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RESEARCHING FIRST CONTACT EMOTIONAL RESPONSES TO PRODUCTS

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ABSTRACT
This paper provides an overview of ongoing research at the inception stage of a PhD research project in the area of design and emotion, and discusses some of the key issues that have arisen out of the research to date. It outlines a pilot study that is planned to identify further avenues of research and considers the implications of the research on design education. The paper is part of research being developed by the Creative Design Research Group and taught on design courses, in the School of Design, Engineering and Computing at Bournemouth University. The paper illustrates how this can support the education and development of product and engineering design students in design education.

Keywords: Design, aesthetics, semiotics, emotion

1 INTRODUCTION

For products to enjoy long term commercial success in today's society they need to possess more than mere functional adequacy and pleasing aesthetics. Consumers are now presented with a huge array of product choices; each design offering slightly different features from those of their competitors, or at least similar ones at a lower price. Users' experience different emotional responses towards products at different times [1]. However, a particularly significant time in a persons' emotional relationship with a product is at the moment of first-contact. It is at these times that a product is seen for the first time and when an emotional response can be evoked in the consumer that could make the difference between whether or not they choose to purchase or use that product. At this point, the investment a company has made in the design, development, manufacture, and marketing of their product lies in the balance. The design that evokes the right emotional response in the consumer at the right time is the one that the consumer is most likely to purchase.

2 FIRST CONTACT WITH A PRODUCT

The emotional aspect of design has broad scope and there has been considerable debate in recent years with regard to the way in which products can elicit different emotions and subsequently how people are attracted to the products around them. The particular area of interest for this research is that of the emotional responses evoked by *first-contact* with products. Specifically for the purposes of this research, the term *first* is used here to mean at a point which a potential consumer has no prior awareness of the product, and *contact* meaning visual contact rather than through physical touch.

2.1 Design and Emotions

Desmet [1] describes how products can elicit emotions by their appearance and that 'the act of buying a product can elicit strong emotions.' He also describes how different people can experience different emotions towards the same product and that sometimes people can feel more than one emotion simultaneously. In a subsequent paper [2] Desmet goes on to describe a typology of emotions and in doing so identifies 25 emotions (Table 1) that are regularly experienced in response to consumer products. These emotions are not claimed to be absolute. Fear for example is a common emotion, but one that is excluded from Desmet's study on the basis that 'It might not be relevant because nowadays products are believed to be too safe to be experienced as a real physical threat' [2]. Surprise on the other hand occurs twice, albeit differentiated into pleasant and unpleasant forms. Fear and surprise, are two powerful emotions of significance to first contact.

Table 1. The 25 emotions regularly experienced in response to consumer products (Desmet)

admiration	*alarmed*	*amazement*	*amusement*	*astonishment*
avaricious	*boredom*	*contempt*	*curiosity*	*desire*
disappointment	*disgust*	*dissatisfaction*	*eagerness*	*fascination*
indignation	*inspiration*	*irritation*	*joyful*	*pleasant surprise*
satisfaction	*softened*	*stimulation*	*unpleasant surprise*	*yearn*

2.1.1 Fear at First Contact

In the context of first-contact with the full breadth of products that could conceivably be available today, emotions such as fear could be regarded as having some significance. For example, apprehension could be seen as an extension of fear and such an emotion could in fact be commonly experienced with regards to first-contact with a variety of products, including garden machinery, power tools, hunting equipment (including weapons) and even some domestic appliances. This apprehension might result from a person's uncertainty regarding their perception of a product, its function or what it represents. The term 'techno-phobia' is regularly expressed in relation to modern consumer products. Clearly design has a role to play in eliciting desirable emotions in order to increase the likelihood that a product will appeal to the end user in the most appropriate manner.

