Consumers’ concepts of materials

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Dedication

To my wonderful parents.
Abstract

User needs and wants dictate the way in which products are designed, produced, used and disposed of. Western society in particular has become very consumer driven and the waste resulting from such activity has the potential to be disastrous. The creation of emotional attachment with possessions is one way of approaching sustainable consumer-product relationships.

The aim of this research was to gain a deeper understanding of the interaction and emotional attachment that consumers have and develop with their products. It outlines literature relating to consumer emotion and experience in relation to products, and how pleasurable product user relationships can be prolonged. It is evident from the literature that the roles of materials in the emotional attachment consumers have with products needed to be further explored. A study was conducted to determine consumers’ concepts of six materials currently used in product design. This involved participants being given a Concept Prompt Probe with textual prompts to assist in discussion about the materials in question. The discussions between the 15 participant groups of two people, one male and one female, were then transcribed and coded ready for analysis.

The study findings demonstrate consumers’ concepts of the six materials. The findings show both physical and emotional consumer concepts of the materials. It is, however, the interaction of these concepts that is the most significant finding of this research. Each material concept is not only judged emotionally by consumers in its own right but in relation to other concepts as well. The interaction of the consumers’ concepts of materials can considerably effect the emotional judgement made about the material and the appropriateness of its application. This research makes a significant contribution to knowledge regarding the effect materials have on the consumers by identifying how materials can prompt emotional judgements and thereby alter the product user experience.
Keywords

Design
Product design
Product experience
User concepts
Materials
Material selection
Durability
Emotion
Table of contents

Dedication .......................................................................................................................... i
Abstract ............................................................................................................................... iii
Keywords ............................................................................................................................. v
Table of contents ............................................................................................................... vii
Statement of original authorship ..................................................................................... ix
Acknowledgements ......................................................................................................... xi

1. INTRODUCTION ........................................................................................................... 1
  1.1 Background .................................................................................................................. 2
  1.2 Thesis structure .......................................................................................................... 3
  1.3 Research aim and objectives .................................................................................... 4
  1.4 Research question ...................................................................................................... 4
  1.5 Research approach .................................................................................................... 4
  1.6 Research contributions ............................................................................................. 5
  1.7 Summary ................................................................................................................... 5

2. EMOTION ....................................................................................................................... 7
  2.1 Emotions ...................................................................................................................... 7
  2.2 The creation of emotion ............................................................................................. 9
  2.3 Knowing emotions ...................................................................................................... 9
  2.4 Types of emotion ....................................................................................................... 10
  2.5 Emotion’s effect on reason and decision making ....................................................... 12
  2.6 Cognition, affect and schemas .................................................................................. 13
  2.7 Emotion, cognition and objects ............................................................................... 16
  2.9 Summary ................................................................................................................... 22

3. PERCEPTION ................................................................................................................. 25
  3.1 The senses .................................................................................................................. 25
  3.2 Perception of a product ............................................................................................. 26
  3.3 Summary ................................................................................................................... 30

4. EXPERIENCE ............................................................................................................... 33
  4.1 Experience .................................................................................................................. 33
  4.2 The optimal experience ............................................................................................ 34
  4.3 Positive and pleasurable experiences ....................................................................... 35
  4.4 Interaction with products ......................................................................................... 38
  4.5 The seductive experience ....................................................................................... 44
  4.6 Summary ................................................................................................................... 45

5. THE INDIVIDUALISTIC EXPERIENCE ..................................................................... 49
  5.1 Self identity ............................................................................................................... 49
  5.2 Self identity through the eyes of others .................................................................... 51
  5.3 Cultural identity ........................................................................................................ 52
  5.4 Memory .................................................................................................................... 53
  5.5 Context and change ................................................................................................. 56
  5.6 Summary ................................................................................................................... 57
Statement of original authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Shayne Beaver

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1. INTRODUCTION

The elicitation of emotion by products was the interest that formed the basis of this research. The belief that the objects that humans have and the experiences that they have with them should be meaningful and pleasurable was deeply imbedded years before this research began. Distaste for the society that humans have made for themselves and its need to consume in excess also inspired. There was once a time when possessions would last a lifetime, not only physically but emotionally. It was this interest in the emotional longevity of possessions which first inspired this research.

The research process began by investigating the literature on emotion, perception and experience. When this research began in early 2006 it was found that little research had been done on the perception and emotions experienced during the interaction with a product’s materials. Their application for years has been based on technical characteristics and the assumptions or ‘intuition’ of the product designer.

Although the material a product is made from is only one of the contributing factors to both the physical and emotional longevity of a product it was personally considered to be an important one. This belief was imbedded due to an article written by Soentgen (1997), titled “What materials convey”. This article created an interest regarding the sensations and experiences of the materials used in consumer products. Due to the evident lack of research and the personal interest in materials contribution to the user-product relationship this became the refined focus for this research.

The identification of a gap within the literature resulted in the development of an experiment to find out, directly from the consumer, what was thought and felt about materials that are commonly used in products.
1.1 Background

This research aims to focus on the emotions of the user, identifying how material selection during the design process can enhance the quality and possibly the duration of consumers’ relationships with their possessions.

Every individual has their own personal wants and needs. These may relate to purely personal ambitions or they may be the result of the individual’s participation in particular groups, both cultural and social. It can be said that once a need or want is satisfied people then start to need or want something more (Jordan, 2000).

Interaction with objects changes, from the initial viewing through to the products’ life and disposal, due to evolving consumers (Demirbilek and Bahar, 2003). The products available for consumption are changing; or rather their design approach has adapted to suit the changes of society. The consumer is now more important than ever. It can be said that it is important that designers take consumers’ needs and wants into consideration when creating consumer products to ensure user satisfaction and product success.

Problems involving unsustainable resources and energy and other environmental issues have affected consumers’ belief systems, thereby affecting the products purchased and the way in which products are used and disposed of (Ohira, 1995 and Jones, 1997 cited in Demirbilek and Bahar, 2003). Product attachment is considered to be a means for providing meaningful and emotional product relationships to the consumer as well as promoting long-lasting product-user relationships as a means to reduce resource wastage (Mugge, Schoormans and Schifferstein, 2008).

There is no doubt that consumers’ emotions are an important consideration in product design and there have been a number of experiments which have sought to explore consumers’ emotions and their link to products physicality (Bonapace, 2002; Davis, 2002; Forlizzi, Gemperle and DiSalvo, 2003; Hsiao and Chen, 2006). It is the consumers’ wellbeing that should be the focus of all design, and the beliefs and issues that surround everyday lives should be reflected in this design (Demirbilek and Bahar, 2003).
This study differs from other product and emotion studies by focusing on understanding the consumers’ emotions regarding the materials that are used in products. This study focused on getting information directly from the consumers’ about their concepts of materials and their use in products. This research contributes towards an understanding of the enhancement and prolonging of the user-product relationship.

1.2 Thesis structure

This thesis is divided into eleven chapters. The literature is reviewed in Chapters 2 to 7 and represents the highest level of thinking in the field. Chapter 2 explains emotion and gives an overview as to what emotions are, how they are created and how they can affect individuals. It then explores how emotions and cognition are able to affect consumers’ interaction with belongings. Chapter 3 addresses perception and the senses, focusing on the perception of product attributes.

Chapters 4 and 5 concentrate on experience. Chapter 4 focuses on what experience actually is and the different types of experiences there are to be had. Chapter 5 looks at the individualistic experience, investigating factors that make each individuals experience unique. Chapter 6 then delves into the needs and wants of consumers, the ways in which pleasure can be experienced through product use and the life-cycle of this product pleasure. Chapter 7 describes the material selection process for products and the research that has been done to investigate the user-material relationship.

Chapters 8 and 9 outline the planning that has gone into this research, and the analysis and findings of the experiment that has been conducted. Chapter 10 discusses the significant findings of this research and its implications and limitations. The conclusion, contributions of this research and future research are outlined in Chapter 11.

The intentions of this research, including the aims, objective and research questions, are outlined in this chapter. This chapter also provides an overview of the contributions this research has to design knowledge.
1.3 Research aim and objectives

The aim of this research is to identify consumers’ concepts of materials.

The objectives of this research are to:

- Explore the consumers’ concepts of specific materials
- Identify if there are differences in the concepts of males and females
- Identify how these consumer concepts of materials may be used to enhance emotional attachment with products to lengthen the duration of the product-user relationship.

1.4 Research question

The main question that this research set out to answer was:

- What are consumers’ concepts about materials?

Sub questions

A number of sub questions were developed to better focus the direction that the research should take. These sub questions were:

- Do male and female consumers have different concepts of materials?
- Do durability and changes in the appearance of the material due to age and wear have an effect on the product-user relationship?
- How can consumers’ concepts of materials assist in the creation of emotionally durable product-user relationships?

1.5 Research approach

This research undertakes a qualitative research approach. An experiment was designed and implemented to gather data directly from the consumers about their concepts of materials. The co-discovery experiments consisted of pairs of participants being involved in a textually prompted discussion about six materials currently used in products. These discussions were audio and video recorded.
Chapter 8 outlines the research plan in detail and Chapters 9 and 10 show the analysis and findings.

1.6 Research contributions

This research benefits the broader research and design community. Significant new findings have been made relating to the physical and emotional concepts that consumers have regarding materials and the combinations of concepts that are likely to prompt emotional judgements by the consumer. These findings provide an understanding of how the use of materials can affect the product-user relationship, contributing to existing product and emotion knowledge. The findings not only contribute to product design knowledge but to other design domains. The research findings also contribute to the selection of materials during the design process. The means by which the findings are carried over into design practice needs to be further developed however. This material selection methodology/tool and other identified further avenues of research regarding consumers’ concept of materials are outlined in Chapter 11.

1.7 Summary

The search for new knowledge relating to consumers’ emotion regarding materials has driven this research. The identification of the lack of previous research investigating the materials’ role in the product-user relationship has lead to the selection of this research topic. Providing experiences for consumers that are both pleasurable and lasting has many benefits. Pleasurable emotional and physical consumer experiences, whether short or long term, enhance the consumers’ relationships with a product. These pleasurable product experiences also result in pleasurable associations and repeat business for the product designers or manufacturers. Product experience is partially affected by the consumers’ concepts of the materials from which a product is made, as materials can play a critical role in the physical and emotional interaction and physical durability of a product. Furthermore, long lasting product-user relationships reduce the need for unnecessary waste and use of resources. Materials therefore play an important role in enhancing and prolonging the life of a product-user relationship. This research identifies the
consumers’ concepts of the materials and contributes significant new knowledge on materials that are applicable to consumer emotion, product attachment and sustainable design practice. Chapter 2 will outline existing literature on emotion and the effect it has on humans.

In order to understand the relationships between products and consumers it is essential to understand exactly what emotion is and the affect it can have. This chapter will outline emotion, explaining exactly what emotions are and how they are created. It will also explain how emotions become known to individuals, the types of emotions that can be experienced and how these emotions can affect reasoning, decision making and an individual’s interaction with products.

2.1 Emotions

Evolutionarily advanced animals are more emotional than the more primitive animals (Norman, 2004), with emotions being experienced by all humans, apart from those with particular neural damage (Damasio, 1999). Emotions are able to change how the cognitive system operates and the way it which the human mind solves problems (Norman, 2004). To a certain extent all human actions are ruled by emotions, the pursuit of emotion or attempts to create particular emotions within others. Humans strive for happiness and the avoidance of unpleasant emotions (Damasio, 1999).

Emotions are bioregulatory devices which are engaged automatically. They provide the means to create circumstances or reactions to an inducing situation; these are usually advantageous to the organism exhibiting the phenomenon. They are seen as a requirement for survival, a way to maintain the body and life itself (Damasio, 1999). Emotional phenomena have also been linked to high level cognitive activities such as decision-making processes, memory, learning, planning, creative problem solving and risk assessment skills. Research has also identified that emotions assist in storage, coding and retrieved information involved in memory (Oliveira and Sarmento, 2003).
Emotions occur in two types of situations. The first situation involves the organism processing a familiar image. The second situation involves the conjuring up of an image from memory during the thought process. Images are mental patterns. Each image is created from the sensory modalities; these include visual, auditory, olfactory, gustatory and somatosensory modalities. The somatosensory modality (‘soma’ meaning ‘body’ in Greek) includes varied forms of sense such as touch, muscular, temperature, pain, visceral and vestibular (Damasio, 1999). There is nothing vague, elusive or non-specific about emotional responses or their representation, which becomes the feeling of the emotion.

The pervasiveness of emotion in our development and subsequently in our everyday experience connects virtually every object or situation in our experience by virtue of conditioning to the fundamental values of homeostatic regulation (Damasio, 1999, p.57).

