17

PRODUCT ATTACHMENT: DESIGN STRATEGIES TO STIMULATE THE EMOTIONAL BONDING TO PRODUCTS

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Three years ago, the first author bought a brand new convertible, a Citroën C3 Pluriel (see Figure 17.1). Since she owns it, the car has shown several defects: The roof leaked several times, the brakes creaked, the window was dislodged, and she had problems with the battery and the gears. Also, it is not a very user-friendly car, as she repeatedly has had difficulties in removing the roof of the car. Due to these issues, she paid many visits to the garage. But, does she regret that she purchased her Citroën C3 Pluriel? No, on the contrary, she loves her car! She loves it for its beautiful, extraordinary design and its eye-catching, green color. She loves it for the fun and relaxation it provides her when she drives it with the top down during summer. She loves it, for the fact that only few people own an identical car. And last but not least, she loves it, because it makes her smile when she sees it standing on the parking space after a long working day. As a result, her car has gained a special meaning to her and she feels attached to it despite the utilitarian issues. This chapter is about why people develop strong relationships to certain products and how designers may influence the degree of attachment through product design.

1. DEFINING PRODUCT ATTACHMENT

In the literature on interpersonal relationships, it is proposed that an attachment is an emotion-laden target-specific bond between two persons (Bowlby, 1979). Correspondingly, product attachment is defined as the strength of the emotional bond a

FIGURE 17.1 The first author's Citroën C3 Pluriel.

consumer experiences with a specific product[1] (Schifferstein, Mugge and Hekkert, 2004). First of all, the definition of product attachment suggests that when experiencing attachment to a product, a strong relationship or tie exists between the individual on the one hand and the object on the other.

Secondly, this definition implies that experiencing attachment to products is a matter of degree (Kleine and Baker, 2004; Schultz, Kleine and Kernan, 1989). People may experience relatively strong emotional bonds to their most favorite or special possessions, whereas other products are less significant to them.

Thirdly, the definition implies that the object to which a person experiences attachment triggers one's emotions. Schultz et al. (1989) investigated which emotions are elicited by products to which people are attached. In this study, a total of 83 different emotions were reported. Some of the most reported emotions were happiness, love, warmth, nostalgia, sadness, pride, security, comfort, excitement, and joy. Although a great deal of variety is present in the experienced emotions, people thus most often experience positive emotions to their objects of attachment. In contrast, products to which people do not experience attachment often do not elicit any emotions at all (Schultz, Kleine and Kernan, 1989). Also, negative emotions (e.g. boredom, frustration, and disgust) were mainly reported for objects to which people did not feel attached. An exception was the emotion sadness. Sadness may be elicited by products that are cherished for the memories associated with them. For example, a brooch that reminds someone of one's deceased mother can simultaneously elicit both love and sadness.

Although people usually experience positive emotions toward the product to which they feel attached, several arguments can be given why research on (positive) emotions is inadequate to understand the experience of attachment to a product. The occurrence of positive emotions is not sufficient to conclude that a person is attached to a product.

[1]In all our studies, product attachment was measured using four items on seven-point Likert scales: (1) 'I am very attached to this product'; (2) 'I have a bond with this product'; (3) 'This product is very dear to me'; and (4) 'This product has no special meaning to me' (reversed item).

Many products can instantaneously elicit strong positive emotions even without any direct contact with a product (Desmet, 2002). For example, a person can immediately feel excitement or joy based on a picture of a water tap, which can encourage him/her to purchase it for his/her new bathroom. However, these emotions may change radically into frustration and disappointment when the use of the water tap appears to be extremely complex and counterintuitive. Only if a product continues to elicit positive emotions over time, may the owner become attached to the product. The experience of attachment tends to develop bit by bit over the course of time, as a result of multiple, recurring interactions between an individual and the attachment object (Baldwin et al., 1996; Kleine and Baker, 2004; Thomson, MacInnis and Park, 2005). Typically, these recurring interactions occur during ownership of the product. For example, through possession rituals, such as using, displaying, cleaning, discussing, personalizing, and storing, a product may gradually accumulate personal meaning (McCracken, 1986). As a consequence, products to which one feels attached are generally considered to be special and significant to the owner. Another consequence of attachment is that it results in specific protective behaviors, because people cherish their relationship with the object and want to preserve the object (Mugge, Schoormans and Schifferstein, 2005). When a person feels attached to a product, he/she is more likely to handle the product with care, to repair it when it breaks down, and to postpone its replacement. Experiencing positive emotions in response to a product does not necessarily bring about these protective behaviors.