2.1.2 The Surprise Emotion

Surprise by itself is largely a precursor for secondary emotions. A surprise emotion can be pleasant or unpleasant and can lead to many of the other emotions listed in Table 1. Used effectively, this build up of emotions can lead to highly pleasurable experiences. Surprises can manifest themselves at different times in a user's relationship with a product. These moments might occur before, during or following a person's first contact with a product. Surprises that occur at first-contact stand to make significant impact, as first impressions play such a large part in determining the commercial success of a product.

Designers can use multiple ways to create surprising products. The choice of materials and textures alone can be used to 'trick' a user into perceiving a product as something which it is not (e.g. substituting acrylic plastic for glass [3] or chrome plating a plastic component to make it look and feel like metal). There is a risk that someone could experience negative emotions resulting from what they perceive as being an unpleasant surprise. Finding, for example, a low quality material apparently masquerading as something which it is not may well lead to disappointment, alarm or even disgust. The overall experience is something that the designer needs to consider carefully. A person may also reflect upon a surprise arising from an encounter with a product for some time after it has occurred, perhaps even going on to discuss it with their peers. It's therefore important that any such reflective discourse is positive, so that it does not negatively influence the emotional responses of other potential consumers before they've encountered the product for themselves.

2.1.3 Processing Emotions

In Designing Emotions, Norman [4] describes three levels of processing (Figure 1), to which he refers as visceral, behavioural and reflective. The visceral (or reactive) level he describes is responsible for the initial instinctive reactions that occur during a new encounter. It rapidly makes assessments as to whether something is good or bad and forms the first stage in affective processing. The affective system influences whether we perceive our environment in a positive and negative way. Positive affect makes us more receptive to new ideas while negative affect can cause anxiety. In terms of emotions experienced during first-contact with products, the visceral level can be considered a significant factor in setting the context for subsequent emotional responses. A positive first impression sets the tone for subsequent emotions processed at the behavioural level. The behavioural level is concerned with the majority of human activity. It is at this level that conscious decisions are

made. The behavioural level can influence the visceral level and can subsequently be influenced by the reflective level. Therefore, conscious thought can overcome an initial reaction but it can also be affected by experience. It is at the reflective level that experiences are revisited after they have happened, and while reflection is not linked directly to the senses, it has a significant influence on how a similar experience might be dealt with in the future. All three levels described here can therefore be seen to play a part in influencing emotions during an encounter with a product for the first time.

