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Introducing industrial design students to long-term product attachment

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KEYWORDS: PRODUCT ATTACHMENT, PRODUCT LIFETIME OPTIMIZATION, INDUSTRIAL DESIGN, DESIGN EDUCATION

ABSTRACT

Technological and fashion obsolescence continue to be concerns in the design of contemporary products. Research shows that consumers dispose of household items even though those are still fully or partly functional, for various reasons. One cause of premature disposal is the lack of emotional attachment between user and product.

This paper aims to explore how industrial designers, as initiators of the relationship between products and users, might facilitate the generation and continuation of positive experiences that could potentially lead to the consumer's enduring attachment to particular products, thereby optimizing the product's lifetime and detouring it from becoming landfill too soon. This paper contributes to a larger research that seeks to understand the factors that contribute to long-lasting product satisfaction and how industrial designers can be encouraged to consider these in their product development strategies.

Dining furniture was selected as the product area for this paper. The research starts with a literature review on consumer-product attachment, and on design strategies which promote the optimization of product lifetimes. These were used to inform a studio charette within a third year industrial design course at the University of New South Wales, in which students brainstormed ideas for aftermarket products that could enable consumers into modifying, personalizing, refreshing, repairing or refurbishing existing furniture items and thus bond better with their possessions. The outcomes of this exercise, in turn, provide a basis for formulating some guidelines that would help designers foster long-term product attachment. Furthermore, the charette increased the students' awareness of the effects of rapid consumption processes, while illustrating the value of lifetime optimization through more responsible design and more emotionally durable products.

INTRODUCTION

In general consumers purchase and consume products to satisfy their perceived needs. Csikszentmihalyi (2000) explains that consumption is practiced not only for the existential benefits, such as the fulfillment of necessities and wants, but also just as importantly for the experiential rewards, such as the temporary improvement in positive moods that typically results after a shopping spree or when we are surrounded by our possessions, particularly brand new ones.

I. PRODUCT LIFETIME & PRODUCT ATTACHMENT

Products don't last forever: they will eventually be discarded. After an object is purchased and utilized, it would at some point lose its value or its desirability to be possessed. When a product completely loses its utility and/or its worth it is said to have reached its end-of-life and is then destined for disposal.

The challenge is to optimize the product lifetime, whose duration starts from the acquisition, whether brand new or second hand, and ends at the moment of replacement (Van Nes & Cramer, 2006). Durability is considered as "one of most obvious strategies" for a long product lifespan (Von Weizsäcker *et al*, 1997) but Van Nes and Cramer (2006) argue that how long a product is retained before being replaced is largely the result of the consumer's purchasing behavior and motivation rather than its robustness. They found four factors influencing the product replacement decision: wear and tear, improved utility, improved expression, and new desires. The Eternally Yours Foundation showed that a great number of products are disposed of even though they are they are still working; thus functionality is only part of the reason for disposing of a product and there is much more to how we relate to products than function (Van Hinte, 1997).

There are suggestions that the frequency of product replacement can be slowed down by fostering a strong emotional relationship or attachment between the user and the object (Ball & Tasaki, 1992; Cooper, 2005; Mugge *et al*, 2004; Mugge *et al*, 2005; Mugge *et al*, 2008; Savaş, 2004; Schifferstein & Zwartkruis-Pelgrim, 2008; Van Hinte, 1997). This theory contends that consumers are likely to hang on to products that they share an extraordinary psychological bond with; they are likely to exhibit more protective and preservation behaviors to those objects and

try to handle them with care, repair them when they break down, and postpone their replacement for as long as possible. An optimized product lifetime can thus be the consequence of a consumer's psychological attachment to a product.

"Product attachment" can be defined as the emotional bond that a consumer experiences with a special and significant object (Mugge *et al*, 2004; Schifferstein *et al*, 2004). They proposed that people become attached to products due to four determinants: if the product provides pleasure; if the product expresses one's unique identity; if the product articulates one's belonging to a group; and if the product evokes memories of the past. Mugge *et al* (2004) contend that designers can easily stimulate product attachment via self-expression by considering product personality and product personalization.

As a result of recurring pleasurable experiences between users and possessions, a person tends to develop attachment to a product; after some time the object means a lot to the person and emotional distress could result if damage or loss occurs (Savaş, 2004; Schifferstein & Zwartkruis-Pelgrim, 2008). Therefore since product attachment can optimize product lifetime it can be considered as a design strategy for achieving sustainable consumption (Cooper, 2005; Mugge *et al*, 2008; Van Nes & Cramer, 2006).