Past research suggested that people become attached to a product for the personal and special meaning it conveys (Csikszentmihalyi and Rochberg-Halton, 1981; Wallendorf and Arnould, 1988). To obtain a personal and special meaning, a product should provide the owner with something exceptional over and above its utilitarian meaning (Mugge, Schoormans and Schifferstein, 2005). A product can have a utilitarian meaning, because it enables a person to fulfill a certain need. For example, a watch can show a person the correct time and a lamp can shine light. Most products within the same product category can provide this meaning. Accordingly, the product just functions according to expectations and does not provide anything special. In that case, a replacement decision is made relatively easily. Products to which people become attached provide a special meaning and, therefore, exceed their merely utilitarian meaning to the owner. For example, a watch may serve as a reminder of one's father and a lamp may express a person's identity. In these cases, the replacement of the product is much more difficult, because other products may not provide this special meaning to the owner. The product has ceased to be an ordinary object and has become extraordinary (Kleine and Baker, 2004). The former does not necessarily imply that a product needs to be expensive or rare to become an object of attachment. Ordinary objects may just as well elicit feelings of attachment, for instance, when the product is associated with an important memory.

With respect to the construct of product attachment, we can distinguish between the experience of attachment to certain product variants or to specific product specimens (Schifferstein and Pelgrim, 2004). Being attached to a product variant implies that this specific type of product has a special meaning to the owner. In that case, the attachment will not only hold for this specific object, but also for other products of the same type that are physically identical. For example, a person may be attached to a Citroën C3 Pluriel (see Figure 17.1), because the car's innovative and eye-catching design supports one's identity. This special meaning is present in all physically identical Citroën C3 Pluriels, because they all have the same design. An identical-looking Citroën C3 Pluriel can thus also elicit feelings of attachment for this person. This does not mean that other variants are truly identical to the one that is owned. In time, most products show signs of use (e.g. stains or scratches). However, for the attachment to a product variant, it is

the overall design that all these specific product variants have in common that induces the special meaning, and not these personal signs of use.

Being attached to a product specimen implies that the attachment concerns one particular object. Another physically identical product cannot completely replace such a product, because the context in which the object was obtained or used is inimitable. Accordingly, the special meaning cannot be present in other products, and the product is irreplaceable. 'An irreplaceable possession is one that a consumer resists replacing, even with an exact replica, because the consumer feels that the replica cannot sustain the same meaning as the original' (Grayson and Shulman, 2000, p. 17). For a product to become irreplaceable, the product's meaning should have a factual connection with the object itself (Grayson and Shulman, 2000; Verbeek and Kockelkoren, 1997). The special meaning should be deeply anchored in that specific object, and the product and its meaning have to become inseparable. Because other products cannot provide this special meaning, a person will feel that replacing such a product results in a loss of the special meaning. For example, a person may be attached to one's Citroën C3 Pluriel, because the car reminds him/her of all the pleasant trips made. This meaning is only present in this particular Citroën C3 Pluriel, because the trips were made in this product specimen. For the attachment to a product specimen, the signs of use on the product (e.g. stains or scratches) may be important for the product's special meaning, because they may serve as proof for certain events.

2. RELEVANCE OF PRODUCT ATTACHMENT FOR DESIGNERS

For designers the construct of product attachment is valuable from two perspectives. First, strengthening the emotional bond can help designers to create emotional experiences with products during ownership. Secondly, product attachment can serve as an eco-design strategy to create long-lasting person–product relationships.

2.1. Creating emotional experiences

In today's markets, most consumer durables are comparable with respect to their features, quality, and user-friendliness (Veryzer, 1995). This makes it difficult for companies to differentiate their products from competitors. To gain a competitive advantage, companies and designers are focusing more and more on the 'emotional responses and experiences' that products can bring about, rather than on their functional benefits. Figure 17.2 shows several advertisements of companies that suggest that people are attached to the advertised product. For example, the watches and jewellery company Breil uses the pay-off '*Don't touch my Breil*' in all their communications, suggesting a special caring for the object. The growing interest of scientific research, as well as design practice in the emotional impact of products, is also illustrated by the conferences and events that were organized on this topic over the past few years (e.g. Design and Emotion conference, Eternally Yours conference, Designing Pleasurable Products and Interfaces (DPPI) conference).