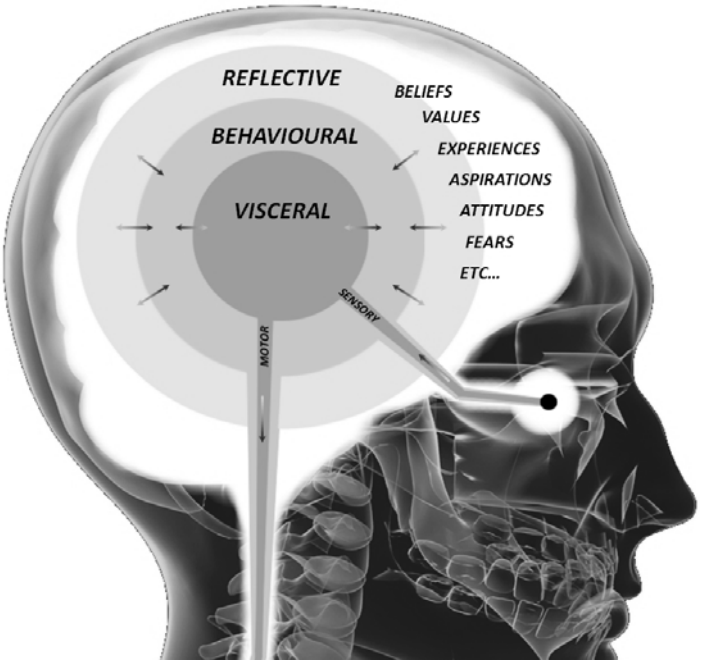

Figure 1. Three levels of emotional processing

2.2 Embedding Meanings in Products to Elicit Emotions

Meaning represented through every aspect of a design can be designed to be perceptible to a large proportion of a population or to distinct segments, sensitive to particular signs or symbols. Signs can be used to elicit emotional responses, and semiotics (the science of signs) provides a means of engaging as many senses as possible to enable this to happen [5]. Saussure demonstrated that meaning is signified as a result of aspects of signs known as signifiers [6]. Products can be signifiers and can have signifiers represented within them. But while signs can be designed in such a way that their meaning is very apparent, in the context of product design their use is usually quite subtle. A person's relationship with an object can develop as they spend more time with it [5] and as meanings have time to establish themselves and evolve in a person's consciousness. However, if a design signifies one of many possible meanings of emotional significance then it could also be misinterpreted. Over time, this can lead to many emotions being subsequently evoked through what is known as 'unlimited semiosis'. A common example of a symbol capable of evoking this phenomenon is the sign of a cross, which has broad connotations from religion to politics and first-aid to danger. An initially positive emotional response to a product could ultimately result in a negative one, as well and vice versa. Time may be of particular significance to first contact emotions. Too little contact-time and subtle meanings may not be communicated effectively. The first contact emotions may vary depending on the understanding one already has of meanings associated with a design. It would therefore be crucial for the designer to recognise the cultural and social dimensions when designing a product with the intention of eliciting a particular emotion.

2.2.1 Meanings as Metaphors

Meanings can also be represented using metaphors. Neuro-Linguistic Programming (NLP) developed by Bandler and Grinder uses metaphors to separate experiences from each other and has been suggested as another approach to aid in the understanding of how emotions are elicited by products [7]. The *perceptual* and *recalled images* created when someone forms a mental image are considered in relation to real, remembered or imagined situations. The overall *modalities* expressed by a person

in relation to a product can be broken down into subcomponents of the visual, auditory and kinaesthetic elements. These subcomponents are known as *submodalities.* Examples of the submodalities of the visual, auditory and kinaesthetic modalities would be brightness, volume and speed respectively. The way a person perceives these submodalities depends on their individual allocation of value. If someone regards something to be of great importance or value then it is likely that they will be drawn to it. If a product consists of various attributes and a person has a tendency to be attracted to one or more of them, then it is likely that those particular attributes will dominate the person's perception of the product as a whole. Hence, for example, the designs of certain sports cars tend to emphasise characteristics that are known to elicit particular emotional responses from their target market, (e.g. large wheels and sleek body contours) as it is those attributes that the users are likely to focus on. Therefore the meanings embedded within a design and the impact those meanings have on one's emotions can be influenced by deliberate design intent. The degree to which meaning can influence emotions during first-contact with a product will depend on the subtlety with which they are conveyed within the design and the receptiveness of the individual.

3 SCOPE FOR FURTHER INVESTIGATION

This research has raised a number of possible avenues for further investigation. Firstly, if emotions such as surprise can set the tone for further emotions, then how many emotions can one design elicit from an individual and can these emotions be predicted? Can emotions not normally associated with response to products (e.g. fear) be more significant during first-contact? If we can begin to understand a person's perception of themselves in relation to the products and the world around them then can we identify their emotional requirements and design products to evoke them more effectively during first-contact? It is proposed that a pilot study be undertaken in parallel with the literature review in order to investigate some of these issues a little further.

3.1 Pilot Study

A small generic qualitative study using a semi-structured interview approach will form the basis of the pilot study. The aim is to identify themes for further analysis rather than to develop a theory, so the sample size can be relatively small in comparison with more in-depth studies such as those used in 'grounded theory' [9]. The types of questions most suited to this topic of investigation relate to the participants' opinions, feelings, and sensory experiences in relation to their first contact with products. However, interview technique plays a large part in determining the success of the overall study and the effectiveness of verbal data with regard to recording emotions has been called into question [1] due to the different ways in which people perceive and then verbally express their feelings. Therefore, the nature of the open-ended questions and the semantics used should have a positive affect on the participants in order to encourage a rapport that is likely to be rich in data. Jargon or terminology that is likely to be outside of the participants' common use should generally be avoided as this can have a negative effect on the participants and could make them feel anxious and apprehensive. Where technical terminology is used; either in a line of questioning or by a participant in response to a question, it should not be assumed that the participant has sufficient comprehension of the subject matter to use such terms without further clarification [8].