Emotion also has the biological function of regulating an organism’s internal state so that it can be prepared for a specific reaction to suit a situation. These specific reactions usually cater for dangerous situations, such as the flight reaction which provides increased blood flow to the legs when there is a need to escape. In spite of the infinite variations to be found across cultures, among individuals and over the course of a life span, it can be predicted with some success that particular stimuli will produce certain emotions (Damasio, 1999).

Emotions are able to influence everything, often unconsciously (Norman, 2004). They provide important information regarding the source individual, and they reflect the personal success and capabilities the person has in and over their environment. Emotions also indicate how favourable the environment is for the individual given their current capabilities and goals. It is emotions which therefore encourage the adoption of new or reprioritisation of old goals (Oliveira and Sarmento, 2003).
2.2 The creation of emotion

Emotions are complicated collections of chemical and neural responses which form a pattern. Emotions are produced in a fairly restricted ensemble of subcortical regions located below the cerebral cortex. The main subcortical sites are in the brain stem region, the hypothalamus and the basal forebrain. These sites are involved in both regulating and representing body states, processing emotions to differing degrees and the recognition of stimuli which prompt particular emotions (Damasio, 1999). Damasio (1999) has shown, through the use of Positron Emission Tomography (PET) imaging, that the emotions sadness, anger, fear and happiness have distinctive patterns of their own within these sites. Different emotions will have their own processing schemes or strategies and have different ways of accessing memory or new environmental information (Oliveira and Sarmento, 2003).

A feeling can occur as a result of two classes of biological changes. In a typical emotion the subcortical regions send command signals to other regions of the brain and body. These signals are sent via two routes. Damasio (1999) refers to this process as the “body loop”. The first route sends humoral signals via the bloodstream in the form of chemical molecules which act on receptors in the cells. The second route sends neural signals in the form of electrochemical signals along neuron pathways. These neural signals act on neurons or muscular fibres or organs, and these organs can then release chemicals of their own into the bloodstream. The humoral and neural signal commands create a ‘global’ change in the state of the body. Alternatively these changes can be created directly by the “as if body loop” (Damasio, 1999, 2001). This involves sensory body maps by-passing the body partially or entirely and representing the body changes. This can be particularly helpful in certain circumstances when both time and energy need to be conserved (Damasio, 1999).

2.3 Knowing emotions

An emotion is a specifically caused momentary change in the state of an organism (Damasio, 1999). Firstly the organism is engaged by an inducer of the emotion; which could be an object, place or person, for example. The inducer is then
processed and may or may not be recognised by or made conscious to the individual. Neither recognition nor consciousness are required for the emotion process to continue (Damasio, 1999). The emotional reaction to the inducer will usually occur before the inducer is cognitively assessed due to the organism’s survival instinct (Norman, 2004). Signals created by the processing of the inducer activate neural sites. These emotion-induction sites are specific to the class of inducer being processed and they then trigger a number of responses toward the body and other brain sites. These responses are the emotion itself (Damasio, 1999). The emotions are then expressed non-consciously as a feeling. Emotions are outwardly directed and produce public responses to an inducer, such as sadness expressed through crying. Feelings are the inwardly directed and private mental experiences that the emotions create (Damasio, 1999).

Much human behaviour is beneath conscious awareness and can happen before one is aware of it. ‘Affect’ is a term used by Norman (2004) to describe an information-processing system that quickly judges environments either consciously or unconsciously determining whether they are safe or dangerous, for example. The cognitive information-processing system interprets and makes sense of the environment. Emotion is then described as the conscious experience of affect. This consciousness will allow one to attribute and identify the inducer (Norman, 2004).

Consciousness creates a sense of self and it is this consciousness that allows feelings to become known. It is once the self is made conscious of these feelings that the inducer is able to have more than a momentary influence on the self. The individual is able to reflect and to plan according to their feelings. The impact of the emotion depends on the feelings that are prompted by the emotion. There is, however, no evidence to suggest that humans are conscious of all their feelings. Developmentally an individual is equipped with responses to create emotion before the sense of feeling self has fully developed (Damasio, 1999).

### 2.4 Types of emotion

Emotions can be classified into primary, secondary and background emotions (Damasio, 1999). The six primary or universal emotions described by Charles...
Darwin (cited in Damasio, 1999) are happiness, sadness, fear, anger, surprise and
disgust. These are termed universal emotions due to the facial expressions associated
with them and the recognisability of the emotions. The secondary or social emotions
include emotions such as embarrassment, jealousy, guilt or pride. Background
emotion, a term used by Damasio (1999), describes emotions such as well-being,
malaise, calm, tension, energy, excitement, imbalance and harmony. He states that
these background emotions are not at the forefront of the human mind; rather they
help to define the mental state and are more internally directed. These background
emotions are observable in a number of forms including body posture, speed and
design of human movements, and tone of voice. Damasio (1999) also suggests that
drive is expressed as a background emotion and that humans become more aware of
this due to these background feelings. He suggests too that background emotions are
connected to motivations and moods. Moods are said to be a mixture of modulated
and sustained primary and background emotions (Damasio, 1999).

There are a number of other categorisations of emotions which are also widely used.
Plutchik (1980, cited in Holak and Havlena, 1998), for example, based his eight
primary emotions on the psychoevolutionary theory of emotion. These included
acceptance, disgust, fear, anger, joy, sadness, surprise and expectancy. Izard’s (1997,
cited in Holak and Havlena, 1998) differential emotions theory considers ten basic
emotions, which are described as interest, joy, surprise, sadness, anger, disgust,
contempt, fear, shame/shyness and guilt. Both of these categorisations have been
used with some degree of success by consumer researchers (Holak and Havlena,
1998).

Oliveira and Sarmento (2003) propose that emotional phenomena can be subdivided
into at least 3 different categories: (i) specific emotions, (ii) moods and (iii)
emotional dispositions. Each category is defined by an object or the preconditioned
information that triggers the response, the intensity and influence of the emotion
phenomena on the viewer, the duration of the emotional phenomena and finally the
individual’s consciousness of the emotional phenomena.

Specific emotions are intense and clearly differentiated, such as those mentioned by
Charles Darwin (Oliveira and Sarmento, 2003). Moods, however, are used to
describe emotional states, such as pleasant/unpleasant, for example. They are less intense, and are likely to be unrelated to any specific product or antecedent. Moods can last many days in some cases while specific emotions are likely to only last a period of minutes (Oliveira and Sarmento, 2003). Emotional dispositions or temperaments are thought to occur as a result of genetic influence, medication or neuro-surgery. An emotional disposition such as chronic anxiety, for example, can last several months or years, but is inactive most of the time.

Different emotional states favour distinct processing strategies, different ways of accessing memory and of acquiring information from the environment. A sad mood, for example, will usually promote a systematic processing strategy, great care with detail and deep analysis of the acquired data, whilst happy moods favour heuristic processing strategies with intense use of pre-existing knowledge structures instead of recently acquired ones (Oliveira and Sarmento, 2003).

2.5 Emotion’s effect on reason and decision making

Emotion has been said to be too elusive, vague and not at all rational. Research however proves that emotion is an integral part of the reasoning and decision-making processes (Blythe and Wright, 2003; Damasio, 1999; Oliveira and Sarmento, 2003). Emotional mechanisms work as dedicated information collectors, filtering relevant data which is condensed for later retrieval during the decision-making and planning processes (Oliveira and Sarmento, 2003). Damasio’s (1999) neurological evidence suggests that selective absence of emotion can be a problem. The way in which the mind solves problems is changed by the emotional state of the human. Many human reactions are affected by feelings, reason and wisdom. Emotions can, most likely, particularly affect decisions involving personal goals, social matters and rules, as well as moral issues. “Emotions are inseparable from the idea of reward or punishment, of pleasure or pain, of approach or withdrawal, of personal advantage and disadvantage. Inevitably emotions are inseparable from the idea of good and evil” (Damasio, 1999, p.55). Positive emotions can broaden thought processes and are critical to learning, curiosity and creativity (Norman, 2004).
2.6 Cognition, affect and schemas

Norman (2002, 2004) uses the one term, affect, to group the concepts of affect, emotion, feelings, mood, motivation and qualia. The affective system rapidly and efficiently assigns a positive or negative judgement of the environment, while the interpreting, sense making, and increasing understanding and knowledge is done by the cognitive system. Norman (2002) states that both affect and cognition are information processing systems, each with different functions and operating parameters. Each system influences the other, with affective states being driven by cognition and cognition being impacted by affect (Norman, 2002, 2004).

Norman (2002) states that he has learnt through his research that affect makes humans smart. The passing of judgements and the immediate information that is presented to humans are a result of affect. These signals work through neurochemicals flooding the brain centres and changing the way humans perceive, decide and react. The neurochemicals change the parameters of thought, adjusting things such as reason which can be focused or creative and unfocused. Affect influences the performance of tasks with negative affect focusing the mind leading to higher levels of concentration, which can be beneficial for particularly difficult situations, but not when creativity is needed. Affect therefore regulates how problems are solved and how tasks are performed (Norman, 2002).

Individuals carry ingrained assumptions which influence the way they do and perceive things, whether it is conscious or not (Sengers et al., 2005). Ortony, Revelle and Norman’s (Norman, 2004) studies suggest that human ability to reflect and learn from past experiences and prepare for current and future activities result from three levels of the brain. The visceral level makes rapid judgements and is an automatic response, the behavioural layer controls everyday unconscious behaviour, and the reflective layer is contemplative. Each level interacts, modulating one another and contributing to the functioning of the individual.

There is no consciousness or interpretation, only affect in the visceral and behavioural levels. These two layers are about the current moment, and the feelings and experiences when seeing and using a product. The reflective level is conscious.
and includes the highest levels of feelings, emotions and cognition overriding the other two levels. Interpretation, understanding and reasoning come from the reflective layer. The reflective layer may be varied by a number of factors such as culture, experience, education and individual differences. The reflective level remembers the past, contemplates the future, and contains the individual’s self-identity. It is often this reflection that determines the overall impression of a product. This therefore affects the product-user relationship, relationship longevity and the emotional outcomes of product-user interaction such as feelings of pride and satisfaction of owning, displaying and using a product (Norman, 2004).

Humans are not always aware of how product designs’ agendas affect their everyday lives. Reflection can assess the effects of the designers’ views and consumers’ perception, which can bring about awareness and thereby a possible decision to change. These conscious choices are said to be crucial to individual freedom and quality of life as a society (Sengers et al., 2005). Sengers et al. (2005, p.56) state that “Reflective design allows users to maintain control of and responsibility for the meaning making process”.

Family pride, personal virtue and professional identity may also affect product-user relationships (Norman, 2004). Products can be more than material possessions, and this attachment is something that neither the designer nor the manufacturer can provide. The objects that individuals choose to surround themselves with bring meaning to the user’s life (Norman, 2004) and are often symbols; symbols of wealth, status, experience, achievement and loved ones, for example (Sengers et al., 2005). Complex ideas, values, principles and judgements are also connected to emotion (Damasio, 1999). Personal identity, experience and the sentimental value of objects, for example, can all imbue objects with connotations (Crozier, 1994). Objects can be the catalyst for a positive frame of mind, a pleasant reminder or an expression of self (Norman, 2004). Emotions are subjective and also rely on the individual’s personality, their goals, values and attitudes (De Angeli and Johnson, 2004). MacDonald (1999, cited in Jordan, 2000) states that emotional response depends on the individual’s personal cultural values and innate human instincts.
Cultural, social and political assumptions are ingrained in the way individuals both consciously and unconsciously do and perceive things. Everyday values, practices, perspectives and sense of agency and self are unconsciously shaped by forces and agendas according to critical theory. These agendas or forces can include racial politics, gender and economics, for example (Sengers et al., 2005).

Experiences, culture, religion, social standing, education levels, thoughts, attitudes, beliefs and values are part of a learning experience that begins in childhood. This learning is an ongoing process; individuals will be continually affected by different factors (Piaget, 1990, cited in Demirbilek and Bahar, 2003). It is therefore likely that emotional responses and reaction to meaning will depend on the background of the individual and will possibly change over time. Meanings of the world are connected with people’s sense of identity and community (Crozier, 1994).

The individuality of expression and interest has its own implications. Crozier (1994) has shown that both interest and pleasingness are positively correlated and have an inverted ‘U’ relationship with familiarity and complexity. Interest is said to be lost if objects are too complex or too familiar. Eckblad (1980, cited in Crozier, 1994) proposed that judgements of pleasingness have a lower peak than judgements of interest on the scale of complexity. This suggests objects or events are found interesting before they become liked. It is therefore thought that interest needs to be sparked in the consumer followed by increased exposure to prompt liking. This is believed to be particularly effective if there is resistance to the design or if it challenges consumers due to the changes in design (Crozier, 1994).