Emotional responses to products can be a decisive factor in purchase decisions (e.g. Desmet, 2002; Jordan, 2000; Norman, 2004). Nevertheless, Desmet (2002) argued that studying emotional responses for a purchase situation may not be sufficient: 'In the long run, it may be more fruitful to establish a long-term emotional relationship with the consumer' (p. 187). Emotions enrich a person's life and can increase one's general experience of well-being (Diener and Lucas, 2000). Because part of a person's day-to-day emotions are elicited by the products this person owns, designers need an understanding of the

FIGURE 17.2 Advertisements of Breil, Patek Philippe, Toyota Yaris, and Swatch that suggest the experience of product attachment in their pay-offs.

emotional impact of their designs over time. The construct of product attachment can be instrumental in achieving this goal.

2.2. Stimulating sustainable consumption

From a sustainability perspective, the replacement of consumer durables is often undesirable. Many of the replaced durables eventually end up in the waste stream, which creates an environmental burden. In addition, replacing products requires the production of new consumer durables. Because scarce resources are used up during production, replacement also has an indirect detrimental effect on the environment. To reduce the negative environmental effects of consumers' product replacement, scholars have proposed a strategy toward product longevity (Cooper, 1994; Von Weizsacker, Lovins and Lovins, 1997).

Nowadays, product lifetime seems to be determined not only by technical constraints, for many products are replaced while they are still functioning properly (Van Nes, 2003). As a result, it is particularly interesting to lengthen the product lifetime by focusing on the product's psychological lifetime: The time during which the user perceives the product to be valuable. A possible eco-design strategy to address the psychological lifetime of products is to strengthen the person–product relationship (Van Hemel and Brezet, 1997; Van Hinte, 1997; Van Nes, 2003).

During the replacement process, a person abandons his/her relationship with a product in possession to be able to develop a new relationship with the replacement product (Roster, 2001). On the one hand, a person is attracted to a new product (e.g. for its new features or styling), which pushes him/her away from the currently owned one. On the other hand, the product in possession exerts a pull on the person (e.g. because it is familiar or has a special meaning). If a person is attached to a product, detaching from and ultimately abandoning this product is undesirable. People feel that losing the product implies that the special meaning conveyed by the product is lost as well. Therefore, people strive to maintain products to which they are attached and exhibit protective behaviors toward these products (Ball and Tasaki, 1992; Belk, 1988; Schultz, Kleine

and Kernan, 1989). As long as the product's special meaning is sufficiently important to the individual and cannot be substituted by a replacement product, a person will be reluctant to replace and dispose of these objects (Mugge, Schifferstein and Schoormans, 2006c). More knowledge on product attachment can help designers to design products with a prolonged psychological lifetime.

3. DETERMINANTS OF PRODUCT ATTACHMENT

People develop feelings of attachment to consumer durables, irrespective of the utilitarian meaning of these products. Why do people become attached to certain objects? In the literature on product attachment, several reasons for becoming attached to products have been proposed (Ball and Tasaki, 1992; Kleine, Kleine and Allen, 1995; Schifferstein, Mugge and Hekkert, 2004; Schultz, Kleine and Kernan, 1989; Wallendorf and Arnould, 1988). In addition, several consumer behavior researchers have explored the meanings of products that are considered to be special, treasured, important, or favorite (Csikszentmihalyi and Rochberg-Halton, 1981; Dittmar, 1991; Dyl and Wapner, 1996; Kamptner, 1995; Richins, 1994). Describing an object as special or favorite may imply the presence of an emotional bond. Consequently, the product meanings distinguished in these studies may be possible determinants of product attachment. Based on the findings of these studies, we propose the following four determinants of product attachment:

1. **Pleasure**: the product provides pleasure.
2. **Self-expression**: the product expresses one's unique identity.
3. **Group affiliation**: the product expresses one's belonging to a group.
4. **Memories**: the product is a reminder of the past.

Below, each determinant is explained in more detail. Specifically, we propose several design strategies influence the determinants, and thereby strengthen the emotional bond between a person and his/her product.

3.1. Pleasure

An example of pleasure as a determinant was given at the start of this chapter, when the first author elaborated on the feelings of attachment to her car: The car's extraordinary and attractive design evokes pleasure, due to which an emotional bond has developed (see Figure 17.1). Several scholars advocated that the experience of pleasure during product usage is related to attachment (Davis, 2002; Norman, 2004; Savas, 2004). Schifferstein et al. (2004) indeed found empirical evidence for the effect of pleasure on product attachment.

