The influence of consumer research on product aesthetics

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Keywords: industrial design, product aesthetics, consumer research

1. Introduction

The visual form of products has been described as a medium through which designers communicate with consumers [Krippendorff and Butter 1984; Monö 1997; Crilly et al., 2004]. This approach to product aesthetics views the product as a text that is 'written' by designers and 'read' by consumers. Designers are thus considered to have some intentions for how the product should be interpreted. These intentions are embodied in the product and the consumer responds to the product in a manner that may or may not correspond with the designers' original intentions. Representations of this perspective have typically implied that the designer-consumer relationship is essentially linear and uni-directional (see Figure 1a). However, in examining the nature of designer intent and consumer response it is important to consider the designers' awareness of consumers and the research that is conducted to acquire further knowledge about them (see Figure 1b).
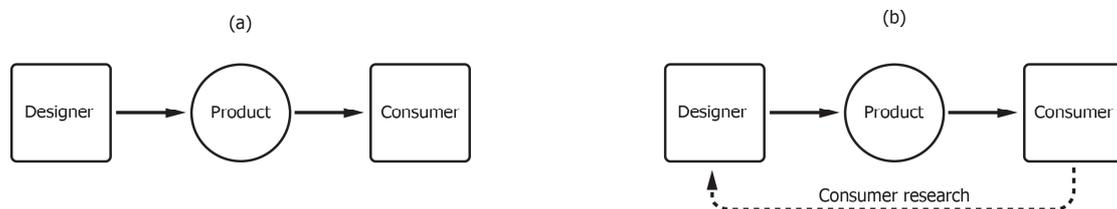

Figure 1. (a) Product form as a communicative media. (b) Consumer research as a flow of information to the designer [see Krippendorff and Butter 1984: 6].

Consumer research brings 'the voice of the consumer' into the design process by offering insight into their lifestyles, preferences and aspirations [Bruseberg and McDonagh-Philp 2001, Kotro and Pantzar 2002, Courage and Baxter 2005]. However,

whilst such research offers information on the practical and social needs of consumers, it is seldom focused on providing a visual direction for the design project. Generating a product's visual form is a very intuitive process and it is claimed that "designers frequently consider their aesthetic judgement to be independent of consumer taste" [Margolin 1997: 231]. Thus, whilst consumer research has the potential to provide information on consumers' aesthetic preferences, and to provide other insights that affect the form of the product, the effect on industrial design practice remains unclear.

To address this issue, a qualitative study was undertaken exploring the influence of consumer research on product aesthetics. After describing the nature of the study, this paper outlines the process of consumer research as it applies to design. There then follows discussion of how consumer research directly influences product aesthetics and how it exerts further influence by shaping the politics of designer-client relationships. Finally, there is discussion of the barriers that prevent or limit the application of consumer research and the challenges that are encountered in applying its findings to the aesthetic aspects of design.

2. The study

By adopting a grounded theory approach [see Strauss and Corbin 1998], a qualitative research study was undertaken to examine current industrial design practice. Sampling from the London and Cambridge areas of the UK, industrial design consultants and their consumer research colleagues were interviewed. Throughout the course of the study, 21 industrial designers (associated with 19 different design consultancies) were recruited into the study. All of the designers had professional experience ranging from seven to 28 years and each designer held a senior design position (variously described by titles such as 'Design Director', or 'Head of Industrial Design'). In addition to these designers, eight consumer researchers were recruited into the study. Five of these researchers were associated with design consultancies and the remaining three researchers were associated with external agencies. All of the researchers had at least moderate professional experience, ranging from four to 18 years. Although the researchers had less experience than the designers, consumer research is a comparatively new activity and thus each of the researchers held senior positions (e.g. 'Head of Global Trends').

In total, 29 semi-structured interviews were conducted with a mean duration of 75 minutes. The majority of the interviews were conducted on a one-to-one basis and set in the context of the interviewees' places of work. With the interviewees' permission, all of the interviews were recorded and later transcribed to produce over 250,000 words of text-based data. Computer-aided qualitative data analysis software, QSR NVivo [2002] was used to analyse this data and to provide interactive visualisations of the emerging themes. Consequently, an interpretation of current industrial design practice was obtained which places the role of consumer research within the context of the other factors that are influential in determining product form. This interpretation is now presented below supported by extracts from the interview

transcripts. For clarity, these quotations are attributed either to an industrial designer (ID) or a consumer researcher (CR).