Schemas can be defined as ‘coherent units of structured representation of environmental regularities. They are not carbon copies of experience, but abstract representation of environmental regularities’ (Gaver and Mandler, 1987, p.264, cited in Crozier, 1994). Schemas are built up through an individual’s transactions with the environment. It is due to this fact that each individual’s pattern of life experiences is unique that schemas are entirely personal. Commonalities do however occur due to shared cultures and socialisation processes. Environmental events will therefore inevitably be interpreted in terms of the individual’s existing schemas. This individual interpretation allows events to be experienced differently by different
people or by the same person at different times. Schemas are not rigid structures, they are able to be modified by new experiences (Crozier, 1994).

2.7 Emotion, cognition and objects

Emotions occur regardless of gender, age, culture, education or economic status and humans have and will continue to develop artefacts and activities that attempt to produce sought-after emotions such as happiness and enjoyment. Centuries of creation have resulted in the functional and decorative artefacts with which humans surround themselves. Artefacts are able to increase both the quality of life and pleasure of their owners and users (Jordan, 2000).

Emotions are a biologically determined process and although rough correspondence can be made between a class of emotion inducer and the resulting emotion, the composition and dynamics of the emotional responses vary from one person to another. The stage of development, knowledge, environment and culture are just some of the influencing factors that alter the expression of emotions and their meaning. These influences shape what constitutes an adequate inducer of a particular emotion, some aspects of the expression of the emotion as well as the cognition and the behaviour which follow the emotional expression. It is important to note that the primary biological emotion, instinct, will always influence the acquired secondary emotion information (Damasio, 1999).

The brain responds to objects using both facts evoked from memory and emotion. Due to the bioregulatory dispositional knowledge available in the diencephalon and the brain stem, the brain will respond to a particular object while discarding other information (Damasio, 2001). This response will affect facial muscles and the musculo-skeletal frame, the viscera, the internal milieu, as well as neurochemical responses in the brain itself, and is part of the way in which the state of the body is modified by emotions (Damasio, 2001). Somatic responses, such as changes in skin conductivity and heart rate can happen in two ways when reacting to an experience by what Damasio (2001) refers to as the ‘body loop’ or as a result of familiarity, by means of the ‘as-if body loop’.
Product design and meaning can have a large impact on whether a user feels satisfaction. There are reportedly six groups of verbal expressions representing perceived feelings according to Lee (1992 cited in Han and Hong, 2003): (i) sense, (ii) mental state, (iii) evaluation, (iv) comparison, (v) existence and (vi) indication. Three categories can be used to classify user satisfaction with a product. The first category is basic sense which includes the dimensions relating to the five basic senses such as colour, brightness, shape and texture, for example. The second category is that of description of image. This is the user’s abstract description of the experience in characteristic and image dimensions; these can include elegance, neatness or luxuriousness, for example. The third evaluative/attitude category explains the subjective attitude or judgemental feelings relating to the product, and these can include acceptability, preference and overall satisfaction (Han and Hong, 2003).

A survey conducted by Norman (2004) on the objects people love and hate found that loved objects were too obvious and entangled in the users’ lives to be noticed, while hated artefacts were not present among the consumers’ possessions. In general, it was found that people are passionate about their belongings, services and experiences (Norman, 2004).

Possessions are able to evoke strong positive emotions. The most fundamental product-related emotions are attraction emotions such as love, hate, liking and disliking. These attraction emotions are often quite ephemeral and largely context dependent. Wright and McCarthy (2003) state that it is possible to design for an experience but that the certainty of a particular experience cannot be predicted or dictated. The same can be said for promising a particular emotional response from a product (Hassenzahl, 2004).

Fun, pleasure, joy, excitement, anger, anxiety, fear and rage are all contributors to our lives and without these a usable product does not engage the user in an appealing relationship (Norman, 2004). Emotions modify perception, decision making and behaviour. Feeling good as the result of the products that one uses enables problems with the products to be dealt with more easily, resulting in a more harmonious interaction (Norman, 2004). When people are in a relaxed situation the pleasant,
pleasurable aspects of a design will make them more tolerant of the difficulties and problems with the interface (Norman, 2002).

De Angeli and Johnson (2004) state that object related emotion is often a blend of various contradictory feelings. These feelings are said to be difficult to interpret. Emotions are dynamic and depend largely on the relationship the individual has with the object in a particular context (Jordan, 2000).

Creusen and Snelders’s (2002) research shows that arguments about pleasure are different from other consumer arguments, with pleasure being attributed to abstract product attributes. Concrete parts will have specific qualities. Physical aspects or attributes of the product are, however, not always distinct parts with clear boundaries. Abstract attributes such as elegance, simplicity or safety can often not be attributed to concrete aspects of the product. If pleasurable aspects of the product are not present in a distinct way it is not possible for consumers to describe these aspects in very concrete terms, although they still establish an indistinct sense of quality and are still valued. It was also found that consumers derive pleasure from the form or appearance of the object (Creusen and Snelders, 2002).

Each individual will have their own product preferences. Product appeal is subjective and individual due to differing relationships, emotions and personalities (De Angeli, Lynch and Johnson, 2002; Gilot, 2001). Prized possessions invoke emotions; they are reminders and indications of the self. Treasured objects will often have a story, either positive or negative, without which individual’s lives would be incomplete (Sengers et al., 2005). The most treasured belongings may only be inexpensive artefacts; often tattered, dirty or faded, the signs of use clearly identifying the attachment. These possessions will always have a story, a remembrance, and something that ties individuals to the object (Norman, 2004).

Jordan (1998) found that opinion is formed faster with pleasurable products than with displeasurable products, with pleasure being decided before actual use of the product in half of the respondents’ cases. This is evidence that consumers are able to perceive pleasure before they have actually used or purchased the product (Jordan, 1998). Jordan (1996, cited in Demirbilek and Bahar, 2003) also found that
interaction with displeasurable products will result in displeasurable emotions and that it is likely that these negative emotions will last longer than positive emotions (Jordan, 1998). Respondents indicated a definite link between the high frequency of use and the pleasurable nature of the product. Pleasurable products or features were also said to influence future purchase decisions (Jordan, 1998). Emotions play an important role in memory storage and retrieval processes, and will affect future decisions regarding products or associated products (Oliveira and Sarmento, 2003).

Demirbilek and Bahar (2003) state that the products individuals tend to encounter have different functions, such as technical, practical or semantic. Both the appearance and the actions of a product carry meanings (Djadadingrat et al., 2004). Both the whole product and its individual parts should communicate the intended message, such as object handling, for example (Demirbilek and Bahar, 2003). Demirbilek and Bahar (2003) outlined Mono’s four semantic functions of products. The first function is to describe the product facts; this may include the intended task for example. The second function is to express the values and qualities of the product, which in turn will be a reflection of the owner. The third semantic function is to signal for the user to react in a particular way. The fourth function is to identify the product, its origin, nature and the connection between its own parts and their functions, as well as with other products. Semantics, if properly applied, will result in a more emotionally and psychologically comfortable product. Impersonal objects can connect emotionally with the user through eloquent and expressive shapes and details (Demirbilek and Bahar, 2003).

An unfamiliar product’s semantics are interpreted and decoded by two different reactions according to Griffin (1999, cited in Demirbilek and Bahar, 2003). The first reaction is based on prior experience, knowledge, and social and cultural background. The second reaction is emotional and is an automatic response triggered by thoughts, beliefs, values and attitudes about the product. These two reactions are unable to function independently.

Aldrich (2004) states that the validity and value of experience meanings have become relative and subjective opinions due to the way in which humans think they take meanings from things. Objects are no longer considered in their own right, but
have instead become symbols, of their source, nature or limitations, for example (Aldrich, 2004). The way in which an object has been made, the person or company that made it and the quality of the material which it is constructed of may also have an effect on attachment. Crafted items may have an intimate appeal, for example (Crozier, 1994; Norman, 2004). The history of the material or object is important – its previous use, the current use and the users will have an influence on how it will be perceived (Candy, 2003).

Berlyne, a psychologist, was the first to attempt to link the knowledge of the role of the nervous system in emotion with the response to art and music (cited in Crozier, 1994). Berlyne identified that certain physical properties of environmental stimuli are a source of arousal. Collative variables or combination variables from multiple sources of information can be a source of arousal. Properties of ambiguity, complexity, novelty and potential for surprise are examples of collative variables. Too little or too much arousal will result in less pleasure. This relationship between the hedonic and arousal can be described in terms of an inverted ‘U’ or Wundt curve (Crozier, 1994). Berlyne (cited in Crozier, 1994) reiterates the idea of a link between aesthetic reaction and emotions, that pleasing designs are a balance of simplicity and complexity, unity and diversity, order and variety.

Novel and overly familiar products are likely to be less liked than those that are moderately familiar according to Berlyne (cited in Crozier, 1994). Other schools of thought suggest preference is positively correlated with exposure; that the more humans experience a product the more it is liked. Martindale (cited in Crozier, 1994) states that aesthetic preference is linked to arousal potential, and that this preference is reduced by habituation or familiarity. Walker (1973, cited in Crozier, 1994) proposed that repeated exposure to complexity leads to psychological simplification. This will, depending on the individual’s preferred complexity level, increase or decrease preference. The sayings ‘old favourites’ and ‘familiarity breeds contempt’ are examples of the different views regarding product familiarity. The fact is, however, that one of the most prominent features about design is that it changes (Crozier, 1994).
Berlyne’s theory predicts a cyclical process, with new designs that may have been met with initial hostility becoming loved as they become familiar. This familiarity will eventually lead to dislike and new designs will be adopted as replacements. This links with the fact that fashion and style trends tend to be gradual (Crozier, 1994).

Consumers have come to expect products and their interaction with them to possess particular attributes, such as attractiveness, ease of use, functionality, affordability, recyclability and safety, for example (Demirbilek and Bahar, 2003). These attributes are said to be taken for granted, and are therefore no longer able to satisfy the consumer completely. User satisfaction is now prompted by the product’s ability to convey and provide pleasure, happiness and excitement through the experience of owning and using products (Bonapace, 2002; Hekkert, 2000 cited in Demirbilek and Bahar, 2003). Khalid (2001, cited in Demirbilek and Bahar, 2003) points out that some needs are long established while others are momentary, created quickly upon viewing or interacting with the product.

It is possible that humans respond to an object or environment due to the formal qualities of its design, such as size, shape, colour and texture, for example. There is a systematic relationship between the pleasure and interest derived from these objective qualities. This would imply that human reactions have some constants which will be expressed regardless of the environment or time between incidents (Crozier, 1994). It may also be possible that meanings vary depending on the cultural setting in which a design or associated imagery was first seen or experienced. Another possibility is that the designs may evoke affective reactions due to their use or their functionality (Crozier, 1994). Objects can provide the owner with a new way of performing a known task, thereby providing a novel experience (Norman, 2004). All products will have particular uses, intended meanings and objective qualities when first marketed. Other characteristics that may be used as marketing tools are efficiency, safety, effectiveness and pleasantness (Crozier, 1994).

It is possible that an individual who has had a problem with a product, which has been resolved by the company, will be more satisfied than one that has had pleasant memories of the product. The brand, an identifying symbol of a company or product,
produces emotional responses. This response will depend on previous experiences and associations with the individual and the company or product (Norman, 2004).

2.9 Summary

This chapter outlined literature regarding emotions. It is important to have a basic understanding of the nervous system and emotion as it contributes to understanding the product-user relationship. Emotions are outwardly directed and public responses to an inducer, while feelings are the inwardly directed and private mental experiences that the emotions create (Damasio, 1999). It is the consciousness that will influence the self and the interpretation, understanding and reasoning of the inducer of the emotion (Damasio, 1999; Norman, 2004).

Product designers need to understand that the design of product is able to influence or promote particular human emotions or behaviours. Damasio (1999, 2001) states that although every person is effected by their own personal beliefs, physical and social environmental interactions, activities and experiences there are still particular stimuli that will, with some success, produce the same emotion in most humans. It may therefore be possible to find particular stimuli that effect the emotions or behaviour towards a product and its materials.

The effect of emotions on a person’s ability to reason and make decisions was also discussed. Norman (2004) states that a person’s ‘affect’ will influence how problems are solved. This indicates the potential for designers to somewhat dictate the operation or experience of a product if they are able to invoke the right type and intensity of emotion in the consumer. It is therefore important to understand what physical and intangible characteristics of a product or material induce emotion.

The emotions felt during interaction with the product or material will also affect the users relationship with the currently owned product as well as future purchase decisions (Jordan, 1998; Oliveira and Sarmento, 2003). This means that emotions are able to not only dictate the longevity of the current product-user relationship but also the probability of the same product or brand being bought or used in the future. This means that considering emotion during the product design process not only improves
consumers’ satisfaction but could also result in future business for the designers and their employers. The person or company that designed or made the product will effect emotional attachment to a product, but so too will the way in which the product has been made (Crozier, 1994; Norman, 2004).