Feelings of pleasure for a product can come about in two ways. First of all, pleasure may result from the product's primary function in cases where these products provide entertainment or relaxation, such as televisions, stereos, or ski equipment. However, it is unlikely that the pleasure resulting from the product's primary function will bring about the experience of product attachment, because this meaning is delivered by all products in the category. For example, a stereo may provide a person with pleasure, because it provides him/her the benefit of listening to music. In this case, we cannot speak of product attachment, because the attachment concerns the product category stereos in general, rather than one particular object.

On the other hand, a product's superior utility (e.g. extra features, greater usability, or higher quality) can be a source of pleasure as well (Jordan, 1998). In this case, it

is not the primary function that evokes the pleasure, but the extras that are not delivered by other products in the category. In addition, the product's appearance may evoke aesthetic pleasure (Creusen and Snelders, 2002; Jordan, 1998). Mugge, Schifferstein and Schoormans (2008) found that, due to a product's superior utility and/or superior appearance, the product may evoke pleasure that similar products do not, which affects the experience of product attachment. An example is a person who enjoys his high-quality stereo, because it provides a great sound or because it has a beautiful design.

To stimulate product attachment through the determinant pleasure, designers should design products that perform better and/or are more beautiful than comparable products. These particular products may gain a special meaning to the owner and an emotional bond may develop. We acknowledge that this is no easy task for designers, because many companies strive for a superior utility or appearance in their product designs. Another difficulty of this design strategy is that technological improvements in new products may quickly reduce the pleasure for the product in possession. Manufacturers often deliberately accelerate product lifecycles by introducing new products with new features and by stimulating fashion changes. This planned obsolescence negatively affects the experience of pleasure for the currently owned product and, therefore, the special meaning and the experience of product attachment will only be short-lived.

These arguments are corroborated by the findings from Schifferstein et al. (2004). They found that the experienced degrees of attachment and pleasure are relatively high for products that are owned for less than a year (see Figure 17.3). However, after the first year of ownership, the experienced attachment and pleasure has already decreased. This suggests that attachment to a product that provides a person with pleasure is often short-lived.

To evoke long-lived pleasure, designers should try to incorporate pleasure eliciting attributes that are more or less exclusive for a particular product variant. Then it is less likely that other products can take over the special meaning of pleasure. Accordingly, people have a stronger tendency to continue such a relationship, and the experience of attachment to the product will persist for a longer period of time. An opportunity to achieve this is to create products that surprise the consumer. Past research concluded that surprising products are more enjoyable (Vanhamme and Snelders, 2003). Although it is unlikely that the product continues to strongly surprise the consumer over time, implementing a

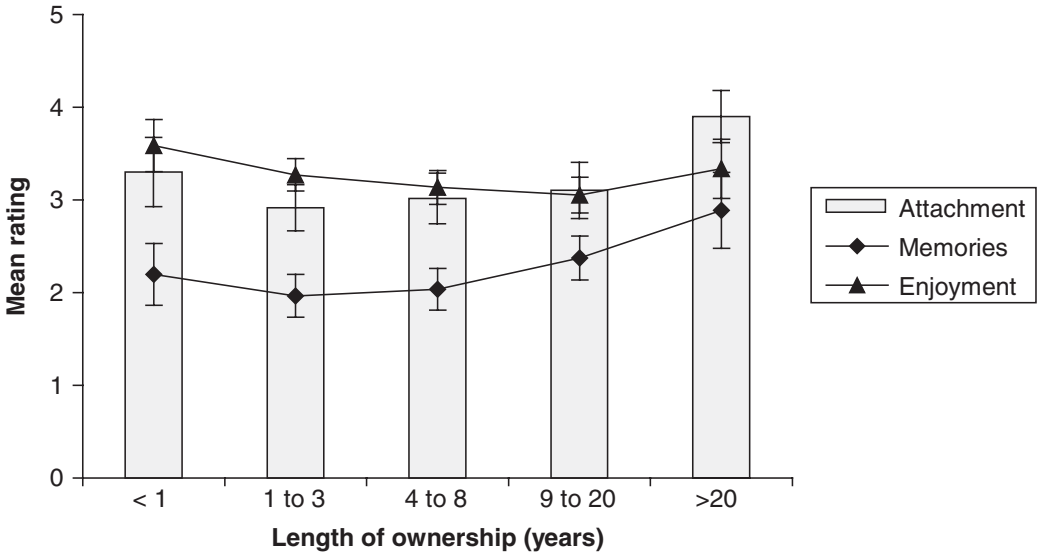

FIGURE 17.3 Attachment, memories and enjoyment as a function of length of ownership, reprinted from Schifferstein et al. (2004).