3. The consumer research process

The study showed that the process of conducting consumer research requires the consumer population to be sampled from, a topic of interest to be identified, and some research methods to be employed. This all leads to an output summarising the findings of the research that can be distributed amongst the relevant parties. Whilst consumer research may be systematically conducted in a highly formal manner, it may also be informally applied or performed somewhat intuitively. This general process is briefly reviewed here with emphasis given to the aspects that the interviewees considered to be especially relavent to product aesthetics.

3.1 The sample

Many designers describe themselves as constantly absorbing cultural information and they believe that this gives them an insight into the consumers for whom they design. However, in many instances, designers conduct small-scale, informal investigations as an intuitive and routine part of the design process. This may involve quickly generating a crude sample that approximates the target market by exploiting their network of personal contacts and then seeking insight through contact with this group.

> *"We tend to use wives, and friends and things. We don't go out of our way to do [research]." (ID)*

When a more formal research approach is used, the sampling method may involve separate recruitment companies who provide groups that are claimed to represent a specified demographic. Access to such groups gives the designer insight into, and empathy for, the individuals to whom their designs are targeted.

The product's target market is the first immediate choice when considering those who should be studied. This includes those who purchase the product and also, in cases where there is a difference, those who use it. This leads to the identification of not only typical consumers, but also 'edge cases' who exhibit interesting characteristics that can promote innovative thinking amongst the design team. 'Early adopters' are an example of one such group who are often studied because their progressive attitudes to technology and design are considered to be both indicative of future trends and influential in shaping those trends.

> *"You are just trying to understand how this would fit into an early adopter's life or how it wouldn't… What other things do they buy, use, want, desire? How should the product be reflecting that in some way? Round edges? Sleek? Slim?" (CR)*

Also of interest are the intermediaries who are involved in the distribution and sale of the product; this includes the clients' sales force, the retailers and the "gatekeepers" who recommend a product, or somehow guide selection (e.g. journalists). Finally, consumer groups that are identified as aspirational for the target market may be studied as their association with, or endorsement of, the product can be highly influential in determining the target markets' consumption behaviour.

3.2 The topic

With each of the groups studied, but particularly those representing the target market, the consumers' lifestyles and attitudes are the main focus of inquiry. Of particular interest for product styling are the brands with which they identify, and the 'product world' that they reside in. Researchers thus investigate the products that these consumers surround themselves with, the products that they are aware of and the products that they aspire to own. In addition to these consumer-focused investigations, significant research effort is also dedicated to the identification and analysis of social, political and technological trends. These broad studies give an indication of the external forces that contribute to consumer tastes over both the short and longer term.

> *"Basically we've got a network of people around the globe that we use to conduct tests for us; take pictures of where they live, what they do." (CR)*

3.3 The researchers

Consumer research may be conducted by the designers themselves, by their in-house research colleagues, by their clients, or by some independent agency working on their behalf. Additionally, some collaborative research teams comprised of representatives from these parties may be assembled for a specific project.

Where the designer conducts consumer research in isolation, the approach is often informal and small-scale. When a more formal research approach is required (or requested) then designers may take recourse to the services of a research group within the same consultancy, or an external agency that provides such a service. In some instances, research may already have been conducted by the client organisation (or some agent acting on their behalf) before the designers' services have been requested. In these cases, designers may simply be provided with the research findings as presented in a formal report. However, there is good reason to include the designer in any investigations that are conducted, as this allows them to gain direct experience of the consumer, their environment and their cultural context.

> *"Through actually the designer being involved in gathering the research data, there are bits that you pick up along the way that are actually invaluable to the design process. If we hadn't been involved in that [research process]… it's very unlikely that we'd have realised the significance of some aspects of it." (ID)*

3.4 The methods

The nature of consumer research activities ranges from informal observations that designers conduct in the natural course of their work, to more systematic multi-method research programmes. Of particular relevance to product aesthetics is that consumers may be asked to self-report on their lifestyles, attitudes and consumption activities, in some form of regularly maintained diary.

> *"All these people got a pack and they kept a diary of their week. They cut things out of magazines, adverts, they took pictures of their favourite clothing items, what they had in their bedroom, where they went with their friends to give us an idea about what they're doing with their life."*
> *(CR)*

Consumers may also be interviewed, surveyed, or asked to participate in group discussions that focus on the products that are currently available. Where insights are sought that offer more situational or contextual validity, techniques such as video ethnography are preferred. This typically requires the researcher to live amongst a household or community for an extended period (perhaps one week) with the aim of revealing behaviours and attitudes that are inaccessible through direct verbal inquiry.