The object’s or material’s history will also dictate the emotions that are felt (Candy, 2003). Familiarity was also something that was discussed in the chapter. There is some debate as to whether familiarity is pleasurable or displeasurable in products (Crozier, 1994). The familiarity of materials and the associated emotions is something that needs to be further investigated. As Crozier (1994) states that past experience will have some effect on current or future experiences, it will be of interest to find out what experiences are remembered and how these might affect current emotions with materials.

Furthermore, the consumer expectations of products and interaction compiled by Demirbilek and Bahar (2003) included attributes such as attractiveness, affordability, recyclability and pleasure. All of these attributes can be linked to the material that a product is made from. It therefore seems appropriate to also investigate what consumers think of these attributes in relation to the materials that are commonly used for the making of products.

This chapter emphasised how important emotions are, and that both instinctual and learnt behaviour can influence individuals and their behaviour with a product. Emotions should not only be considered during the design of the functional and usability experience of the product but also the users’ sensual perception of the product. The senses and perception will be discussed in the next chapter.
3. PERCEPTION

This chapter presents an overview of the senses and how the senses are employed during the interaction with the environment, and more specifically products, in order to generate perception. Interaction with a product involves the sensing, perception, interpretation and appraisal of product (Hekkert, 2006; van Kesteren, 2008).

3.1 The senses

The senses operate as a whole, detecting environmental information and forming a picture of the world. The brain receives, analyses, filters, integrates and decides what sensory information is important, based on what the individual knows. A great deal of the brain is devoted to this sensory information reception and analysis. Parts of the human brain are dedicated to the senses (input) and the movement of body parts (output). A large portion of the brain is devoted to hands, face, and genitalia. The hand, which comes into contact with most man-made products, is given a large amount of motor and sensory space in the brain and humans are greatly dependent on hands for sensory information (Bonapace, 2002).

Humans use the senses as a means of experiencing and interacting with the world. In western society artefacts are primarily dealt with visually. Interaction and experience are perceived by and integrated through the use of the different senses. Sensory ability is diverse, as is the diversity and richness of information available through different senses (McElligott and van Leeuwen, 2004). Each individual has their own sensory aspects which stand as dividing elements from other individuals, making the sensory pleasure and object qualities perceived subjective. These individualised sensory characteristics derive from functional reductions; these may be congenital or acquired, through age or work profession, for example (Bonapace, 2002). Ethnic, social, cultural and individual tastes will also all affect sensory pleasure (Bonapace, 2002).

Touch is the most developed sensory modality at birth, contributing to cognitive, brain and socio-emotional development throughout infancy and childhood (Field,
For Aristotle (cited in Kwint, Breward and Aynsley, 1999) touch, and thereby taste, was found in all animals and was therefore considered to be the lowliest sense. He argued that touch was the sense needed for being, whereas the other senses were necessary for well-being. Aristotle posed a hierarchical order of the senses, from most to least valuable: vision–hearing–smell–taste–touch. Montagu (1971, cited in Pallasmaa, 2000) however verifies, with medical evidence, that all the senses and sensory experiences are extensions of the sense of touch and are related to tactility, stating that the skin is the oldest and most sensitive organ and medium of communication. Specialisation of skin tissue created the other senses, justifying the evaluation that touch is 'the mother of the senses' (Montagu, 1971, cited in Pallasmaa, 2000).

Montagu (1971, cited in Pallasmaa, 2000) states that touch integrates an individual’s experience of the world and of their self. Of all the senses touch is the most linked to emotion and feeling (Kwint, Breward and Aynsley, 1999). To be ‘touched’ or ‘moved’ implies that the senses have been used to identify a particular quality or experience that has resulted in an emotion response.

Hertenstein et al. (2006) state that there are two claims that link touch and the communication of emotion. The first is that touch communicates the hedonic tone of both positive and negative emotion, such as warmth and intimacy or pain and discomfort (Hertenstein, 2005, Hertenstein and Campos, 2001, Jones and Yarbrough, 1985 and Knapp and Hall, 1997, cited in Hertenstein et al., 2006). The second claim is that touch is able to be an intensifier of the communication of emotion, adding to the emotion displayed by other modalities (Knapp and Hall, 1997, cited in Hertenstein et al., 2006).

### 3.2 Perception of a product

Users’ feelings for products are a complex cognitive process and there are many factors that influence the perception (Hsu, Chuang and Chang, 2000). Communication occurs with the use of the senses and all the senses play a valid role in enriching experiences (Djajadiningrat et al., 2004). Appearance is often thought of as visual but it may also be auditory, tactile and smelt (Janlert and Stolterman, 1997).
Physical objects consist of visual qualities, weight, material, texture and sound, for example, all of which are naturally linked (Djajadiningrat et al., 2004).

Colour, shape, form and texture all form the product messages that are meaning language structures known as semantics (Demirbilek and Bahar, 2003). Appearance, functionality, product feasibility, product semantics, ergonomics and social factors all determine the feasibility of a product and visualisation is an important contributing factor to this (Johanson, 2000 cited in Demirbilek and Bahar, 2003). Aesthetic properties of a product are a synonym for the visual. Aesthetics may include materials, colour, graphics, texture and product semantics and semiotics (McDonagh, Bruseberg and Haslam, 2002; Sevener, 2003). It is the user’s perception of these aesthetics that will determine the emotions the individual will experience as a result. These emotions will have a direct effect on the pleasure that is achieved from the interaction (Sevener, 2003). Aesthetic properties are easy to access and are therefore perceived early during user-product interaction. These aesthetic aspects play an important role in stimulating pleasure and generating ‘first impressions’. Initial stages of perception dictate the consumer attitude and behaviour towards a product such as approach or avoid (Sevener, 2003).

Colour also plays a role in the product aesthetic and is seen as symbolic and psychological. Colour and contrast between colours affect the emotional well-being of individuals (Pavy, 1980, Fontana, 1993, and Allegos and Allegos, 1999, cited in Demirbilek and Bahar, 2003). It is also possible for specific colour combinations to take on new meanings and intensify appeal (Demirbilek and Bahar, 2003), with some psychologists attributing this appeal to the innate properties of the human nervous system (Crozier, 1994). Colour has been extensively used in the field of product design. Although there are many factors in product design such as texture, style, forms and function, colour is said to be one of the most important factors for attracting customers. Despite there being many colour harmony theories, these are not fully understood nor well tested and cannot be used effectively due to a lack of direct link to colour science (Luo, 2006).

Senses such as hearing and vision are employed in product design more than tactile, olfactory, and kinaesthetic senses. Vision has become the dominant sense of modern
consciousness and sensory reality, with this domination being observed and analysed by many. Bouche (2004) states that sensations within the human environment have become standardised for economic reasons, particularly in terms of technological or market constraints, according to Demirbilek and Bahar (2003). It is said that the control, speed and technological orientated world has deprived the senses. Instantaneous imagery is said to be a result of this speed and control, detaching and controlling interaction.

Levin (1993, cited in Pallasmaa, 2000) criticises this visual bias and states that it is appropriate for this culture to be challenged. Pallasmaa (2000) states that this visual dominance has turned design, particularly architecture, into an instant visual image. He believes that this sensory impoverishment has created highly predictable, tiresome and uniform experiences. A haptic approach to design would, on the other hand, promote slowness and intimacy, and result in an engaging and uniting experience. Tactile sensibility is said to enhance materiality, nearness and intimacy (Pallasmaa, 2000).

Djajadiningrat et al. (2004) state that industrial designers consider the influence that the haptic or tactile qualities of materials have on the aesthetics of interaction. However, Sedgwick, Henson and Barnes (2003) state that surface texture is very rarely explicitly addressed, except in a few exceptions such as cosmetics, perfumes and ‘style’ audio equipment design. These exceptions are said to be made due to the high cost of the product and the need for strong consumer appeal (Sedgwick, Henson and Barnes, 2003).

The tactile perception of an object is created in reference to the individual’s body and the adjustments the body makes during interaction. This situates objects and ideals, be they concrete or abstract. Perception is also created using humoral and visceral reactions that make up the response to the object and the alterations to the sensors in the skin during contact with the object. This ‘fine touch’ is able to detect texture, form, weight, temperature and so on. The tactile texture, size and shape of an object can be identified by a one or two handed scan. The weight and elasticity can be identified by holding, lifting and putting pressure on the object (McElligott and van Leeuwen, 2004).
Matter, materials and surfaces can be said to be a language, richly complex and evolving and changing with time (Pallasmaa, 2000). Pallasmaa (2000) believes that vision places the individual in the present tense whereas a haptic experience evokes the experience of a temporal continuum. The aging, weathering and wear of materials strengthen the experience of time, causality and reality, but are rarely considered as conscious and positive elements of design (Pallasmaa, 2000).

Selection of suitable materials is a key step in the product design process. The market place, engineering requirements, production and the consumer must all be considered when analysing potential materials (Kang and Young, 2000). Due to the limited literature resources that addresses the role of surface texture in consumer perception of a product it would be difficult to confidently judge a surface’s influence. Zou et al. (2002, cited in Sedgwick, Henson and Barnes, 2003) have developed subjective descriptions of surface texture, but use is limited due to the lack of context consideration.

Sedgwick, Henson and Barnes (2003) have developed a methodology to characterise the surface textures of the packaging of personal care products. The properties of the surfaces and the evoked emotions were recorded and correlated through the use of focus groups and the semantic differential technique. Initial results were said to give the researchers confidence that the semiotic techniques would give consistent and valid results for the tactile domain (Sedgwick, Henson and Barnes, 2003).

Sensorial design employs all the techniques that humans use to communicate to others through their senses (Shedroff, 1994 cited in Demirbilek and Bahar, 2003). Appropriate application of the senses in design will depend on the understanding of those senses and whether they are appropriate for the particular product or technology (Demirbilek and Bahar, 2003). Sound is useful for appropriate circumstances for communicating particular messages. Tactile, olfactory, and kinaesthetic senses, although valid and experience enriching, are still rarely employed due to technological or market constraints.
Bonapace (2002) suggests that when first experiencing a product, individuals unconsciously sum up the sensations that are communicated by the objects and which are perceived by the individuals. These perceptions may then result in a positive or negative view of the object. Once the individual has been able to interact with the product, possibly receiving other stimuli, their judgement will become more precise. Before the object is judged for its real features the individual will already have formed an opinion of the product which is heavily conditioned by the judged pleasurable.

Formgiving has traditionally been associated with aspects of form, colour, texture and material. In interaction design, however, formgiving is considered to be the way in which an object can appeal to the senses and motor skills, by allowing freedom of expression, for example. The sensory richness and the action-potential of the product itself are carriers of meaning. Sensorial products will seduce customers (Djajadiningrat et al., 2004). It is important that a product gives the user or viewer complete satisfaction and that they are not disappointed by any of the sensations experienced (Bouche, 2004). Schifferstein and Hekkert (in press, cited in Schifferstein and Zwartkruis-Pelgrim, 2008) state that “gratifying all the senses simultaneously in a coherent and harmonious way may provide a means to evoke an enjoyable, engaging experience”.

In Bouche’s (2004) opinion it is up to the individual to re-educate their senses in order to experience more enjoyment from possessions and surrounding environments. Sensorial products are said to create surprises which attract and allure customers. This surprising reaction and associated feelings may, however, have a short lifespan as the user will quickly become familiar with them (Bouche, 2004).

### 3.3 Summary

This chapter has provided an overview of the senses, perception and their role in product and material interaction. The human senses are able to interpret messages (semantics) given by a product (Demirbilek and Bahar, 2003). The sensorial aspects of a product are likely to attract, allure and seduce users (Bouche, 2004;
Djajadiningrat et al., 2004). The initial stages of perception will dictate whether the consumer will approach or avoid the product (Sevener, 2003).

The perception of a product’s aesthetic aspects play an important role in the product-user relationship, particularly during the “first impressions” (Sevener, 2003). Designers’ consideration of the senses was in some contexts, particularly architecture, scrutinised as being predictable and reliant on instantaneous imagery (Pallasmaa, 2000). Sensory consideration is more than just the colour and shape of the product. Providing sensory richness is about providing complete experience satisfaction for the user (Bouche, 2004).

The feelings the user experiences as a result of the product’s sensory consideration may have a short lifespan according to Bouche (2004), as familiarity will result from interaction. As familiarity has been said to breed contempt this may not play a positive role in the product-user relationship. Pallasmaa (2000) offers a solution to this and states that aging, weathering and wear of materials can strengthen the experience of time, causality and reality. The deterioration or changing of materials to enhance the product-user relationship is an approach that is rarely considered as a conscious and positive design approach (Pallasmaa, 2000). The perception of materials will be discussed in more detail in Chapter 7.
This chapter will define ‘experience’; explain the different types of experiences and the factors that may influence these experiences. Factors influencing consumers’ experiences with products will also be explored.