surprise in the product design can still have a long-term effect on pleasure and on product attachment. Being surprised brings about physiological (e.g. changes in heart rate) and behavioral (e.g. special facial expression) changes, which encourages the surprised person to focus their attention on the product. As a result of this heightened awareness, a surprise is better stored in one's memory (Derbaix and Vanhamme, 2003; Lindgreen and Vanhamme, 2003). Consumers may think back to the pleasantly surprising event while using the product and may, therefore, continue to experience pleasure from the product over an extended period of time. Ludden, Schifferstein and Hekkert (2007) presented several design strategies to create surprising products. These strategies are based on a combination of new and familiar elements in the product design.

3.2. Self-expression

The determinant self-expression stems from a person's desire to differentiate oneself from others and to express his/her personal identity. People are motivated to establish and communicate a personal identity, distinct from that of others. By acquiring, displaying, and using products, an individual can symbolically display one's individuality to oneself and to others (Solomon, 1983). For example, a person's clothing expresses who he/she is as an individual.

If a product is used to define and maintain one's personal identity, this product gains a special meaning to the owner. Past research on product attachment concluded that people tend to develop stronger attachment to products that are used to express and maintain a personal and unique identity (Ball and Tasaki, 1992; Kleine, Kleine and Allen, 1995; Schultz, Kleine and Kernan, 1989; Wallendorf and Arnould, 1988).

Product personality

A possible design strategy to stimulate product attachment through the determinant self-expression, is to implement product personality in the product design. Govers (2004) has defined product personality as 'the profile of personality characteristics that people use to describe a specific product variant and to discriminate it from others' (p. 15). For example, a product variant can be experienced as cute, extrovert, or practical (see Figure 17.4). Product personality is believed to be a meaningful tool for designers of consumer durables to communicate symbolic meaning (Govers, 2004; Janlert and Stolterman, 1997; Jordan, 2002). The product's shape, material, texture, and color affect the personality that consumers recognize in a product. Designers are able to translate personality characteristics into the product appearance in a way consumers understand (Govers, Hekkert

FIGURE 17.4 An extrovert and a practical toaster.

and Schoormans, 2002). Moreover, Govers and Mugge (2004) found evidence that people become more attached to products with a personality that is similar to their own personality, than to products with a dissimilar personality. Products with personality associations similar to the owner's personality allow him/her to express himself/herself. As a result, the product gains a special meaning and an emotional bond may develop.

Although personality is a stable construct that does not change much over time (Costa and McCrae, 1988), a second study on product personality showed that personality congruity does not necessarily imply that the person–product relationship will be long-lasting (Mugge, Schifferstein and Schoormans, 2006c). For most consumer durables, the experience of product attachment is dynamic (Ball and Tasaki, 1992; Kleine and Baker, 2004; Mugge, Schifferstein and Schoormans, 2006b; Schultz, Kleine and Kernan, 1989). The strength of the person–product relationship can change over time as a result of changes in the product (e.g. performance deficiencies), changes concerning the owner (e.g. role transitions), or changes in the situational context (e.g. fashion changes). The findings of our study suggested that fashion may serve as a moderator for the relationship between product attachment and product lifetime. A necessary condition for an extension of the product lifetime appears to be that the product's design remains in general fashion acceptance. Otherwise, evaluation of the product as being old-fashioned will reduce the product's value for maintaining a positive view of the self, resulting in early detachment.

The finding that the degree of attachment to a product with a congruent personality depends on fashion changes and on other competitive products can be explained by the fact that these self-congruent products are considered to be replaceable (Mugge, Schoormans and Schifferstein, 2005). If the product and its meaning can be separated, the product can be replaced by a new product that conveys the same meaning to the owner. For example, an extrovert watch can serve as a sign to express one's extrovert personality. However, this symbolic meaning is not exclusively related to this particular object. Other watches or consumer durables can have similar personalities and can serve as similar signs. Accordingly, the watch is replaceable and the attachment to the product is likely to be only short-term. As long as the product is replaceable, the strength of the person–product relationship strongly depends on the characteristics of competitive products. To stimulate long-term attachment, designers should encourage a product's irreplaceability by designing products that are inextricably bound up with their special meaning.

