economy came from similar sources in sustainable design, and evolved as the research moved from general research before examining selected methodologies such as PSS and touching upon practice theory, although the latter was not included within this paper. Papers were filtered on whether they contained keywords in their titles or subheading, in order to retain relevancy around the topics. This literature was investigated in two separate phases. The first, involved gathering information regarding the sharing economy and its details. The second involved studying the progression of emotional product design in the consumer sector and its relationship to attachment. Papers specific to attachment that were not necessarily exclusive to the product design fields were reviewed concurrently to broaden the base of knowledge and to balance the nucleus of work created by prolific authors in this area such as Ruth Mugge.

2. BACKGROUND

2.1. Diminishing Resources

Ever increasing demand for resources and a society reaching greater ecological maturity mean the issue of reducing the environmental burden of wasteful consumption is continuing to rise in prominence [7]. Alternatives are needed quickly; the 2013 Circular Economy Report by the Ellen MacArthur Foundation suggested that "as the global middle class more than doubles in size to nearly 5 billion by 2030, consumption and material intensity will rise accordingly, driving up input costs and price volatility at a time when access to new resource reserves is becoming more challenging and expensive" [8]. Therefore it is vital that more attention is directed towards improving the transition for users adopting reduced models of consumption.

2.2. Planned Obsolescence

The idea of Planned Obsolescence is a prevalent underlying driver in our high-consumption approach to manufacturing and the use of services. The term was first studied in 'Post Depression America' by London (1932), who outlined it as a method for increased consumer spending to sustain a manufacturing boost, with the implication of greater societal satisfaction through heightened desire for material possessions [9]. This model for consumption is sustained by designing products with intentionally short lifespans. The accelerated cycle causes diminishes perceived value of products and limits effective strategies for product end-of-life management through reuse, recycling or redistribution [10].

If emotionally durable design can be effective in extending the useful life of a product, many of the environmental issues faced by society could be reduced. However, merely offering a stronger emotional connection is not sufficient [10]. By

studying the user's relationships and attachments to products, designers have the opportunity to create deeper product connections in a way that thereby promotes long product lives [11]. The author believes that more discussion around empathetic design and designing for emotion is needed to enrich sustainable design, which will aid future designers with the tools to further reduce consumption.

3. SHARING ECONOMY

3.1. What is a Sharing Economy?

A sharing economy is a multi-faceted model that can be defined as a "socio-economic ecosystem built around the sharing of human, physical and intellectual resources" [12]. There are several different models that exist and act under the umbrella term of the 'Sharing Economy'; these include Collaborative Consumption, peer-to-peer exchange and Product Service Systems such as Rolls Royce's 'Power by the Hour' agreement with companies. The latter involves companies leasing engines over their lifetime in exchange for continued maintenance cover from the manufacturer [13]. Over the last several years, successful companies have emerged offering a variety of services. One such company, AirBnB, allows people to advertise and rent out available rooms in their properties for short periods of time. There are also several digital markets for sharing and exchanging physical goods, helped by the growth of social media [8].

These current examples show how a sharing economy facilitates services and wider access to goods and products for consumers, as opposed to creating new products itself. This could theoretically lead to reduced consumption and more sustainable production of goods [14]. The idea is supported when the sharing economy is used as a tool to add additional loops to a closed cycle, circular consumption process by maximising the use and value of the manufactured goods and services. For the purposes of this article, the scope will be limited to collaborative consumption practices as this provides the opportunity for reduced resource use [14].

3.2. Digital Opportunities

The continued increase in use of digital products is changing how we engage with the physical touch points around us. Chapman (2008) states how "a move away from the sustainable culture of human-to-human engagement, towards a faster culture of human-to-product engagements" [5] contributes to the wasteful and unsatisfactory character of material experience and the lives we construct around it. Yet the dichotomy involved in branching further into the digital realms also allows for these products to improve sustainable consumption with easier access to sharing platforms. This idea will be reintroduced later when considering 'self benefit'.

3.3. Collaborative Consumption

Collaborative Consumption involves sharing, renting, gifting, bartering, swapping, lending or borrowing between individuals [15]. It has attracted attention as a sustainable alternative due to its potential to prevent unnecessary new purchases and promotes reuse rather than waste. There is a range of collaborative consumption services that enable different modes of product and non-product based sharing and exchange. These include; redistribution markets where existing pre owned or underutilised goods are redistributed to maximise the use of a product, collaborative lifestyle systems which involve the exchange of non physical assets such as space or skills, and product-service systems [16] that promote 'using rather than owning' [17].