4.1 Experience

Dewey (1934, cited in McCarthy and Wright, 2003) defined experience as the irreducible totality of people acting, sensing, thinking, feeling and meaning-making in a setting, including their perception and the sensation of their own actions. Wright et al. (2003, p.44) state that “Experience is an elusive concept that resists specification and finalisation”.

Dewey (1934, cited in McCarthy and Wright, 2003) explained that experience is the relationship between the concerned, feeling self and the object, where the self has previous interests and ideologies that affect new relationships. He stated that through experience with objects people change. It can therefore be presumed that an individual’s perceptions and ideologies may also be changed due to a particular experience. Experience involves the actions of the individual as well as the actions of the object towards that individual. Desires and goals are also an essential part of experience, as is the feel, fear, belief, hope, enjoyment and imagination of the individual.

According to Bennett (2001, cited in McCarthy and Wright, 2003) enchantment involves both being carried away and caught up. If an experience is enchanting, it can be thought of as being intense, delightful, sensuous, mesmerising or absorbing. According to McCarthy et al. (2003) enchantment is a personal and individual experience that is reliant on previous experience, possibly cultural, and the situation’s ability to grab attention and shape the desires of the individual. Enchantment is said to evoke transformative openness and unfinalisability of an experience. Dewey’s (1934, cited in McCarthy and Wright, 2003) ‘holistic engagement’ between a sensing individual and their surrounding environment is said
to be similar to enchantment. Dewey states that this ‘holistic engagement’ is necessary for the growth and development of individuals. An integrated sensual experience that unites the senses to reveal the qualitative immediacy of the situation is said to be at the centre of the ‘holistic engagement’ (McCarthy and Wright, 2003). Holistic engagement however, only captures some of what it is to be caught up, but not what it is to be carried away, according to McCarthy and Wright (2003).

Bakhtin (cited in Wright, McCarthy and Meekison, 2003) takes into account the personal qualities of an experience such as trust, identification, loyalty and commitment. Bakhtin’s work suggests that the focus should not be solely on the immediate value of an experience, such as whether it was absorbing or irritating, for example. Rather the importance should be placed on the sense made of the experience; this is the experience of the self, personal cultures or lives. Bakhtin also states that the experience itself and the meaning derived from the experience do not come easily, but have to be worked for. It is said that experience allows one to register life as being lived and felt (McCarthy and Wright, 2003).

4.2 The optimal experience

Csikszentmihalyi (1990) offers an account of optimal, intense or peak experience which he has termed the ‘flow’ experience. The concept of flow has been used by many psychologists, sociologists and anthropologists. It has also contributed to many practical applications such as training, organisation of activities and design (Csikszentmihalyi, 1990).

Csikszentmihalyi (1990) suggests that there are two main strategies that humans can adopt to improve quality of life. The first is the matching of external conditions to personal goals. The second is to change how external conditions are experienced to make them fit personal goals better. The example he gives is that of security and that, due to its important role in happiness, people will attempt to bring their environment in line with this goal of feeling secure. This may involve the purchase of particular products, such as guns, locks or alarms, or possibly a new house located in a safer neighbourhood. Security can also be provided by other means such as the presence of police protection or community organisation. Alternatively the
perception of safety could be altered, and it is up to the individual to realise that risks are inevitable and that the feeling of insecurity should not affect their happiness (Csikszentmihalyi, 1990).

Csikszentmihalyi (1990) states that rewards are something given to the self, that one needs to find one’s own personal enjoyment and purpose, regardless of external environments and circumstances. His studies showed that although people from different cultures, economic status, age groups and genders do very different activities to enjoy themselves, the way in which they described this enjoyment was the same. The reasoning behind why they enjoyed a particular activity was also found to be more similar than different on comparison. In sum, optimal experience and the psychological conditions that make it possible seem to be the same the world over (Csikszentmihalyi, 1990). He also states that people are willing to expend a great deal of energy just to experience enjoyment in their lives.

4.3 Positive and pleasurable experiences

Pleasure, enjoyment and fun are fundamental to life (Monk et al., 2002). Nielsen (1993, cited in Monk et al., 2002) states that usability has undervalued the users’ experience in the past. Qualities such as pleasure, enjoyment and fun should be thought of as outcomes to certain experiences with or through technology and products (Wright, McCarthy and Meekison, 2003).

Enjoyment, pleasure and fun have been defined by many; however Blythe and Wright (2003) and Blythe and Hassenzahl (2003) state that there are problems with using these terms interchangeably. In everyday conversation this would not be of concern, however in terms of design for experience it is apparent that distinct forms of enjoyment need to be categorised (Blythe and Hassenzahl, 2003).

Blythe and Wright (2003) suggest that it may be easier to consider enjoyment as an indication of an experience, an emotion, a sensation, a perception or a state of mind, or by degrees of intensity, such as satisfaction, gratification, pleasure, joy, euphoria, and so on. Blythe and Hassenzahl (2003) state that it is important that enjoyment is considered to be a context-dependent and relational phenomenon, that activities
should be considered to have the potential for enjoyment rather than enjoyment itself. Each enjoyable experience will be unique in the combination of context, personal state of mind, goals, experience and knowledge, and social behaviours and beliefs (Blythe and Hassenzahl, 2003). Enjoyment has also been described as the boundary between boredom and anxiety, so that when challenges are balanced with the person’s capacity to act enjoyment occurs (Csikszentmihalyi, 1990).

Pleasure is considered to be related to the degree of absorption (Blythe and Hassenzahl, 2003). The term pleasure has many definitions from different research backgrounds. One or many of the terms may be appropriate depending on the applicable situation. Pleasure can be thought of as the absence of pain, as was stated by Plato (cited in Wright, McCarthy and Meekison, 2003), as well as the alleviation or suspension of a state of pain (Damasio, 1999). Freud (cited in Wright, McCarthy and Meekison, 2003) argued that pleasure was the motivating force for human action and that it may not be known by the conscious mind. Seeking pleasure could also be a reflex response built into our genes for our survival (Csikszentmihalyi, 1990).

Gregory (1987, cited in Wright, McCarthy and Meekison, 2003) stated that pleasure could be regarded as the physical response of the nervous system, as it can be electrically stimulated by neurologists. Pleasure can also be described as a quality of certain emotions as well as a trigger for certain emotions (Damasio, 1999).

Pleasure is an emotion that is associated with the anticipation, acquisition or possession of something good or desirable (Demirbilek and Bahar, 2003). Pleasure can be the anticipation of a goal, with pleasure increasing as the goal is achieved (Damasio, 1999). In order for these goals to be achieved the activity and the underlying assumption and rules of the activity need to be accepted, which will allow the participant to be fully absorbed in the activity (Blythe and Hassenzahl, 2003). It is likely that pleasure-seekers will have to be active in their pursuit of pleasure (Blythe and Hassenzahl, 2003).

Aristotle (cited in Wright, McCarthy and Meekison, 2003) stated that pleasure was caused by the stimulation of the senses through action, that something new and novel activates and stimulates the mind. Blythe and Hassenzahl (2003) state that it is a progression and a consequence of deviating from the expected. Novelty is, however,
unstable and once it is encountered a number of times the mind becomes less
stimulated and the experience is less pleasurable (Honderich, 1995, cited in Blythe
and Hassenzahl, 2003; Wright, McCarthy and Meekison, 2003). Csikszentmihalyi
(1975 cited in Bell, Blythe and Sengers, 2005) stated that ordinary tasks can become
pleasurable through the alteration of the symbolic meaning of the act. This may be
done by defamiliarising an activity or task or by combining a familiar task or object
with an unfamiliar one. Many argue that Aristotle saw pleasure as “the perfect
actualisation of a sentient being’s natural capacities, operating on their proper

Pleasure can also be thought of as self actualisation (1975, Csikszentmihalyi, cited in
Blythe and Hassenzahl, 2003). Pleasure is said to occur when people try to explore
and nourish their identity in order to make sense of themselves. The object or
activities that create pleasure indicate aspects of the self (Blythe and Hassenzahl,
complex nature, pleasure can involve difficulty and challenge in particular contexts.
Pleasure-related words include ‘bliss’, ‘felicity’, ‘happiness’ and ‘thrill’ (Demirbilek
and Bahar, 2003).

Fun is a fleeting distraction from concerns, problems and self image; it is superficial
and not necessarily personally relevant and meaningful. Fun should not, however, be
considered to be unimportant as it satisfies an underlying psychological need (Blythe
and Hassenzahl, 2003). Fun in the English language carries cultural connotations of
frivolity and triviality; it is the absence of seriousness (Blythe and Hassenzahl,
begins due to qualities such as funny, warm or friendly, which reach out to people.

Fun involves the engagement of the senses, through bright colours, flashing lights
and interesting sounds, for example. Fun is a spectacle, often involving a level of
unpredictability, which demands attention and is distracting. While fun provides a
fleeting focus and deep absorption, pleasure is thought of as a deeper, longer lasting
form of enjoyment (Blythe and Hassenzahl, 2003). Happiness and joy can also be
used to describe experience and positive emotion. Happiness can be thought of as a
state of well-being and contentment, while joy can be considered a pleasurable or
satisfying experience evoked by well-being, success, or the anticipation of possessing the desirable (Demirbilek and Bahar, 2003). Enjoyment is a subjective experience, which relates to one’s motivation, which may focus on the outcome, the activity itself or a combination of the two (Brandtzaeg, Folstad and Heim, 2003). Activities or products that provide enjoyment are often specifically designed for this purpose, such as games, sports, art and literature. Enjoyment should not, however, be limited and should occur through the participation in a healthy culture, productive work and routine activities (Csikszentmihalyi, 1990).

Play is said to be one of the most important and fundamentally human activities. Huizinga (cited in Wright, McCarthy and Meekison, 2003) argues that play is both a defining characteristic of the human being and the root of human culture. Huizinga divided play into three stages: (i) mastery play (practice play involving repetitive behaviour), (ii) symbolic play (fantasy and role playing) and (iii) play with rules (structured games). Fun is associated with play or playfulness and with terms such as amusing, pleasurable, entertaining and enjoyable. Play is not serious; there is no resistance, necessity or limitations, and it is therefore unlike work and less likely to be boring (Demirbilek and Bahar, 2003).

4.4 Interaction with products

Morris (cited in Norman, 2004, p.227) stated that “if you want a golden rule that will fit everybody, this is it: Have nothing in your houses that you do not know to be useful, or believe to be beautiful…”.

An individual’s current emotion or mood and the emotions they have regarding a particular class of inducer will have an enormous influence on the ability to like an object and whether the object will be able to encourage a pleasurable and exciting interaction. Development and interaction allow both factual and emotional experiences, and can be thought of as a form of conditioning. All objects are able to induce some form of emotional attachment, although some do so more than others (Damasio, 1999).
Sustained interaction promotes sustained emotion, but both sustained interaction and emotion take time to develop. Sustained emotions are often the result of a history of interaction and experience, association and reflection, and the memories that are evoked by the product (Norman, 2004). Emotions are caused partly by the physical appearance and the behaviour of the object. Although Norman (2004) states that aesthetics, attractiveness and beauty play an essential role in making objects sustainable, he also believes that it is possible that unattractive objects can be loved as a result of the product-user interaction history.

It has been proposed by De Angeli et al. (2002) that involvement with an artefact is multidimensional and should be divided into three dimensions referring to social, functional and aesthetic qualities. The relative weight of each dimension varies according to the task executed, the environmental context and the character of the user. Functional qualities refer to the effort exerted in order to interact with an artefact. Aesthetic qualities refer to the pleasure of interaction, particularly the physical aspects. Not only should the aesthetic qualities be designed into the product or interface but they should be flexible enough for the user to personalise if wanted. The effectiveness qualities assess the success and duration of the bi-directional information flow (De Angeli, Lynch and Johnson, 2002). User satisfaction can therefore be determined by the convergence of the perceived quality of each dimension (De Angeli, Lynch and Johnson, 2002).

Beautiful engaging interaction will allow the user to engage with products through their physicality. Fun and beauty can result from engagement (Hummels, 2000 cited in Overbeeke et al., 2003). Aesthetics of interaction is the sense of beauty of the relationship between the user and the product in context. Hummels states that this sense of beauty relies on five aspects. The first being the functionality and performance of the product, second the user’s needs, wants, interests and skills, and third the context of interaction. The fourth is the sensory richness, the wealth and subtlety of auditory, olfactory, tactile and kinaesthetic aspects, and lastly the story and ritual that the individual creates with the product (Hummels, 2000 cited in Overbeeke et al., 2003).
The return of the physicality of products may restore engagement, ensuring fun interaction and beautiful experiences. The three skill levels used for interaction, according to Overbeeke et al. (2002, cited in Overbeeke et al., 2003) are (i) cognitive or knowing, (ii) perceptual motor or doing, and (iii) emotional or feeling. The design of products, electronics in particular, has resulted in a cognitive approach neglecting the other interaction types (Overbeeke et al., 2003).