Product personalization

From this perspective, an interesting design strategy to influence the determinant self-expression is to personalize the product. Based on the definition of Blom (2000), product personalization is defined as a process that defines or changes the appearance or functionality of a product to increase its personal relevance to an individual. Mugge, Schifferstein and Schoormans (2004) found that people become more attached to products they have personalized themselves. During the personalization process, a person is actively involved in the design of his/her personal product. The outcome of the personalization process is that the consumer obtains a more personal and unique product (Schreier, 2006). The personalized product often also represents a personal accomplishment to the owner (Franke and Piller, 2004). As a result, the product can fulfill the need for self-expression (Blom and Monk, 2003). We acknowledge that this may partly be triggered by a person's biased perception of the personalized product. As a result of the active participation, people may simply *perceive* the product as providing a better fit to their preferences and, therefore, as more self-expressive (Simonson, 2005). Self-expression, in turn, has a positive effect on the degree of attachment to this product. Because this specific object resulted from the person's active participation in the design process, it

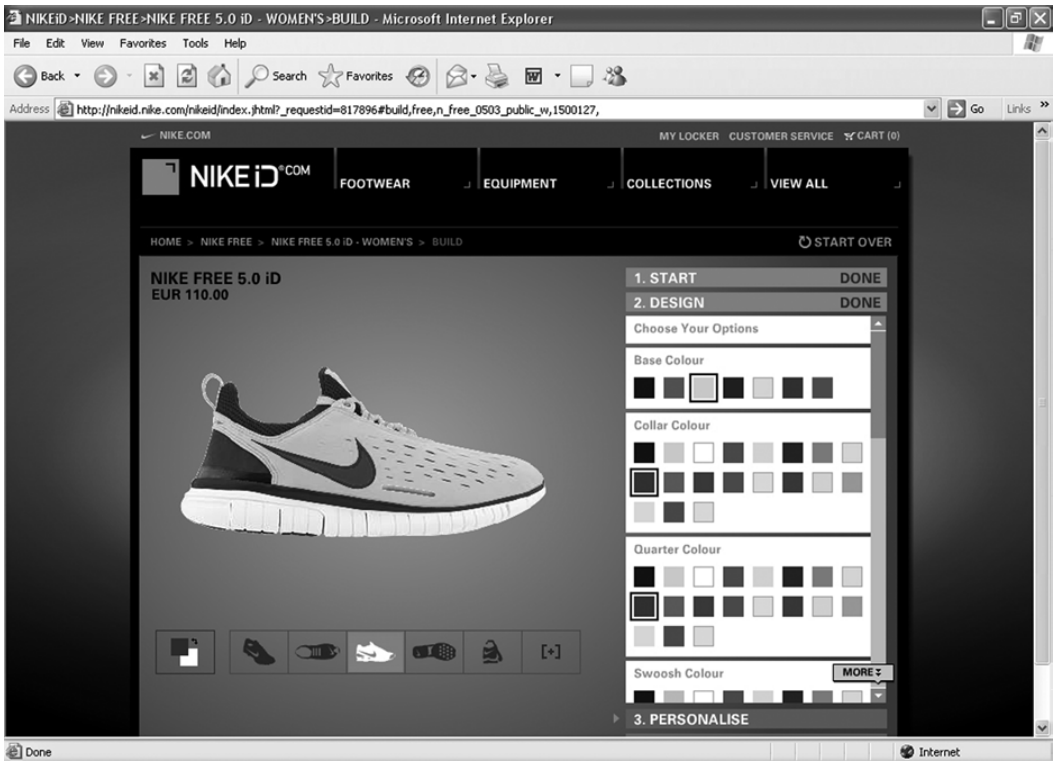

FIGURE 17.5 Nike mass customization site (http://nikeid.nike.com).

is likely that the product obtains a special meaning that has a factual connection to the product. Consequently, this product may become irreplaceable to the owner.