There is particular potential in a shift to a resource-saving model of 'using rather than owning', although this may present problems in how we perceive attachment to our products [17]. This is due to how people tend to associate high symbolic value to the act of ownership of

goods, and so a "cultural shift is required to place value on having a need met as opposed to owning a product" [18]. This condition again allows for the opportunity to investigate the prospect of applying knowledge gained around emotional and empathetic design to further the research into what methods and studies are needed to allow for this shift.

3.4. Sustainability through Product Service Systems (PSS)

In the context of collaborative consumption, Product Service Systems have been linked to a possible benefit for creating a leasing based economy, facilitating a transition away from traditional customer ownership [19]. These systems can be applied in business models aimed at providing sustainability of both consumption and production [20]. PSS are described more specifically as "a system of products, services, supporting networks and infrastructures that is designed to be competitive, to satisfy customers' needs and to have lower environmental impact than traditional business models" [21]. Such business models function by involving the manufacturer or distributor throughout the life of the product and aiding in its durability by providing repair and upkeep services, increasing the responsibility held by the company to maintain satisfaction with the user. Thus, "more traditional material intensive ways of product utilisation are replaced by the possibility to fulfil consumers' needs through the provision of more dematerialised services, which are also often associated with changes in the ownership structure" [21]. Here, Mont's (2002) additional acknowledgement of a change in ownership style introduces a crucial weakness in the current PSS formula: the requirement for alternative ownership models.

3.5. Barriers for PSS

Successfully fulfilling satisfaction through immaterial means [19], for example in the intangible services [14] offered by PSS, still presents a challenge today. PSS often have less intangible value than competing products and frequently afford a lower degree of behavioural freedom for the consumer [14]. One author, Behrandt (2003) outlined another problem for consumer adoption of PSS due to ownership being highly valued in society. Solutions centred instead on access contradict the dominant and well-established norm of ownership, [22][19] and so consumers are slower to adopt and trust 'access over ownership' as it challenges their established values.

4. EMOTIONAL DESIGN

4.1. Origins of Emotional Design

Emotionally driven design is an important tool for influencing behaviour and creating particular feelings for users in all aspects of Product Design. It can be argued that modern designers have intuitively utilised emotional response in relation to style [23] with the knowledge that 'attractive things work better'; [4] Beautiful things have long been created to allow users to express their wealth, beliefs and values. Increasingly, emotional design has become a precision tool used by businesses to boost sales and brand loyalty [24]. The advancements in this field has coincided with a move away from a traditional focus on functionality towards achieving softer feelings of hedonism, spirituality and individuality within the consumer [25]. As such, added value is now most frequently created around such themes [21].

4.2. Definitions of Emotional Design

The concept of Emotional Design falls under many similar names, such as Affective Design, Affective Engineering and Emotional Engineering. It is sometimes explained as "the study of relationships between physical and rational product features and their subjective cognitive and emotional influences on the people interacting with them" [25]. However, the research conducted separately under each name leaves ideas unconnected, and research in this field is in its relative infancy.

4.3. Limitations

In instances when emotional design is used in conjunction with the term 'engineering', as in some of the definitions stated above, it may be viewed as an exact science, when it is in fact very difficult to model guidelines and rules in this field. A method like Kansei Engineering, which "has the ability to collect and prioritise the customer's feelings and distinct customer groups with different tastes" [25], falls into this category. The author argues that creating attachment is a central driver for successful emotional design, and believes a deeper understanding of this should be gathered when looking to progress sustainable design approaches instead of trying to work around a set of fixed principles. Doing so neglects the unpredictable nature of emotional experiences.

4.4. Design for Emotional Response

Ashby (2003) describes how "when many technically equivalent products compete, market share is won (or lost) through its visual and tactile appeal, an exploration of other senses or emotional connection, associations and experience" [26]. Here, the successful manipulation of the consumers' emotional response is vital where attachment leads to a longer usage period [27].

This author further elaborates on the many aspects that shape our emotional response, by suggesting the existence of product personality. In order to create a successful product, it must function correctly, be designed for use and have a personality that fits its owner. This point raises several questions about how we share products if they are tied to ourselves on a cognitive and emotional level [26].