Users are interested in challenging experiences, according to Overbeeke et al. (2003), and as a result design that considers the experiential context as well as the product is needed. Products should engage the user as a whole, appealing to all the senses. Unlocking the functionality of the product should contribute to the experience (Overbeeke et al., 2003).

The users’ personality also plays an important role in the product-user relationship. Needs, wants, fears and aspirations will affect an individual’s response to and interaction with products (Jordan, 2000). These meanings can be used by the owner of a product to convey their ideal self-image to those around them others (Jordan, 1998). Norman states that the attributes that make an item personal cannot be designed, especially in mass production. Even customisable objects are not emotionally compelling, offering a better user-product match but still not guaranteeing emotional attachment (Norman, 2004). Making an object personal involves expressing some sense of ownership, of pride, it needs some individualistic touch (Norman, 2004). Norman (2004) claims that there are five ways in which consumers can deal with products. One can live with what is available on the market, make more selective purchases, customise the order, design one’s own or modify purchased products.

Hassenzahl (2003) stated that understanding the user experience is a long way off. During the initial product-user interaction the user will individualistically perceive and interpret the product, resulting in the creation of a product ‘character’. This ‘character’ will continue to affect follow-up interactions – influencing decisions, actions, emotions, resulting behaviour and interaction time (Hassenzahl, 2003).
Involvement relies on the strength and quality of the user-product relationship, both the user’s and the product’s characteristics and their familiarity (De Angeli, Lynch and Johnson, 2002). Relationships unfold over time and familiarity is the amount of personal knowledge available and exchanged during interaction. As a result of this familiarity a level of predictability will result, and as a consequence one of two things will occur: the relationship will either be reinforced (attraction effect) or dissolved (tedium effect) (De Angeli, Lynch and Johnson, 2002). The tedium effect can result in the users ignoring the object and even considering the object to be faulty. The brain adapts naturally, diminishing response to each repeat experience. This adaptive behaviour is justified by the fact that it is biologically useful and that it is usually the novel and unexpected that requires the most attention (Norman, 2004).

Personal possessions, homes and the people that individuals surround themselves with all become familiar. There are many opinions as to why familiarisation can result in this decreased interest and interaction, and how defamiliarisation can be implemented (Bell, Blythe and Sengers, 2005; Csikszentmihalyi, 1990; Norman, 2004; Sengers et al., 2005). Csikszentmihalyi (1990) states that tediously familiar experiences can become pleasurable once again if the symbolic meaning can be changed. Sengers et al. (2005) suggest that it is necessary to balance the familiar with the strange in order to prevent alienation, confusion and disinterest. Norman (2004) believes that there is something to be learnt from the music, literature and art that have been able to stand the test of time, the depth and richness of which is said to allow a different focus with each repetition.

Trust is also an important factor in the interaction with objects, as it implies an expectation of the object; a reliance, confidence and integrity. Trust is established and maintained through a number of external sources, such as brand, but it also relies on positive interactions and feedback (Norman, 2004).

Individuals are skilled; these may be learnt or inherent skills which in particular situations will be advantageous. Some skills are concerned with the body; these physio-characteristics may include the senses, musculo-skeletal, size or body appearance. Psycho-characteristics are the cognitive and emotional characteristics of individuals. These psycho-characteristics include intelligence, skill, creativity,
memory and perception. Particular populations of people may have developed skills. These skills can be positively exploited during product design to benefit that particular population (Jordan, 2000).

Technology is another factor that affects the product-user relationship and interaction, with the users’ view and experience of technology in general playing a large role (Jordan, 2000). Interfaces should allow product-user interaction to be obvious, useful and efficient. It is important to consider the emotion implied by the product characteristics as it will affect the user emotion. A more tactile and interesting product which relates with the environment and the user emotions will better satisfy the users (Zimmerman, 2003). Hummels (2000, cited in Overbeeke et al., 2003) states that less engaging product-user relationships have been the result of the appearance and interaction of products. She states that this has to do with the loss of skills and the consumers’ ability to know and understand the product. Shallow relationships are due to the physicality of designs, with machinery being hidden behind an interface. Current interaction is said to ignore the bodily skills, bodily senses and tangible alternatives (Overbeeke et al., 2003). The four components of good behavioural design according to Norman (2004) are function, understandability, usability and physical feel, and feel may sometimes be the rationale behind the product (Norman, 2002).

Positive emotions play an important role in the decision making, motivation and social interaction needed for task-based activities (Isen, 1993, DeCatanzaro, 1999 and Makela, 1999, cited in Demirbilek and Bahar, 2003). There are many ways positive experience occurs between a product and user. The senses are a way of experiencing and enjoying; vision is extremely pleasurable, especially if the eyes are looking for something in particular, a goal, or are admiring something that is cherished. Hearing organised auditory information, music, provides patterns and order, induces feeling and moods, and is especially enjoyed during celebrations. Taste is also considered to be an inducer of feeling (Csikszentmihalyi, 1990). There is no doubt that individuals are able to experience enjoyment through touch. This sense can, however, be undeveloped, resulting in individuals who are not able to fully appreciate this sense.
Wright, McCarthy and Meekison (2003) state that knowledge of the self can emerge as a result of the expression of self-object relationships and interaction. According to Csikszentmihalyi (1990) learning in itself is an especially enjoyable experience for young children, adding to their complexity of the self. This enjoyment is said to disappear with age and learning may then only be enjoyed if it has a particular benefit. Csikszentmihalyi (1990) also considers remembering the past to be an enjoyable experience. Memories are preserved both internally and externally, they are an individual’s personal identity – diaries, photographs, movies, mementos and souvenirs, for example, are all important to their owners. The fact that there is often an extremely high emotional attachment to these objects indicates that products that are able to provide or store memorable experiences would most likely be valued.

A shift in Western culture has resulted in the current separation of work and private life, where play is often less valued socially. This change from the joint play and work of previous centuries makes it even more important to ensure that work-related tasks are pleasurable experiences (Sengers, 2003). Security, confidence, pride, excitement and satisfaction are all feelings characteristic of individuals using pleasurable products (Jordan, 1998). Unpleasurable products can invoke feelings such as annoyance, anxiety, contempt and frustration. Due to these feelings, pleasurable products will be used more regularly and will influence the future purchase choices of the individual (Jordan, 1998).

Difficulty can, however, be a challenge; there is more to usability than ease of use. Difficulty can result in enjoyable experiences which are seductive, playful, surprising, memorable or moody. There is a general tendency to believe that difficulties prevent pleasure, however this is not always the case. Pleasure-based, as opposed to usability-based designs, do not limit the quality of user experience (Dejean, 2002). In some cases overcoming difficulty provides a deep sense of pleasure, where the effort made or skills learnt provide differentiation from other individuals and an increased sense of self esteem (Dejean, 2002).

Personal investment and the resulting sense of achievement when one has to overcome physical or intellectual effort will also result in pleasure, and the amount of input effort will relate to the amount of satisfaction one gets. It is, however,
important to ensure that the amount of effort required does not result in stress or negative emotions (Dejean, 2002). Cultures approach difficulty and pleasure differently, the French associate words such as ‘easy – comfortable’ and ‘easy – going’ with the concept ‘without merit’. It is therefore essential for the cultural valuation of certain product difficulties to be defined in the design process (Dejean, 2002).

4.5 The seductive experience

Seduction is another aspect involved in creating an emotional bond between user and product (Norman, 2004). Product seduction involves a promise and a connection with the users’ goals, values and emotions (Khaslavsky and Shedroff, 1999). Seduction goes beyond the visual or functional, it sparks emotions such as curiosity, surprise and imagination. A product therefore needs to be original, and include more of everything than is expected or needed of it. There does need to be an initial attraction (Norman, 2004) and products need to stimulate the imagination, creating a connection between product and user (Khaslavsky and Shedroff, 1999).

Seduction is a three-step process according to Khaslavsky and Shedroff (1999). The first step is that of enticement and involves the initial contact which attracts the user, grabs attention and promises emotion, establishing an initial relationship. In order for a product to entice it should be able to differentiate itself from the competition and its environment (Khaslavsky and Shedroff, 1999). Relationship is the second step; the product should make a promise that holds the users’ attention for this stage of the seduction. These promises can be a number of things but most importantly they should link to the goals and emotions of the potential user. Once these initial promises have been fulfilled it is essential for the product to make new promises (third step). This process can continue indefinitely (Khaslavsky and Shedroff, 1999). Finally the seduction needs to be completed with the product fulfilling the final promise and ending the experience in a memorable way, rewarding the user for the attention given. At this stage it is possible to give the user alternative reasons to invest more emotion into the experience. For example, once an aesthetic becomes tiresome the product should be able to provide other promises, such as functionality,
durability or tactile pleasure. The longer the product is able to reinvent itself the more successful it will be (Khaslavsky and Shedroff, 1999).

As a result of a seductive relationship the user is said to grow both emotionally and intellectually due to the rich and compelling experience (Khaslavsky and Shedroff, 1999; Norman, 2004). The user may value both the product and the experience even though there may not have been any change in the experience during the life of the product (Khaslavsky and Shedroff, 1999). Norman (2004) states that as a general rule the key to maintaining a successful relationship is what happens after the initial burst of enthusiasm. Attractive objects, for example, lose their appeal fairly easily if they do not have something else to offer the owner after the appearance has lost its novelty (Norman, 2004).

Khaslavsky and Shedroff (1999) documented a number of criteria that can be used to identify a seductive experience with a product. Seduction lies in the enticement of individuals by diverting their attention and by surprising them with novelty. Seduction is also related to the matching of values or goals between the individual and the artefact, by promising to fulfil these goals or promises or by exceeding the individual’s needs and expectations. Seductive experiences will create an instinctive emotional response in an individual (Khaslavsky and Shedroff, 1999).

4.6 Summary

This chapter has outlined the different factors that can contribute to experience, specifically when related to tasks and products. It is evident that the type of experience is an important factor to be considered, with the level of engagement varying accordingly. It can be seen that experience is both affected by and effects consumers’ emotions, and that it is important for this to be taken into consideration during the design process.

The experiences that a user has with the products that they own and use play an important role in the pleasure perceived and the duration of interaction. The product’s sensorial characteristics can enhance engagement and experiences. Sensory perception such as attractiveness can lead to making experiences last longer
according to Norman (2004). He also states that even unattractive objects can be loved as a result of the product-user interaction history.

Novel experiences, such as appearances, are said to be unstable, with familiarity leading to less stimulation and less pleasurable experience (Honderich, 1995, cited in Blythe and Hassenzahl, 2003; Norman, 2004; Wright, McCarthy and Meekison, 2003). It is at this stage the product is said to be able to reinvent itself by providing the user with a new characteristic which can inspire pleasurable experience (Khaslavsky and Shedroff, 1999). The physical feel or the durability of the product can then take over from the aesthetics and contribute to the consumers’ experience in a positive way (Khaslavsky and Shedroff, 1999; Norman, 2002). Khaslavsky and Shedroff (1999) state that the longer the product is able to reinvent itself the more successful it will be. Materials have many characteristics which could, if understood and then applied or enhanced considerately by the designer, contribute to this reinvention.

Product functionality, the user’s interests, the context of use, the product’s sensory richness and the story that an individual creates with a product are all contributing factors to experience (Hummels, 2000 cited in Overbeeke et al., 2003). All of these aspects are linked to the materials that a product is made from. Functionality, context of use and the sensory richness for example, can be reliant on the properties of the material. The user’s interests such as wants and likes, and the story that they build with the product can be linked to the perceived pleasurability of the applied materials. Engagement of the user as a whole can be enhanced by the physicality of a product, appealing to all the senses and leading to more pleasurable interactions and experiences according to Overbeeke et al. (2002, cited in Overbeeke et al., 2003).

As each individual is different, so too are their needs and wants from a product. The sense of ownership that one feels can be enhanced by the product. Norman’s (2004) idea of the individualist touch can be enhanced by the materials that the product is made from, whether the product is offered in a range of materials or if the material itself is customisable or modified before or after purchase. In order for materials to contribute to this individualist touch an understanding is needed of what consumers
think of the materials and their ability to tell a story about the interaction that they have had with it.