3.5 The output

Whether performed by, or for, the designer, the findings from consumer research activities are often summarised in a visually rich format. For example, designers often produce image boards that represent consumers' lifestyles and aspirations along with the products with which they are associated. In addition to characterising the target market, these boards often represent the designers' visual intentions and suggest directions in which the design might proceed. The more formal reports that research specialists produce often include similar images supported by titles, text and tables that provide additional details. These reports must often serve a variety of audiences as they should both inspire designers whilst also being able to educate different groups within the client organisation.

> *"A lot of what we do is very visual to try and bring it to life, because it goes to a number of different audiences… It goes to marketing, design, it can go to NPD [new product development],… to top level management. So, it's giving everyone something." (CR)*

Having now reviewed the process of consumer research as it applies to product aesthetics, the information flow from consumer to designer can be more fully represented (see Figure 2). As the following sections show, this information influences designers in many ways and also poses a number of challenges to design practice.
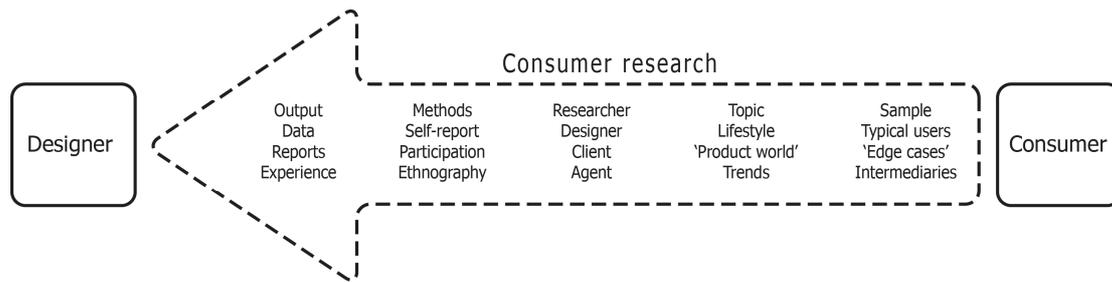
Figure 2. Consumer research as an input to design.

4. The influence of consumer research

Irrespective of how consumer research is conducted, or how it is reported, the ultimate objective is that the designer improves their consumer insight. This insight is acquired either through exposure to the research findings or, preferably, through experience of directly participating in the research. The designers' improved understanding of, and empathy with, the consumer may define the design direction, offer feedback on the effectiveness of the final product, and help manage client relations.

4.1 Design direction

In design projects where consumer research is conducted at the outset, the insight gained may help define the very direction in which the design proceeds. By gaining exposure to specific target markets, designers gain insight into the consumers' aesthetic preferences, their relationship to products, and the visual nature of the environments in which the product will be situated. As such, the output from consumer research is often suggestive in nature rather than prescriptive; this allows the designers to treat research results as a point of departure rather than as guidelines to which they must adhere.

> "So we kind of hint at design direction, but not in a definite way because it goes to designers and that's what they do. We're just saying 'this is what people are seeing and this is what they're interested in and they expect, but what you [the designer] do with it is still quite open.'" (CR)

Where research is only conducted after the design work has already commenced, it may be used to confirm the validity of existing ideas and thus be simply regarded as a 'reality check'. Whether research precedes or follows the initial design work, designers draw inspiration from what is learned, as they are exposed to new varieties of lifestyle and attitude. These experiences can break down preconceived notions of the target market, test out hypotheses that the designers have formed or allow new members of the design team to quickly appreciate the nature of consumer needs.

"[By showing consumers your designs,] you can get some good responses that you can map back to particular features of those products. Like colours, simplicity of overall surface, etc. A lot of it, I guess is quite obvious, but what we're trying to do is confirm those obvious hypotheses if you like." (ID)

4.2 Feedback

If designers intend to evoke specific responses in consumers then consumer research activities conducted after the product has been launched provide the opportunity to ascertain whether those objectives were fulfilled. That is, eliciting feedback from consumers on their perceptions of the product may inform designers as to whether the design was successful or whether it was interpreted in some way other than that which was intended.