Various personalization options differ in the degree of design authority, that is the degree of creative involvement offered to the consumer (Mugge, Schifferstein and Schoormans, 2006a). Accordingly, not all personalization options are equally relevant to stimulate product attachment. The more a person is involved in the design process and can act as a co-designer of his/her own product, the more effort he/she will invest in the product, and the more personal and self-expressive the product is likely to become. A popular way for manufacturers to personalize durables is by offering mass customization services. A mass customization service allows consumers to create a personalized product by selecting components, accessories, and colors from a predefined set of options. An example is the mass customization website of Nike (http://nikeid.nike.com) that enables consumers to 'design' their own shoes by allowing consumers to specify different colors for the shoe (see Figure 17.5). Norman (2004) argued that these products are better in satisfying our needs, but they do not guarantee emotional attachment. We suggest that the degree of design authority offered to the consumer is relatively low in most mass customization services. Consumers are often only allowed to make choices among predetermined alternatives. Because other consumers can easily create an identical product, mass customized products are probably not entirely unique. As a result, these 'personalized' products are necessarily limited in providing the symbolic meaning of self-expression and in stimulating product attachment.

To stimulate product attachment, designers should implement those types of product personalization that demand a sufficient level of design authority by offering consumers the possibility to be truly creative. An example of the latter is the NOKIA 3220 mobile phone that allows consumers to personally design their own cut-out cover using their creativity, instead of merely choosing one among several predetermined covers (see Figure 17.6). This provides consumers with the opportunity to create a more personal and unique product.

FIGURE 17.6 Nokia design tool.

A potential drawback of offering consumers a great deal of design authority is that they may not fully understand what solutions correspond to their needs and desires. Furthermore, they may spoil the product, because they are not sufficiently skilled to design their own products. Consumers may also become confused with the great number of options available (Huffman and Kahn, 1998). It is the designer's task to create a context in which a balance is found between creating design opportunities and guaranteeing adequate product quality. Product personalization can only be a success if designers are able to design the personalization process in such a manner that the consumer can handle the consequences. Accordingly, designers could create a toolkit to support the consumers in their choice, while they may still take credit for the product design (Crabbe, 2001; Von Hippel, 2001). For example, toolkits can offer consumers module libraries with a number of standards for several product parts. Consumers can creatively use these standards as a starting point to create one's own unique product while restricting the required risk.

Group affiliation

Group affiliation is concerned with the relational side of the self. This determinant of product attachment stems from people's need to be connected, joined, associated, and involved with others. Products that support group affiliation define to what groups an individual belongs. They symbolize a person's desirable connections to family members, friends, or social groups. An example is an emotional bond to a wedding ring, because this particular ring symbolizes the connection to one's spouse. People can also use products to enact one of their social identities (Kleine, Kleine and Kernan, 1993). For example, a sweater can show a student's connection to a fraternity. People become more attached to products that symbolize an important person or social group, because these products enhance that part of the self that needs to feel connected (Ball and Tasaki, 1992; Kleine, Kleine and Allen, 1995; Schultz, Kleine and Kernan, 1989; Wallendorf and Arnould, 1988).

Although the determinant group affiliation seems to oppose the determinant self-expression, they can actually co-exist. Kleine et al. (1995, p. 328) commented on this issue that 'People are motivated universally to establish and maintain a personal and unique identity, distinct from that of others (i.e. autonomy seeking), while at the same time are motivated to maintain interpersonal connections that also define the self (i.e. affiliation seeking)'. An example of a product that is used for both self-expression and group affiliation is a Harley-Davidson motorcycle. The motorcycle represents one's belonging to a particular group of motorcyclists. Because most Harley-Davidsons are customized by the owner, they simultaneously express the unique identity of the owner.

A design strategy to stimulate the determinant group affiliation is to encourage social contact with and through products by designing products that are shared with others or used in a group setting. As a result of the shared use, the owner may associate the product more and more with certain people or events. In time, the associations and the product become inseparable for the owner, and the product may become irreplaceable. For example, a guitar may become irreplaceable, because it symbolizes a person's belonging to a rock band.

Memories

A product can remind a person of people, events, or places that are important to that particular individual. It can help him/her to maintain a sense of the past, which is essential to define and maintain one's identity. Part of who we are today is the result of who we were in the past. For example, a person can be attached to a souvenir, because it reminds him of a pleasant holiday. In the same way, an heirloom can serve as a reminder of one's family. Due to the physical association between the product and a special person or place in the past, these products have gained symbolic meaning for the owner (Belk, 1988, 1990). Past research observed a relatively strong relationship between the memories associated with the product and the experience of attachment (Kleine, Kleine and Allen, 1995; Schultz, Kleine and Kernan, 1989; Wallendorf and Arnould, 1988). Schifferstein et al. (2004) found that products that were owned for longer than 20 years were mostly associated with memories (see Figure 17.3). The fact that people have kept these products for more than 20 years suggests that they have developed a strong attachment to these objects. Memories might thus be an important reason for people to develop a long-lasting relationship to the product.