The subject matter itself, in this case products, can be made available either:

- physically
- as a facsimile model
- via an image
- in a video

Today, most people's first contact with a product tends to be via an image, article or advertisement. While tactile response is also an influencing factor [9], it will not be the focus of this study. Therefore, a series of carefully selected, high quality images will be used for the pilot study. However, it is likely that the effectiveness of using images will be the focus of some scrutiny following the analysis of the results. The products will be selected with neutrality (e.g. colour and setting), novelty (to increase the likelihood that this would be first-contact) and design integrity in mind.

3.1.1 Studying Emotions

The emotions and feelings experienced by individuals can be affected by many factors both prior to

and during their participation within a study. It is important to recognise that it is impossible to expect every participant within the study to be on an equal emotional footing at its commencement. External influences need to be considered, as does the presence (or lack thereof) of the researcher. The emotional state of participants prior to commencing the interview can be unpredictable and difficult to predetermine. However, the rapport between the researcher and the participants, and the way in which the subject matter is presented (including the methods and media used to both present the subject matter and to record the responses) can be considered direct influences. Even the ambient conditions (including lighting, ventilation and temperature) tend to influence the mood, albeit more indirectly.

3.1.2 Data Sample

As this research is being undertaken within a product design and engineering department, the most immediate source of participants for this study would be undergraduate students from those disciplines. However, this poses one or two issues regarding impartiality. Students associated with both the subject matter and the individual undertaking the research could, subconsciously or otherwise, be motivated to give biased responses. It is therefore proposed that volunteers will be asked to participate from the Psychology course that resides within the same school as design and engineering at Bournemouth University, as those students are removed from any associations with the subject or the staff.

3.1.3 Data Analysis

The data produced from the study will be subjected to a 'thematic analysis', to draw out the key themes embedded within the participants' responses (Figure 2). This will involve the creation and application of 'codes' to data where 'coding' refers to the creation of categories in relation to data. This grouping together of different occurrences of information under a general term can enable them to be regarded as 'of the same type'. Those themes will then influence the subsequent direction and emphasis of the research.