Trust, another interaction factor discussed by Norman (2004), implies an expectation of a product. Consumers’ expectations of materials are something that has not been explored and could help provide more desirable interactions. The trust of the consumer is also an issue that will be discussed in Chapter 7 in relation to materials that consumers have never used before. The consumers’ reaction to new materials may be predicted if an understanding of current material characteristics is known.

The high emotional attachment consumers invest in products can be an indicator of memorable experiences stored within the product. Due to the role that materials play in the product-user relationship the materials themselves may have imbedded memories attached to them. Finding out about the memories consumers associate with materials, and why, could be used to elicit particular behaviours with future products.

Seduction was identified as the matching of values or goals between the individual and the artefact (Khaslavsky and Shedroff, 1999). An understanding of the values that consumers attached to materials and whether these are pleasurable or displeasurable can be applied to products allowing them to match the user expectations. Pleasurable product-user interaction to some extent relies on an understanding of the user and embedding their needs and wants within a product. Each user, however, is different as they have been influenced by their prior interactions, experiences and belief systems. The aspects that create the individualistic experience will be discussed in the next chapter.
5. THE INDIVIDUALISTIC EXPERIENCE

This chapter aims to outline the different aspects that may influence users’ perspective when interacting with products. Understanding the richness and complexity of different users’ responses can assist in designing to facilitate rich personally meaningful interactions and experiences (McCarthy and Wright, 2003). It is matching the wants, needs and expectations of the individual with a product of the same perspective that will result in a positive experience (De Angeli, Lynch and Johnson, 2002; Gilot, 2001).

5.1 Self identity

Individuals’ behaviour is dependent on their own particular outlook and aspirations. Dittmar’s (1992, cited in Crozier, 1994) study classified the subordinate categories of self-expression as being self-expression for others to see, individuality and differentiation from others, a symbol for personal future goals, and a symbol for personal skills or capabilities. Individuals may create their self image based on how they wish to see themselves or how they would like others to see them. Fromm (1976, p.36, cited in Dittmar, 1992, p. 3) states that “[what] I am is equal to what I have and what I consume.”

Differences between aspirations will determine an individual’s range of products and the contexts where these characteristics are important (Jordan, 2000). Belongings play an important part in self definition. This long-standing concept was expressed by James (1890 cited in Crozier, 1994), who argued that the self is composed of different aspects including the physical bodily self, the spiritual self and the empirical self. He continued to state that the self, in its widest sense, is the sum total of what it can call its own. Physical and monetary possessions can increase, giving the owner a sense of triumph, or dwindle and cause disappointment. Material possessions play a role in the individual’s sense of who they are. Individuals may feel a number of emotions due to possessions, such as pride or shame of their home or belongings or a loss, anger or hurt if their belonging is broken or stolen (Crozier, 1994). Dittmar (1992) states that the concept of self stretches beyond the physical...
body to include material possessions. “Possessions are modern means of acquiring and expressing identity” (Dittmar, 1992, p.4).

Values, tastes, morals and aspirations are described as ideo-characteristics. These ideologies are used, or are attempted to be used, as the basis for personal lifestyle choices and as part of setting goals and aspirations. Work ethic and achievement orientation are examples of adherence to traditional family values. Other values can be more self indulgent such as materialism, decadence or minimalism. These personal ideologies will have an influence on the aesthetic characteristics that the individuals appreciate within products (Jordan, 2000). For example, expensive taste and aspirations to be design conscious may invoke the purchase of a product that is considered to be a ‘design icon’, such as one of the more recognisable products from Alessi.

Individuals will have their own judgement as to what is aesthetically pleasing, beautiful or attractive. These aesthetic values can be associated with particular user groups and can be used to characterise people (Jordan, 2000). Social differences, socio-economic and gender are just some of the ways in which the market can be predictably divided at any particular time (Crozier, 1994). New and different ways of establishing and developing self-identity have and will continue to emerge (Jordan, 2000).

Material goods can be markers for class and status. It is therefore likely that perceived status, wealth and social standing influence identity, not only the identity intended and projected by the owner of the goods but also the identity interpreted by others (Dittmar, 1992). Objects are also said to remind individuals of who they are and express belonging to particular socio-economic groups. This then links with the way in which people orientate themselves with the social world, evaluating and then anticipating how to interact with others based on impressions that are formed from their possessions (Dittmar, 1992).
5.2 Self identity through the eyes of others

Possessions not only influence the way individuals think of themselves, but they also influence thoughts about others (Dittmar, 1992). Products reveal themselves through their design and function, and in most instances belongings will reveal something about the owner too. Products can identify an individual as being of a particular culture, gender or social group (Demirbilek and Bahar, 2003; Jordan, 2000; Norman, 2004). Philips Corporate Design (PCD) project projected that people need their identity and values to be reflected in their belongings (Lambourne, Feiz and Rigot, 1997). The statement, “the work of designers has a central role in the expression of the identity of their end users”, refers to clothing but can be applied across design (Candy, 2003, p.32). von Bertalanffy (cited in Crozier, 1994) stated that humans live in a universe of symbols rather than things.

Products can be bought for any number of reasons; they can be surprising, intriguing, novel or an expression which will initially interest the owner. The interpretation and value assigned to these belongings by the owner may, however, differ from those of others. The product or context of the encounter may invoke other perceptions, emotions, values and associations for viewers (Davis, 2002; Wikstrom, 1996 cited in Demirbilek and Bahar, 2003). The viewers’ interpretation and assigned value of an object may then influence the way in which the owner is perceived. ‘The eyes of others’ play an enormous role in the consumer opinion and therefore in consumer choice and belongings (Candy, 2003, p.32). “People are aspiring to give messages to others and this can be done easily with the products that they own, use or wear”, most of which are related to aspirations of status or lifestyle (Demirbilek and Bahar, 2003, p.1353).

Belongings which the owner is proud of will always be displayed prominently or at least shown to people when the opportunity arises. Prestige, perceived rarity, and exclusiveness are sought after product attributes that will affect the way in which the owner of such a belonging will be perceived. Product qualities can make promises to raise the status of the owner, serving as a point of surprise or prompting conversation, for example. Talking about belongings also provides the owner with a chance to advocate the product’s values in an attempt to gain the approval of others.
(Norman, 2004). Products can assist or hinder an individual’s feeling of social acceptance within particular contexts (Jordan, 2000).

Dittmar (1992) sees this interpretation of identity by others as having a system of rules and ideas, and that the person-possession relationship always has reference to others. She states that “people can conceive of and interact with respect to material possessions only because they share the same underlying conceptions about them” (Dittmar, 1992, p.35).

5.3 Cultural identity

“All artefacts are made of two materials – the physical and the cultural” (Candy, 2003, p.29). Possessions convey social categories, types of person, or stereotypes and locate individuals within the social-material hierarchy (Dittmar, 1992). Culture prescribes norms, evolves goals and builds beliefs that shape experience. Culture provides enjoyable experiences by providing rules and guidelines, one of Csikszentmihalyi’s (1990) eight elements that assist optimal experience. The same could be said for social group norms, morals and religious beliefs. Hofstede (1991, cited in Bonapace, 2002) proposes a three-level model concerned with cultural ‘filters’. The first filter is that of personality, which is specific to the individual. This personality is inherited and learnt. Culture, the second filter, is learnt too, but is specific to a group or category of individuals. The third filter is human nature, universal and inherited beliefs. Children gather knowledge from interacting with products while in the company of adults or older children. The understanding of objects, their meanings and their functions are cultural and precede any individual user (Crozier, 1994).

Hofstede (1991, cited in Bonapace, 2002) states that cultural differences are often manifested through symbols at a superficial level. The types of belongings that users consider to be meaningful and which cultivate emotional attachment are often linked to culture, both ethnic and social. Interaction with products will be influenced by the group’s or individual’s beliefs (Bonapace, 2002). Ashby and Johnson (2002) state that a material’s meaning can be the result of the product that it has been used in, and that if applied to other products this personality is likely to change. Likewise these
perceived attributes are subjective and are likely to be different depending on the user, the context of use and the culture to which the user belongs. These subjective perceived attributes are also likely to change over time (Ashby and Johnson, 2002).

It is possible, especially within social groups, that tastes and ideals shift, and new possessions will be acquired to reflect these changes (Bonapace, 2002). The human senses that dominate the groups’ activities or persona may also vary according to culture, therefore affecting the products that they own, as well as the interaction that they have with them. Cultures, both social and ethnic, differ through superficial symbols such as heroes and rituals, and at a deeper level through values (Bonapace, 2002). Cultural characteristics and values are ingrained in countries, and will affect the appreciation of design characteristics. There are some exceptions, where trends change rapidly.

Groups that an individual may identify with or obtain belief and values definitions from are referred to as reference groups. Possessions such as clothing or material objects will have significance within these groups. Social identity is a reflection of and is expressed through the individual’s taste and preferences. Commodities are said to be values due to the fact that ownership or use can confer status. Tastes can result in admiration and worth or deficiencies, embarrassment and shame (Crozier, 1994).

5.4 Memory

The human senses promote remembering and discovery, allowing objects to become history (Kwint, Breward and Aynsley, 1999). Perception is recreated as a memory in the same way as it was created. Memories include information such as the motor adjustments that an individual has made to obtain the perception, surface qualities and the emotional reaction that was experienced regarding the object (Damasio, 1999).

Objects can also be considered to instruct, remind, or become imbued with memory due to use. Kwint et al. (1999) state that memories have become increasingly material in nature, gifts are prominent features to mark celebrations such as birthdays
and marriage. Objects can be thought of as “inoculations against nostalgia” or modern relics (Kwint, Breward and Aynsley, 1999, p.108). “Remembering occurs in the present, and the present accommodates the recollector” (Kwint, Breward and Aynsley, 1999, p.108). “Possessions can provide actual and perceived control and mastery, a source of comfort and emotional adjustment, a concrete record of our achievements, past experiences or future goals and a reminder of our relationships with others” (Dittmar, 1992, p.95).

The domestic space can reflect and mould the identity of its inhabitants, it reveals the relationships between people, objects and memory, it is itself a memory (Kwint, Breward and Aynsley, 1999). Kwint et al. (1999) suggest that in Western traditions objects serve memory in three main ways. The first is to furnish recollection of the past, this occurs due to the objects involvement in forming consciousness, and therefore remembering. Objects are kept as representations of the past and the experiences that the individuals were involved in (Kwint, Breward and Aynsley, 1999). Secondly, objects stimulate remembering repressed or forgotten memories when the individual unexpectedly encounters a particular object. Proust (cited in Kwint, Breward and Aynsley, 1999) called this ‘involuntary memory’, stating that the past is hidden in the sensation that some material object will give the finder, and whether this is revealed before death is left to chance. Proust believed that there is much to be said for the pagan belief that the soul of the dead is trapped in an object until a known person finds the object, at which time the soul is delivered. Thirdly objects are records of experience and tributes to the living and the dead. Proust (cited in Kwint, Breward and Aynsley, 1999) states that objects can carry the memory of the dead, but this memory will never be total. “At its loosest definition, to live is to remember”(Kwint, Breward and Aynsley, 1999: 3).

The making of the object will also have an effect on the feelings associated with it. Homemade crafts or arts and personal photographs, although technically inferior, are often the most treasured possessions (Norman, 2004). Personally relevant meanings can become associated with objects and may tend to go beyond the obvious. This is a source of memory and possibly of pleasure (Blythe and Hassenzahl, 2003). Objects can therefore be thought of as tools of evocation. Products have ongoing effects on their owners and viewers, and these effects can be produced by any number of
properties which are perceived by the senses. “Evocation implies an open dialogue between the object, the maker and the consumer in constructing meaning” (Kwint, Breward and Aynsley, 1999, p.3). Durkheim (1995, cited in Kwint, Breward and Aynsley, 1999) established that the feelings evoked by an object or a particular characteristic of an object can be associated with other representations or associated representations of the characteristic or object. It is likely that the creation of a new object, and the reactions to it, will be determined, or at the very least influenced, by the invested beliefs of the designer and the viewer.

Objects themselves can therefore be thought of as having consequences (Kwint, Breward and Aynsley, 1999). One of the ways in which an object will affect the viewer is through its history. Objects are able to gather information with which they are able to inform the viewer. The history of an object can be seen physically on the surface of the object, for example. The history of the object will change its meaning and will therefore affect the way it is perceived and/or remembered.

The viewer however still has some power over the history of an object; it is their judgements and previously received information that influences new memories or the adaptation of old memories. It can also be said that experience during early childhood will affect subsequent perception and experience with one’s surroundings (Bingley, 2003). Kwint et al. (2004) propose that human memory experiences a mutual evolution with the objects that inform it.