5. CREATING HYPOTHESES

5.1. Defining the Author's Claims

To sustain consumption in its current form, the author proposes that successful application of emotional design is required, and is dependent around a central pillar of attachment. (H1) In order to maximize attachment within this model, several facilitators exist. A selection of these, curated by the author, will be presented in this article and serve only as an introduction into the many possible attributing factors that might exist.

These can be defined as the relationship between 'the product and the self', which has been adapted from definitions of self-identity and cultivation [28][38], 'single ownership', 'materialism' and the 'symbolic value' of product use and consumption [15] (H2). In the following section the connection between each of these elements and attachment will be explored to validate the author's claim. The first assumptions will then be compared with an equivalent model that outlines the key concepts of Collaborative Consumption in similar terms. Here, it is hypothesised that trust, and particularly trust between strangers is the central driver for achieving critical mass to enable collaborative consumption in a sharing economy (H3). It is facilitated factors modified from those used to influence attachment. These factors subsequently become 'Self Benefit', 'Access Over Ownership', 'Low Materialism' and 'Value Creation' (H4).

5.2. A Summary of Hypotheses

H1: *Successful emotional design requires strong product attachment.*

H2: *Attachment is facilitated by factors including the product and the self, single ownership, high materialism and symbolic value*

H3: *Successful adoption of collaborative consumption relies primarily on trust*

H4: *Trust is facilitated by factors including self benefit, single ownership, low materialism and value creation*

6. EXPLORING THE HYPOTHESES

6.1. Attachment and Trust as Central Factors

Product Attachment is defined by Schifferstein & Zwartkruis-Pelgrim (2008) as "the strength of the emotional bond a consumer experiences with a product" [29]. At this point it is worth distinguishing attachment as a separate concept to ownership, which is defined as the act, state or right of possessing something [30]; Ownership does not necessarily imply immediate attachment if attachment is a factor which increases over time. Through a summary of key points from Ekman (1992) and Norman (2004), Tom Page (2015) [31] highlights that although different users will experience different emotional responses to products, attachment is largely related to positive feelings [32][4]. Despite correctly alluding to the range of emotions felt by users, this conclusion neglects how stronger feelings of attachment can also be caused by negative feelings [33]. This is perhaps an overlooked area that could provide difficulty in reliably designing products for a strong emotional response in a sharing economy, especially when combined with the additional complexities of Collaborative Consumption.

Trust is considered to be one of the principle elements in an individual's choice to participate in collaborative consumption [34]. Botsman (2012) even claims, "Trust will become the currency of the new economy" [35]. Businesses that have successfully implemented principles of the sharing economy into their business models have developed reputation mechanisms to encourage trust among traders [36], which mimics the interaction based on face-to-face contact in smaller communities [37]. These mechanisms are necessary for combatting the potential loss of interpersonal trust usually found in the conventional purchasing cycle.

In traditional consumption practices trust is formed between the user and the product in relation to utility, durability and the brand. If product attachment is antecedent of brand loyalty, [38] then trust and attachment will grow reciprocally over time and use. However, with a shift away from the traditional consumption routine, the role of brands and acquisition change. Due to this already established attachment, there is scope for companies to capitalize on the pre existing trust exhibited by consumers, to promote collaborative or reduced consumption.

6.2. Product and the Self

Many authors argue that consumers cultivate possessions to form and embody or characterize their personal values and self. Ball and Tasaki (1992) further elaborate on the topic of how one protects and cultivates one's self, using furniture and clothing to form part of their identity. Thus, we anticipate more protective behaviours, greater effort goes into maintenance and so loss or lending of the object creates emotional difficulty [28].

Here, product attachment is defined as "the extent to which an object, which is owned, expected to be owned or previously owned is used to maintain self concept" [28]. Self expression is therefore a factor in our attachment to products, and involves a high degree of personal exploration, compared to the economic considerations associated with sharing or lending possessions. Due to this personal attachment, the amount of physical control a user has over an object becomes an issue that could deter users from collaborative practices.

Collaborative Consumption offers an easy way to enrich the ordinary life of a consumer with social interaction [8]. The rise of social media, networks and digital sharing has been present to develop the values of 'Millennials'. They are "coming of age in an increasingly collaborative world" [39] that facilitates the ability for isolated groups, geographically or socially, to communicate and share more readily. This supports the use of digital products and services as an opportunity to improve sustainable consumption mentioned previously.