"We created that interior, for the brand's [flagship] store, and we were obviously hoping that when people walk into that store that there are certain elements of the brand that they kind of capture and recall. And there was definitely research done with that particular brand store to find out if the actual communication was happening." (ID)

Despite this opportunity to 'close the loop', designers are seldom exposed to detailed information on how consumers actually respond to products in the market place. This is because, at the time of product launch, the designers are typically engaged on a new project and additional resources are unlikely to be committed to projects that are no longer 'live'. Whilst the client organisation will, in most cases, provide information on the product's sales performance in relation to establish targets, such information will be primarily quantitative in nature. Thus, designers may discover how many units were sold, at what price, and in which regions, but will not typically know who those consumers were or why those purchase decisions were made. Thus, feedback on product form is often limited to that offered by their colleagues, by the press, or by awards committees. Whilst such responses may be gratifying, they mostly originate from other designers and are thus not necessarily representative of consumer perceptions.

"Design awards are useful to some degree, as a gauge of feedback of how well something's been designed, but they typically are judged by other designers, so that doesn't necessarily mean that the product's right. So design awards need to be taken with a pinch of salt." (ID)

4.3 Client relations

In addition to having direct application in the design process, consumer research is also a political weapon that designers employ in their negotiations with clients. In

particular, designers use consumer research to demonstrate that a rigorous, methodical approach to design has been adopted. This not only makes the design process more comprehensible to the client, but also justifies some design expense. Furthermore, the client often expects certain formal research activities to be conducted in an attempt to reduce the risk associated with the design project. Designers may thus seek to assuage the clients' concerns by performing (or permitting) the studies that are requested.

> *"What this [research] process does say is: 'we've spoken to all the stakeholders involved in this project - [they have] all given us what they think, and we've been interpreting that. So,... there's [probably] a higher chance of it being successful.'" (ID)*

Such apparent compliance does not necessarily correspond with effective research however, as it is often conducted in a way that is considered unconstructive and the results may be dismissed by designers as an irrelevancy.

Designers often report that clients promote their own aesthetic preferences rather than focussing on those of the consumer. However, the application of consumer research allows designers to act as a proxy for the consumer when communicating with the client. As a result, the influence of the clients' tastes may be effectively suppressed by representing the consumers' lifestyles, tastes and aspirations.

> *"We had to show [research findings] to the client: 'look, this is the world of our [customers]... this is what it's got to look like, and not what you think'" (ID)*

5. Challenges of consumer research

Despite the potential benefits that consumer research offers the designer, there still remain significant barriers to conducting such research and difficulty in interpreting any data that results from it. These challenges are now discussed below before conclusions to the paper are drawn.

5.1 Barriers to conducting consumer research

In many instances, there are personal, political and logistical barriers to conducting consumer research. One of the most significant barriers to conducting formal consumer research is the clients' perception that such activities will add little value to the final product: that it will not be cost-effective. Within the limited resources allocated to the project, committing time, money and people to the intangible benefits of 'insight' and 'empathy' may be perceived as a luxuriant digression. Designers are also, at times, reluctant to request extra resource for research because they fear that acknowledging their incomplete understanding of the consumer will diminish the clients' confidence in the design team. Where concessions are made to conducting consumer research, but the allocated resources are limited, logistical research problems may be encountered. In particular, small-scale studies may

struggle to establish a sample group that is representative of the target markets' demographic, geographic and cultural spread.

> *"We will try to gain access to consumers… if there is the budget and if there is the time." (CR)*

The competitive secrecy surrounding design projects also places constraints on the consumer research activities that can be performed. For example, exposing consumers to early product visualisations, or working prototypes, may compromise the confidentiality requirements associated with the project. Therefore, there is often limited scope for assessing the target markets' reaction to the design prior to product launch.

> *"Most of our clients are rather reluctant to let anyone from outside see the designs in progress. You have to be careful with user involvement." (ID)*

5.2 Difficulties in applying consumer research

In addition to the barriers imposed by external factors, the designers' own attitude to the practical value of consumer research may also prevent such research being conducted or its findings being implemented. Designers may feel that they themselves are representative of the target market, that they already have sufficient understanding of consumers, or that, in any case, consumer research is of limited value in yielding useful insights. In particular, where consumers are presented with sketches, illustrations, or models of the preliminary design, their inability to properly interpret such visualisations may pose severe challenges to communication. When this is combined with a research context that differs strongly from that in which the product will be consumed, the results may be even more difficult to interpret.