Based on these studies, we suggest that designers can influence the emotional bond between consumers and their durables by encouraging the memories associated with a product. However, product-related memories usually develop independently from the product design and are difficult to influence by the designer. Nevertheless, we would like to propose two exploratory design strategies that stimulate the formation of product-related memories (Mugge, Schoormans and Schifferstein, 2005).

The first strategy is to implement odors in products. Odors may elicit associations that are resistant to change (Aggleton and Waskett, 1999) and that are more effective in arousing consumers' mood or feelings than other sources of sensory stimulation (Herz, 1998). In cases where an odor is likely to evoke a similar, pleasant association among a large group of people, implementing this odor in a product may be used effectively to make consumers experience this pleasant feeling again. For example, Alessi's Mary Biscuit is a biscuit box that releases a vanilla biscuit smell upon opening, which is likely to elicit a feeling of nostalgia (Holbrook, 1993) by reminding a person of the past (e.g. my grandmother's cookies).

Another opportunity to stimulate the experience of attachment through the determinant memories is by designing products that 'age with dignity'. Such products are made of materials that form and wear gracefully in time. An example is a leather jacket

that starts showing wear and tear. During use, a leather jacket can shape according to the owner's body and can show bare spots. The result is a unique jacket with a personal touch. Accordingly, the product symbolizes the shared history of the person with the object. When implementing this design strategy, designers should bear in mind that 'aging with dignity' can only be a success if the signs of wear are interpreted positively by the owner.

4. CONCLUSION

Product attachment is a valuable concept for designers who are interested in the emotional impact of their product designs during ownership. To stimulate the degree of attachment to products, the following four determinants are distinguished: Pleasure; self-expression; group affiliation; and memories. If a product conveys one of these meanings, it may be judged special in comparison to other similar products and, consequently, an emotional bond may develop between the owner and the product. The four determinants are discussed as separate elements that can stimulate product attachment. However, this does not imply that these determinants are completely independent. Products can simultaneously convey multiple meanings and these meanings can also become intertwined. For example, gifts can remind a person of the specific event when the gift was received (memories), but can also have a relational meaning (group affiliation), because the gift connects the recipient to the giver (Sherry, 1983).

Based on an understanding of these four determinants of product attachment, several design strategies are proposed for stimulating the experience of attachment to products. These design strategies can help designers to design a product in such a manner that a special meaning is more likely to be associated with it. Particularly interesting are those design strategies that encourage the product's irreplaceability. In that case, the special meaning only holds for a particular object, and the experience of attachment to the product is likely to last over time.

Nevertheless, it is questionable whether designing products that are likely to convey a special meaning to the owner is sufficient to stimulate long-term product attachment. Based on their research findings, Mugge et al. (2006b) concluded that designers should first of all strive for continued product usage; for the people who stopped using their product, the product's special meaning lost its impact on the experience of attachment. Stopping the usage of a product is a divestment ritual that people employ to empty products of their meanings (McCracken, 1986). Due to these divestment rituals (e.g. cleaning, continued storage without use), meaning-loss will not take place at the moment when the product is disposed of. Usage thus seems essential to prolong the impact of a product's special meaning on product attachment and for sustaining the consumer–product relationship. A possible reason for people to stop using a product is that the product does not perform according to the owner's expectations anymore. In other words, to continue product usage the owner should feel satisfied with the product's performance.

Although the presented design strategies can be justified theoretically, it remains difficult to determine the actual effect of implementing these strategies in the product design. At present, these design strategies have only been used sporadically for consumer durables. Moreover, some design strategies are relatively specific and probably only feasible in certain situations. More research is necessary to investigate the generalizability of our findings and to explore what preconditions or limitations the design strategies may depend upon.

We do not claim that the presented design strategies are the only ways in which designers can stimulate product attachment. Other opportunities may exist to design

products in such a way that they are more likely to bring about one of the determinants of product attachment.

Finally, designers should take into consideration that although they may be able to encourage a particular product meaning in a product, it is eventually the individual consumer who gives a product its meaning. People may give the same product very different meanings as a result of cultural, social, and personal influences. Therefore, the exact meaning a product will obtain remains hard to predict.

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