In an increasingly globalised and autonomous world, collaborative consumption within a sharing economy creates the possibility to retain and re establish a sense of community between individuals. Simply, collaborating is the best cure for problems caused by loneliness and feelings of redundancy [39]. Furthermore, from a hedonistic viewpoint, it has been seen that a large motivation for lending owned items to other people was to come across as helpful [40], so as to allow the individual to apply complimentary attributes to themselves and enhance self image.

6.3. Ownership

Emotional ownership describes the degree that individuals or groups perceive knowledge or resources belong to them [41]. According to several authors, the theory that stages of ownership are present is a popular part of the discourse surrounding consumer relationships with consumption. Woodall (2003) suggests the main stages in ownership can be formulated as Pre Purchase, Point of Trade, Post Purchase and After Use [42]. This differs from the more continuous model defined by Ball and Tasaki (1992) which features five elements. These are labelled Pre acquisition, Early Ownership, Mature Ownership, Pre disposal and Post disposal [28]. Although there are similarities in the overall progression of ownership, the latter model features a more nuanced approach to the construct and implies the use of more subtle emotional drivers in the changes of perceived ownership for the consumer. For example, predisposal describes the point in the product life cycle at which the user considers replacing or discarding the artifact. This allows room to hypothesise potential differences in whether the user will complete the action of disposal, or retain the item due to emotional connection, unlike the first proposal, which encompasses many complex behavioural components in the 'Post Purchase' stage.

The most common forms of Collaborative Consumption involve lending or leasing, which accommodate the practice of access over ownership. This is a simple method forms the basis of the Product Service Systems mentioned previously. Trust is integral to this mechanism of sharing, and it is a common conclusion that those who participate in collaborative consumption show much higher satisfaction and enthusiasm to act as receivers, rather than providers of goods [43][34]. This is supported by the consumers' considerations of economic and emotional loss, with one of the largest barriers to participate being the concern that a lent item would be stolen or misplaced [37].

The concept of access over ownership can be made more attractive through the phenomena of trends. Consumers who wish to follow a trend will seek to use more fashionable services [34]. Conclusions are provided from Moeller and Wittkowski (2010) to show the potential of using such trends to influence behaviour. In the same article, it is explained how the act of consumption is connected to a user's social identity, [44] which is consistent with the assumptions around attachment and self-identity. Additionally, it was found that consumers who seek to use 'trendy' products were more likely to prefer sharing to ownership [44]. It is apparent that collaborative consumption participation may be increased when issues of trust are supported or offset with other feels of satisfaction. This approach can create increased participation in collaborative consumption, but the attachment to the products that are accessed is not addressed, and questions about the life of the product after acquisition must still be answered.

6.4. Materialistic Constructs

Materialism directly relates to our attachment to products, and is suggested to be the measure to which a consumer is attached to their possessions [38]. This implies that materialism may be used as an empirical guide to defining a user's attachment, however this in an incomplete evaluation. Belk (1985), perhaps more appropriately defines the term as 'the importance a person attaches to worldly

possessions' [45]. Both of these definitions fail to adequately address the non linearity between attachment and materialism, as it may be correct to assume that a product in a different context, or that signifies little importance, could still create strong feelings of attachment.

In research conducted in 'Special Possessions and the expression of material values' [46], the individual is separated into two categories: the 'High Materialist' and the 'Low Materialist'. The authors illustrate that High Materialists place less emphasis on interpersonal relationships, whereas Low Materialists value possessions closely associated with friends and family, or that facilitate interpersonal ties. Classically, the low materialist is considered as the target user for adopting the practices of collaborative consumption due to their inclination for creating ties with others and showing a greater desire for owning less. If High Materialists have a greater desire to consume, it is interesting to consider the possibility of validating this emotional response positively by designing a way to allow these consumers to share as a way to satisfy their need for consumption in a more constructive manner. Additionally, consumption related pleasure might come from acquisition, rather than possession and use of the product, which again reinforces the potential for effectively utilising the qualities of a High Materialist in a sharing or circular economy. This presents an interesting notion; if they place less emphasis on interpersonal relationships then does trust become a smaller issue as well?