II. Industrial Design & Design Education

In 1954 the American design pioneer Brooks Stevens infamously declared that "planned obsolescence" – or "instilling in the buyer the desire to own something a little newer, a little better, a little sooner than is necessary" – was the contentious mission of industrial design (Adamson, 2003). While this sparked outrage and denial amongst the design community, consumers began to view industrial designers as conniving with manufacturers in intentionally shortening product lifecycles in order to stimulate frequent consumption and keep themselves in business. The social critic Vance Packard accused designers of immorally promoting both "functional obsolescence", in which objects were intentionally designed to wear out, and "psychological obsolescence", in which products are deliberately made to look outdated in the manipulated public mind, thereby fuelling wastefulness (Packard, 1957). Leading design educator Victor Papanek censured industrial design as being the "second most harmful" profession, by persuading people to "buy things they don't need, with money they don't have, in order to impress others who don't care" (Papanek, 1971).

Since the last century of intensive industrialization so much has changed in the world, as well as in the design world. In 2001 industrial designers declared that "we will no longer regard the environment as a separate entity" and that "we, as global designers shall pursue the path of sustainable development" (ICSID, 2001). The international designers' code also professes that we should "accept professional responsibility to act in the best interest of the ecology and of the natural environment" (ICSID, 1987).

Studies show that gradually sustainability aspects are permeating into the education of industrial designers worldwide: on average 17½ percent of the curricula have sustainability content, and more than half of design lecturers consider themselves as being interested or very interested in covering design for sustainability in their teaching (Ramirez, 2006; 2007). In 2008, 124 design universities ratified the Kyoto Design Declaration, in which they committed to furthering the education of the young designers "within a value system where each of us recognizes our global responsibility to build sustainable human centered, creative societies" (Cumulus, 2008).

III. Studio Charette

During the last 7 years the course IDES3221 Industrial Design Studio 3A at the University of New South Wales has been reprogrammed to provide students with a firm grounding in sustainable and responsible design. This year's program included an intensive and accelerated charette in which the capacity of students to understand and apply "design for product attachment" strategies will be tested.

The charette day was held on 15 March 2010, with 51 students participating and 4 academic staff providing guidance. The session started with the lecturer-in-charge (the principal author of this paper) providing a short briefing lecture and slide presentation, showing successful examples and strategies for designing for product lifetime optimization and product attachment.

The main task for the day was to generate workable ideas for aftermarket products that would enable a household to be emotionally attached to their furniture, thereby avoiding its premature disposal. Instead of being given a detailed working brief in one go, a sequence of tasks was periodically broadcast to the students on the studio projection screen (see Box 1).

Box 1	Sequence of tasks for Product Attachment charette
09:00-09:30	Lecture on product lifetime optimization and product attachment. Briefing on charette participation.
09:30-09:45	Self-select into assembly parties (max 10 each) and construct the assigned flat-pack chair.
09:45-10:10	Split assembly party equally into two groups (ensure gender balance), and mind-map the various reasons by which end-users would consider prematurely disposing of the dining chair.
10:10-10:15	Report the top 3 issues identified in each group as contributing to poor product attachment.
10:15-10:30	Break out and individually sketch at least 5 ideas for aftermarket products that would address the issues identified in mind map.
10:30-10:45	Reconvene with group. Contribute ideas one-after-another and discuss. Which ones are most feasible for the identified issues?
10:45-11:00	Break out and individually sketch at least 5 ideas for aftermarket products or services that would enhance the physical pleasurability of the chair (product attachment determinant = delivers pleasure in use). How can the chair be enabled to perform better for the user, fit better with needs, provide comfort and relaxation in use, etc?
11:00-11:15	Present physio-pleasure ideas to class.
11:15-11:30	Individually sketch at least 5 ideas for aftermarket products or services that would enhance the psycho/socio logical pleasurability of the chair (product attachment determinant = expresses one's unique identity; evokes memories of the past; articulates one's belonging to a group). How can the chair be enabled to provide or capture pleasant memories or build in stories? How can one distinguish one's personality from another

	with this chair? How can ownership of this chair connect the user to a desired social group?
11:30-11:45	Present ideas on psycho/socio pleasure to class.
11:45-13:25	Working lunch. Within groups discuss all ideas generated. Prioritize most innovative and feasible ideas. Negotiate final design outcome which considers the best ideas generated. Make final presentation sketches AND a quick full-size model of the collaborative idea, by modifying the previously assembled chair. Sketch a visual storyboard of how the life of the chair can be extended using this aftermarket solution or support system.
13:25-13:50	Final design presentations of all working groups=.
13:50-13:55	Using sticky dots, each student will vote on their top 2 favorite ideas (people's choice).
13:55 - 14:00	Debriefing of charette process. Instructions for post-charette activities.
Post 14:00	Each student to post into their individual blog sites detailed reflections of their design process and outcomes, both individually and as part of a collaborative endeavor. How will the proposed solution improve the attachment of the user to the chair? How is the consumer expected to use it? How has this task challenged the student's design thinking about promoting long-term satisfaction and product endurance? How do students feel about designing beyond the original product? How did students feel about the collaborative problem-solving activity?