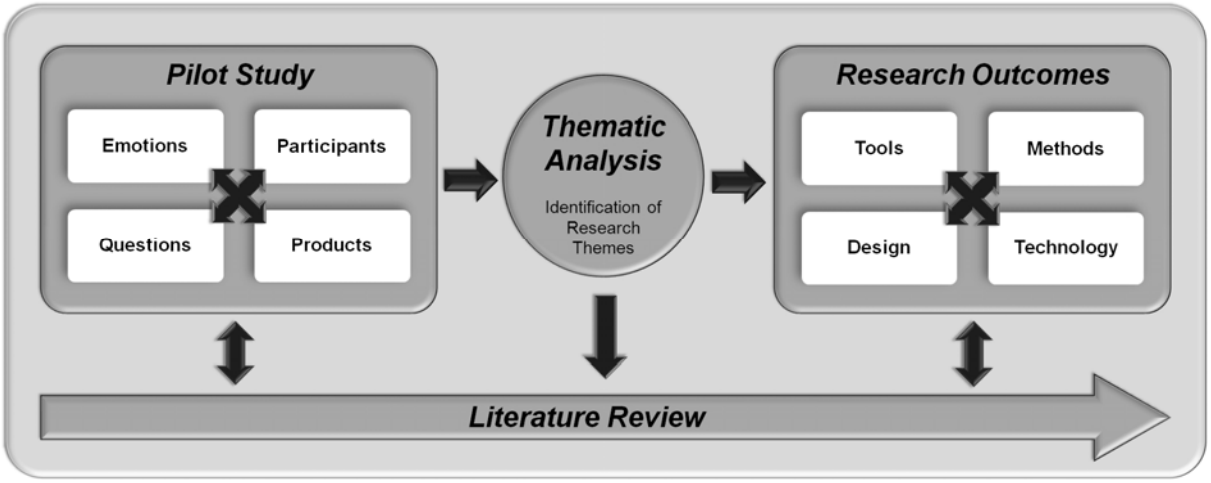

Figure 2. Initial Research Strategy

4 THE EDUCATIONAL CONTEXT OF THIS RESEARCH

This research is being undertaken within a design and engineering department at Bournemouth University where a number of undergraduate and postgraduate design degree courses are run. First year undergraduate Design students often approach design projects in a sequential manner, using existing products as inspiration and focusing on the functional aspect of a product first before considering the user-centred requirements that need to be addressed. The way products' express meanings through aesthetics and the way in which these meanings elicit emotions are concepts that prove difficult for them to grasp. Within the undergraduate courses at Bournemouth University, the topic of design and emotion is taught in User Centred Design and Interaction Design units. Also, that which links product sales to consumers' behaviour forms part of the Design Management and Commercialisation unit, and all these issues are integrated into projects (Figure 3). By the time they undertake their Final Design Project, students are expected to be able to establish synergy between the

design methods and tools they've learned in order to enhance their creativity and to meet the specific functional and emotional needs of their target market. One such example was where a student wanted to redesign a surgical device used in a highly sensitive procedure, in order to make it and the procedure less intimidating and to reduce the patient's stress prior to undergoing surgery. The student approached these sensitive issues by considering the emotional needs of the patient and the functional needs of the surgeon concurrently. The student's insight into how design could evoke emotions meant the design was effective in meeting the different needs of both parties through a methodical approach. This research affords the study of product related emotions more prominence within the design education curriculum. As a result, design students should be better equipped to determine how effective a particular design solution might be before committing to a final concept and prototype.

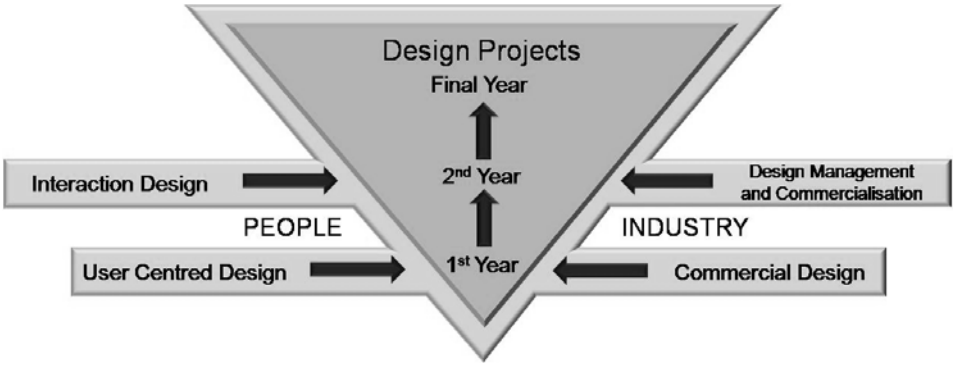

Figure 3. Integrating Design and Emotion into Undergraduate Design Projects

5 CONCLUSION

Different people can experience different emotions in relation to the same product [1]. Therefore, designing products that can elicit a particular emotional response is difficult. But compared to other aspects of design, emotions are no less important in view of the impact they can have on a consumer's decision making process at the point of product selection and purchase. Providing designers with the necessary insight into how people's emotional experiences are affected during first-contact encounters with products should enable them to elicit user's emotions more coherently. Design, semiotics and knowledge generated in the fields of psychology and communication provide a useful basis for research into how this insight might be acquired. Some current perspectives on design and emotions and the way in which this research relates to product design education have been discussed here. In parallel, a pilot study has been outlined that may help to explore the role design plays in eliciting particular emotions at first contact. A more focused line of research will follow analysis of data from that study.

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