6.5. Symbolic Value and Creation

Memory plays a significant role in attachment to products, which may suggest that the experiential element of the product's use can contribute to increased feelings of attachment [47]. This hypothesis is supported by Jensen (1999) who urges designers to understand that products may be less important than their stories [48], and is a tool that can be used successfully in enriching the field of user-experience design. The story of the product becomes intrinsically linked to a set of memories possessed by the owner of the product. As most sharing services imply the exchange or lending of products that are already owned, the creation of memories and thus attachment has occurred when the product story changes. This element of memory could be capitalised upon by shifting the point at which sharing happens within the life cycle of the product.

In research conducted by PWC (2015), a series of interview subjects voiced opinions that contradict the previous point. They did not want to be aware of the previous stories surrounding an accessed product, but were more concerned that the product had been cleaned and maintained correctly [49]. This provides a strange contradiction between the expressed desires for greater community values [6], while clearly showing a need for a degree of separation in the exchange. This case highlights a hesitation towards ownerless access that is commonly observed, as this alternate option of ownership challenges the links of independence, hygiene and intimacy that are usually connected to one's own products [50].

7. DISCUSSION

7.1. Evaluating the Hypotheses

Each hypothesis seeks to highlight only a small number of similarities and differences in the literature, and spark initial discussion around using further study of emotional design when advancing sustainable design approaches related to Collaborative Consumption.

The link between attachment and emotional design is noted and complements the first hypothesis (H1). To enrich and refine the degree of accuracy attributed to this assumption will require research around attachment, specific to the area of collaborative consumption. It is important that users can retain the ability to cultivate and create self identity. A product that is not purchased and owned must still afford control, or a fulfilling alternative for the user,

which raises the question of how to identify the control. In PSS, this remains a key barrier.

The key facilitators discussed correlate well with the second and fourth hypotheses (H2, H4) and provide a compelling argument for the potential to apply elements of thinking relating to emotional design when aiming to improve societal adoption of Collaborative Consumption. However, as this is a short review, these facilitators do not encompass all possible similarities and barriers. Arguably, many designers and companies already utilise social and material trends to create a desired emotional response effectively, but this may still prove detrimental. Trends in their current form will still cause products to become obsolete in a peer-to-peer (P2P) sharing model. However, there might be better control in a business to consumer (B2C) model if companies can retain incentives for return and repair, or effective recycling.

The prominence of trust is evident in both fields, and the literature would suggest agreement with the third hypothesis (H3) that trust is a key dependent for Collaborative Consumption. The sharing process itself can also create emotional ownership, through the act of sharing materials in relation to collaborative creation. This suggests that integrating the consumer more closely into the design stage shifts their behaviour [41]. The capacity for value creation also states the case for designers to continue to focus on encouraging immaterial interactions and desires, but it would be necessary to explore in greater depth.

Finally, although perhaps trivial, when advancing perspectives for the use of Collaborative Consumption as a sustainable alternative, considerations of satisfaction and enjoyment must still be a fundamental requirement - this is one of the strengths of emotional design that can be overlooked but should not be sacrificed.

7.2. Article Limitations

The majority of literature used to form this review consists of contemporary sources, published within the last 10 years, at the time of writing this article. Due to this concentrated collection of information, authors and approaches are referenced heavily from each other and share similar origins. This means there is recurrence of similar points and arguments, with the implication of creating a narrow school of thinking in this field. Broadening this body of knowledge, with a diversification of contributors when considering attachment and applying newer methods for behaviour study such as practice theory would help to challenge and enrich discussion.

7.3. Further Research

From this review of literature, research is suggested in some of the following areas; studying the relationship between high materialists and their attitudes to sharing, how the desire for control can be compensated, and further studying the link between emotion design and sustainable practice. Additionally, it would be necessary to connect evidence of the effects of sharing when paired with emotional design, which has not been covered in this paper.

8. CONCLUSION

This literature review has aimed to inform the reader about the potential of Collaborative Consumption as a viable alternative to the linear consumption model, and highlight the key mechanisms involved in PSS, which currently provide a promising direction for attaining widespread Collaborative Consumption. The author has also discussed and compared emotional design and Collaborative Consumption, to explore the suitability of emotional design in its current state for aiding our understanding and consideration of attachment when designing new products and services in a sharing economy. In the author's opinion, studying emotional design provides an interesting perspective about the implications of

attachment and emotional response in relation to Collaborative Consumption.

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