> *"I think when you're asking people about shapes and colour and so on, you get into territories which are, I think, quite difficult to get at." (ID)*

> *"When they first see something new… their first reaction may not necessarily be their long-term reaction." (ID)*

Designers commonly assert that consumers do not know what they want until they see it, and that they cannot articulate their needs, desires or aspirations. Therefore, designers may have little confidence in the results of consumer research activities that require introspection on the part of the consumer. Consumers are also often considered to be so fixated on the past and the present that they are unable to imagine a future that is substantially different. Thus, designers fear that how consumers respond to innovative product forms is not indicative of how they will respond once the product is launched.

> *"It's really the designer's job to think about how the design's going to be in two years time, after production, rather than thinking about the consumer now, because [researchers] ask the consumer to think about a future product in their current context, and it can kill an idea, because*

they can't think that far ahead. It is a problem with them, it's a problem with consumer testing." (CR)

Whilst most designers acknowledge that consumer research is valuable in identifying and resolving ergonomic issues, it is often considered to be of less value in defining the products' aesthetic. Furthermore, the visual clues that such studies do provide may not only be misleading, but can stifle creativity and reduce innovation. Thus, whilst consumer researchers strive to inspire the designer, they are also cautious of placing limits on their visual solutions.

"The aesthetics of it are pretty much in the hands of the product designers, the designers who are working on the brief. To be honest, we wouldn't really want to influence that… because it can destroy a good brief. And it can destroy someone's creativity" (CR)

Because consumer research may be a required component of design projects, it may be conducted despite any limitations that are perceived by the designers. This unavoidably exposes the designer to new experiences or information, and may have both positive and negative effects on the design process. Therefore, even in instances where designers do not fully endorse consumer research, or believe in the validity of its findings, it may still strongly influence product form.

"It reduces the risk of being completely unsuccessful. But also at the same time it's difficult to make huge innovations or breakthroughs… First of all, generally the public don't really know what they want… If you're involving them in your process as you're going along it can completely confuse you, and the end result is not really strong." (ID)

Having now described the application of consumer research and the challenges to successfully applying it to product aesthetics, a more complete representation of consumer research as an input to design can be constructed (see Figure 3).
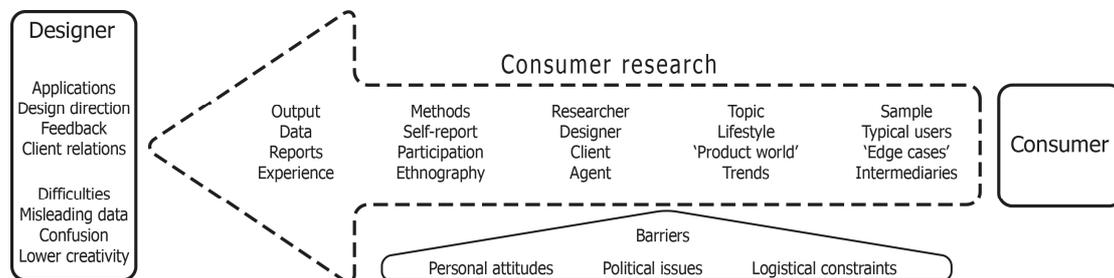

Figure 3. Consumer research and its influence on product aesthetics.

6. Conclusions

Consumer research offers the opportunity to gain insight into the target market, to design products in collaboration with representative consumers and to ascertain how consumers respond to those products. This information may enhance the designers' understanding of how products are perceived, establishing the direction of future projects and providing feedback on completed ones. Further to these design benefits, the consumer research process is also instrumental in the politics of designer-client relationships. In particular, consumer research allows designers to demonstrate that their designs are aligned with consumer needs and increase the clients' confidence in the project. Thus, consumer research offers the perfect vehicle by which designers can establish what their intentions should be and understand whether those intentions have been realised.

Despite these benefits, difficulties in collecting, interpreting and applying data relevant to product aesthetics may either reduce its impact on the design process or affect that process in undesirable ways. In particular, the client's attitudes to consumer research combined with practical constraints on the project may reduce or prevent the use of such activities. Even in those projects where consumer research is performed, designers' attempts to apply these results to aesthetic issues can lead to both conflict and confusion.

In reporting on a study of modern industrial design practice, this paper has discussed the influence of consumer research on product aesthetics. By focussing the study on the visual form of products and the activities of industrial design consultants, the resulting interpretation is limited in its scope. Future work in this area might involve research to include other levels of product interaction (beyond the visual), other parties in the design process (beyond the designer, researcher and client) and other design practices (beyond consultancy). Each of these potential expansions would provide a more complete view of how consumer research influences design practice and thus influences products.

Acknowledgements

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