IV. Discussion of Results

Students presented group and individual work in response to various prompts throughout the charette day. Excitement was obvious as students engaged with the first task, which was assembling a flat-packed solid pine dining chair. Three groups assembled raw pine chairs while the other three had stained-and-lacquered chairs.

The groups then mind-mapped the various reasons why owners of the wooden dining chairs would want to prematurely dispose of them before they have actually broken down. The mind maps acknowledged that the chairs appeared to be easy to replace to begin with. Furthermore four major clusters of reasons could be gleaned (Figure 1): perceived lack of durability; absence of emotional connection with user; and unavoidable change of circumstances.

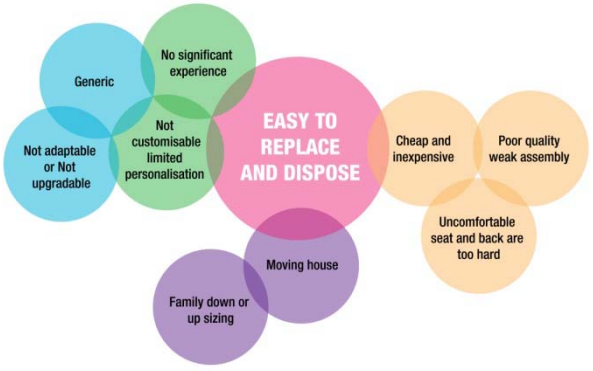

Figure 1. Reasons for premature disposal of chairs.

The charette day has been very effective in producing dozens of group and individual ideas in a very short time. When prompted to think of the various ways by which the chair could be modified to enhance its physio- attachment qualities, a broad range of ideas on providing extra functions and increased comfort emerged (Figure 2). Additional functionality was achieved by adding a desk tablet, a rocker base, a magazine rail, a step-ladder, and hanging bag storage for children's books and toys. Comfort was improved by using memory foam for the seat, adding a front bar under the seat for foot rest, cushioning the back rest, and extending the seat to support the lower limbs. Another approach taken was providing a padded storage cube under the seat which could also function as a foot stool. Providing a supplementary swivel base, a wheel base, an armrest and a leg height extender were also seen as possible ways for improving the physio attachment qualities.

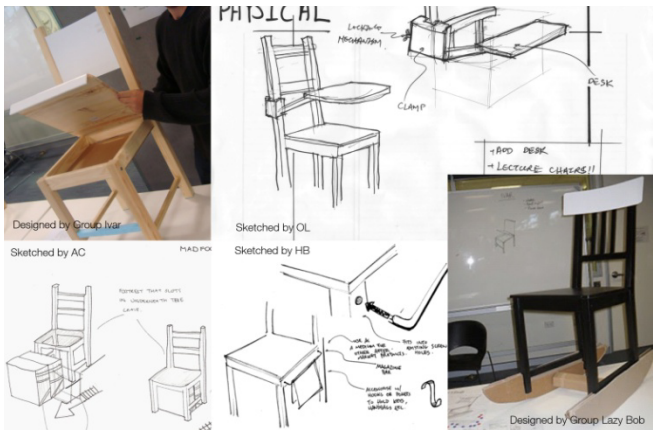

Figure 2. Concepts for enhancing physiological satisfaction.

The socio and psycho attachment ideas centered on the personalization of the chair and on the facilitation of social interaction. These could be achieved by decorating their own chairs (by painting, by stenciling or by carving patterns); providing name plates for their usual owners to promote a sense of responsibility and ownership; and providing an additional side tablet that links two chairs together (Figure 3). While acknowledging that the chairs are designed for adults, several concepts looked at how the children of the adults could derive fun and pleasure with the chair so that they grow up with pleasant memories of the chair and thus become emotionally attached to it. These ideas included the provision of compartments for children's colored pencils, marker pens and toys; gooseneck lamps; soft covers for the chair legs in cartoon character forms; and sliding toy blocks on the foot rests for enhancing learn and play activities. Other ideas for psycho/socio attachment were interchangeable colored parts; a marker pen holder to facilitate collection of autographs from visitors; and a back rest with photo frames to remind the group of enjoyable memories.

At the end of the day, the groups presented prototypes of their ideas for fostering attachment and optimizing the product's lifetime. They were also required to post their concept sketches, group outcomes and individual reflections on their individual blog sites, which were all linked to the course blog site (www.ides3221-2010.blogspot.com).

Student reflections of the charette were highly positive, particularly in terms of the way their design thinking was challenged in promoting long-term satisfaction, product attachment and product endurance (Box 2). The charette

requirement to design aftermarket product solutions was also seen as a new opportunity for designer activity as well as a chance to enhance user experiences. They also found value in the collaborative nature of the charette activity (Box 3).

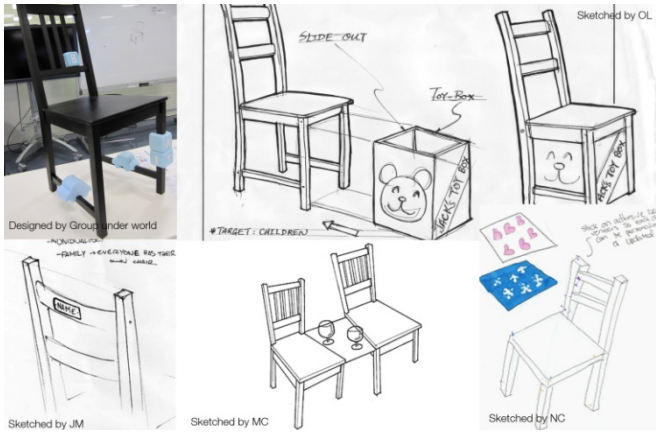

Figure 3. Concepts for enhancing psychological and sociological satisfaction.

Box 2. Reflections on designing for product lifetime optimization and product attachment.
Adapting the product for another use was a good objective to partake in.
Can re-purpose existing products.
Consumers' satisfaction will be extended.
Design in addition to enhance a product after a consumer have purchased and adapted to it is a very interesting field with a lot of opportunity.
Designing beyond the original product can be useful in an IKEA situation where extra odds and ends can already be purchased to personalize furniture pieces but in an upscale market, such as cherry wood furniture and other "classic" pieces, additions like this are not going to work.
Difficult because a chair basically has one function and some of the ideas that came up to give it some other function were wacky.
Hard to target everyone and simply because everyone is an individual.
Having different uses can make the product a more used thing and also a more useful thing to have therefore making user happier experience.
Improve existing products by either adding or subtracting.
Increase the lifespan of a product, because people easily get bored of a product, or it doesn't fulfill the needs of the user as well as it used to.
It also allows for greater creativity in ideation, because you aren't really restricted to say, making a chair.
Makes the product more flexible and interesting over time for the consumer; supporting the original product.
New tooling systems must be made for the accessories and more logistics must be considered which in turn might even cancel out the fact the original product's life has been extended.
Original product connect with the user in a multitude of different ways
Personalized, individualistic or unique, the user has the chance to make it their own and reflect themselves through the product.
Products resonate with the user on an emotional level.
Redesign products so they can fit seamlessly into our changing lifestyles
User's psychology creating memories and emotional attachments to everyday products would urge the user to hold onto that product for a very long time.
When products can be upgraded they are worth more to the consumer in their potential output and can in essence be more meaningful to the user.

Box 3. Reflections on the collaborative problem-solving activity
Collaborative problem solving was really productive, short intervals push out a number of concepts
Collaboration activity was challenging, mainly because there were too many changes in ideas happening…
One's idea can stimulate others to think further, fostering more ideas
Better atmosphere than working on a project alone

Interestingly, none of the students referred to the terms "product attachment" or "product lifetime optimization" in their responses to the question: if they were to design a piece of furniture from scratch, how would they do it differently? However indicators of physical and psychological pleasure were referred to, such as increased comfort, improved user experience, connecting with user's daily life, strengthening emotional ties and fostering sentimental values, understanding the consumers' likes and dislikes, and a more interesting and "less generic" appearance.

V. Conclusion

A thoughtfully designed solution can enable consumers to consider retaining their possessions and to avoid premature product disposal. Furthermore, it helps to change consumer behavior towards a more positive, more sustainable one.

The participation of design students in this charette is one small step in making the next generation of industrial design professionals aware of the implications of product lifetimes and how psychological attachment theory can be exploited to arrive at solutions which are not only emotionally durable but pleasurable in many aspects as well. As industrial designers make efforts to really understand the impacts of the outcomes of their practice and apply appropriate strategies to contravene rapid obsolescence and resource wastefulness, then the goal of sustainable consumption becomes a little bit more achievable.

This paper is part of a larger research at the Faculty of Built Environment of the University of New South Wales, which seeks to understand the factors that contribute to long-lasting product satisfaction and emotional attachment, as well as propose strategies by which industrial designers can be encouraged to consider these factors in their routine product development activities.

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