Sustained interaction is needed to develop long lasting emotional feelings. The interactions, associations and memories that products evoke are what matters. Keepsakes and mementos such as postcards and souvenirs are rarely beautiful and often referred to as kitsch, but they are important to the owners (Norman, 2004). Souvenirs can be considered “excessively or insincerely emotional”, and this is often true of the actual object. The object is not what is important to the owner; it is the object’s symbolism. Culturally significant belongings, for example, although not of one’s own religion, can intrigue or remind the owner of a particular place or group of people. Belongings may also reflect family origins, culture or religion even though the owner themself may not be involved within the belief system.
Norman (2004) states that surface appearance and behavioural utility play relatively minor roles in memory and attachment, as compared to interaction. This view is very limited as surface appearance and texture are important parts of interaction and should not be neglected.

### 5.5 Context and change

Desirable response is not just dependent on the product but on the context of use and the user’s previous level of stimulation which can be affected by a product, possibly accentuating or balancing the existing emotion (Jordan, 2000). Both the human and the environmental context have much to do with the emotional response and pleasure that the user will have and associate with their belongings (Bonapace, 2002; Crozier, 1994; Dickinson, 2003). Pleasure does not only rely on the object but the places it is used (Crozier, 1994). The environment is not just a backdrop, it is the initiator of many emotions both negative and positive (Crozier, 1994). It is, however, up to the user to create contexts, as the designers and the product are unlikely or unable to dictate them. The significance of the context and the person’s memories of previous events will all influence the state of arousal (Crozier, 1994). When the moment is right, when events align, pleasurable product-user interaction will occur (Dickinson, 2003).

The contexts in which pleasure is achieved are very rarely the same. Time will have an effect on the human context. Human context in the form of perceptions and attitudes will change, especially as new products emerge on the market and older products are compared (Bonapace, 2002). The environmental context, the contexts that individuals choose to surround themselves with and the attitudes that they have towards them will change over time too. The environment affects the user, but it is also the way in which the user perceives the environment that will shape this environments’ future (Kwint, Breward and Aynsley, 1999).

User situation can, however, change over time which will affect the interaction. Products can therefore become more or less satisfying over time depending on the user’s circumstances. Satisfaction may be related to the user’s behavioural goals and
the fulfilment of their expectations (Hassenzahl, 2003). Changes or variations in taste and interaction are frequent and can happen extremely quickly, not only in the broad marketing sense, but on an individual level as one ages (Demirbilek and Bahar, 2003) or as social values change (Bonapace, 2002). Changes in product taste can be attributed to the change in preference concerning forms, shapes, sizes, materials or finishes, for example.

Baktin (cited in McCarthy and Wright, 2003) states that perception and observation can be thought of as a constructive act of meaning-making by the observer. In other words, experience is shaped by the position from which the observation or activity takes place. Changes occurring in the observer will therefore change the perception and observation that takes place. A completely different experience may result if interaction were to take place at a different time and from a different perspective. Baktin believes that the world is full of potential, freedom, newness and surprise. Potential enchantment can therefore be said to be rooted in the experience of novelty (McCarthy and Wright, 2003).

5.6 Summary

A number of emotions are felt by consumers as the result of their possessions (Crozier, 1994). Possessions not only induce emotion due to their characteristics such as aesthetics, functionality and usability, but also if they express an identity, especially if this is an identity that the user wishes to portray. The acquisition or expression of identity symbolised by the use or ownership of a product can lead to product attachment and possibly feelings of displeasure if something were to happen to that product (Crozier, 1994).

Gender is also part of users’ identity and can be reflected in the possessions that one owns (Dittmar, 1992). This research sought to identify whether there are any gender differences in the concepts consumers have about materials. Perceived status or lifestyle by both the owner of a product and by those viewing the owner and their product also influences the identity that a product, and thereby its owner, can portray (Demirbilek and Bahar, 2003; Dittmar, 1992). The status that is attributed to a product due to the materials that it is made from can play a role in the creation or
enhancement of identities that people value and pursue, making it another area of interest in this research.

This idea of conception of identity through products only takes place due to a shared understanding of the symbols that a product can represent (Dittmar, 1992). If this is the case then it can be assumed that consumers will have a consensus of opinion about the status of the materials that a product is made out of. It is however important to note that although there may be very distinct status symbols, these may change over time (Bonapace, 2002) and the consideration of materials must change with them in order to provide for the users’ wants and needs. It is likely however that these new symbols will still be influenced in part by the previous invested beliefs of the consumer, so although opinion may change it is important to understand the present in order to cater for the future.

Prior experience of the consumer will affect subsequent perceptions and experiences (Bingley, 2003). History not only relating to the user’s experience but also of the product or the material that the object is made from will also affect what is currently perceived and what will be remembered. It is important therefore to understand whether consumers have any concepts about the history of materials and how these histories may affect the emotions they feel for them. Understanding the past experiences, judgements and emotions of the consumer in relation to products, or materials, will influence the emotions that will be felt in the present and the new memories. Individuals are likely to change due to personal growth, social and cultural changes and the evolution and creation of the products that they come in contact with. Kwint et al. (2004) propose that human memory experiences a mutual evolution with the objects that inform it. Although changes in needs and wants do take place there may be ways for products to hold the attention of the consumer. The next chapter will discuss this topic of prolonging pleasurable product-user relationships.
6. PROLONGING USER PLEASURE

This chapter will outline the hierarchies of consumers’ needs and wants that have been developed by various authors. These hierarchies will show the ever increasing opinion that pleurably is of great importance to the consumer. The different types of pleasure that are associated with product use will also be explained, as well as information relating to the life-cycle of this pleasure. Finally, a summary of research that has been done relating to consumers and their reactions towards products will be shown.

6.1 Consumer needs and wants

It can be said that once one need or want is satisfied people then start to need or want something more. This is demonstrated in Maslow’s hierarchy of needs, and is also shown in Jordan’s (2000) hierarchy of needs which applies to human factors. The first and lowest level of Jordan’s hierarchy of consumer needs is that of functionality. A product needs to be functional and capable of performing the intended tasks in order for people to use it. If the interaction does not achieve the user’s intention dissatisfaction will result. In order to ensure appropriate functionality the product designers and manufacturers need to take into consideration the product’s use, the user, and the context and environment of use (Jordan, 2000).

The second level of the hierarchy is usability. Once users are accustomed to functionality they will seek products that are also easy to use. A functional product may not be usable; however functionality is a necessary quality of a product with good usability. Consumers tend to be well informed and have come to expect products to be functional and have good usability too. Complexity, in technological products in particular, has resulted in an increasing need for appropriate usability (Jordan, 1998). There are a number of design principles which designers are able to implement in order to ensure that products are easy to use (Jordan, 2000).

The third level of the hierarchy is that of pleasure. Once people are used to both a functional and usable product they will seek a product that offers more. Consumers
will seek relationships with their products, relationships that provide emotional benefits and enhanced interactions. Pleasure relies on the product having functional and usable qualities, but functional and usable products are not necessarily pleasurable (Jordan, 2000). Jordan (2000) states that usability is a key component of pleasurable in many cases. Usability-based design approaches are, however, limited by their view of products as a means to accomplish a task (Jordan, 2000). According to Jordan (2000) there is no point in providing a user with a beautiful and functional product if it is difficult to use it to its full potential.

A similar hierarchy was proposed by the members of the ergonomics and design work group of the Italian Ergonomics Society (SIE). Level one was to address respect of the environment, level two was health and safety, level three was usability and finally level four was pleasure (Bonapace, 2002). Bonapace (2002) concluded that the hierarchy should have safety and well-being as the first level, functionality as the second, usability as the third and pleasure as the fourth level.

Good design means that the many factors of design are in harmony. According to Norman (2002) beauty and usability need to be balanced, products that are beautiful to the core are no better than one that is only pretty if they both lack usability. There are many other factors that are important to the success of a product; affordability, manufacturability, quality, aesthetic appeal, functionality and pleasurable productivity. Norman (2002) states that above all, products should be a pleasure to own and use.

Designers and the design decisions that they make affect users. These decisions shape, consciously or unconsciously, the micro-texture of everyday experiences (Sengers et al., 2005). Jordan (1997) states that person-centred design is no longer an appropriate design approach and that it is the focus on enjoyable, exciting, meaningful and pleasurable experiences that will now appeal to the users and viewers.

The minimisation of cognitive and physical demand on users in a usability-based design approach dehumanises the user. This dehumanisation has called for a more holistic understanding of the product use, the user and product-user experience. This requires looking at the role which products play in everyday life and the way people
use products to define a product benefits specification. This goes beyond the previous view of simply looking at the factors that affect the success of task completion. Speculation can then attempt to link the discovered benefits or pleasure of the product ownership or use with particular aspects or features of the design (Jordan, 2000).

The consideration of emotional design is also an ethical argument. It is not just the quantity but the quality of emotional experience that designers should consider during the design process. According to Aldrich (2004), design has tended to rely on the exploitation of associative and symbolic meanings to evoke emotion. This has resulted in narrow engagement and impoverished product-user, person to person and person with environment relationships. According to Aldrich (2004) emotional relations with designed objects are deficient as a result of a user’s lack of ability when considering product meanings. It is suggested that designers should rely on the user’s embodied perceptions to enhance engagement rather than indirectly signifying engagement. Designs should be ‘true to themselves’, open, direct and if appropriate exploit the human body’s physical fit. Labels and associative names need to be eliminated to make way for rich experiences and new ways of interpreting meaning.

It is said that design needs to expand beyond a merely visual approach and take advantage of other forms of communication to readmit emotional potential and ethical value. Inherent qualities, material meanings, shape, weight, texture, movement, scale and aroma are all examples of characteristics which involve direct and rich engagement (Aldrich, 2004).

Buchanan (1989 cited in Demirbilek and Bahar, 2003) stated that emotion has been exploited by designers and used in superficial and coercive ways. He believes that consumers want entertainment, experience and self-identity, not just a product. People always have and always will seek pleasure. The artefacts and products with which we surround ourselves are potential sources of pleasure. They should be designed with a view to how they can provide pleasure to those who use and experience them. This requires a rich understanding of users, an approach to design that sees products not just as tools but as ‘living objects’ (Jordan, 1997, p.250).
The potential fulfilment of needs can promote appeal, attraction and emotions (Hassenzahl, 2004). Designers should be able to evaluate user product experience and user wants and needs, translating them into product qualities to achieve desired user responses (Jordan, 2000).

Crozier (1994) attributes product design, consumer preference and the pleasurability of a product to cultural, historical, economical and technical factors. It is therefore likely that any changes to these factors will have an effect on product design and desirability (Jordan, 2000). Different types of needs are said to be stable, but their relevance and resulting emotions are fluid and fleeting (Hassenzahl, 2004). It is possible that it will become increasingly difficult to predict the tastes and values of users based on their demographic characteristics. This difficulty has created a challenge for those attempting to fit product to individuals (Jordan, 2000).

Individuals’ everyday experiences are shaped consciously or unconsciously by the products that they use. Designed objects have a social and emotional impact on consumers’ lives (Antikainen, Kalviainen and Miller, 2003). Opportunities and constraints provided by technologies and products result in the user’s adaptation. This adaptation in turn affects everyday practices, feelings, identities and sense of self, often in unanticipated ways (Sengers et al., 2005). It is therefore up to the designer to ensure that there are no negative consequences on the user of using or adapting to products that have not been specifically fitted to their needs and wants (Sengers et al., 2005). It is therefore the likely conclusion that designers should carefully consider the values, attitudes and ways of looking at the world that they are unconsciously building into products and the effects they will have (Sengers et al., 2005).

6.2 Pleasure

Jordan (2000) states that compelling products engage on three levels. The first being functionality, the second the associated emotions with the product and the third the aspirational qualities associated with the product. He claims consumers must feel that their choices are “lifestyle affirming”. Products and design decisions are often based on stereotypes in order to appeal to the consumers (Jordan, 2003). It is
Jordan’s (2003) opinion that design for human-beings creates products that are enjoyable, that enhance quality of life and the quality of society as a whole. Design should connect the emotions and needs of the user to the design process (Jordan, 2003). Jordan (2000) defines pleasure as the elimination or absence of pain, or positive joyful feeling. Tiger (1992, cited in Jordan, 2000) outlines a framework of four pleasure types – the physical, social, psychological and ideological.

Physio-pleasure is a pleasure of the body derived from sensory organs. In products these pleasures can be tactile, olfactory, taste, smell, dimensional, weight and sensual feelings, for example. With affective design it is possible to ensure that even those with a sensory disability are not excluded from a meaningful interaction. Products are also able to provide physio-pleasure, in a general sense altering the user’s physiological state. This can be done using colour, for instance (Jordan, 2000).

Socio-pleasure involves enjoyment derived from relationships with others; this includes society as a whole. Possessions are able to facilitate social relationships that are built with other individuals and groups. Possessions can be used purely to inform others of personal status and identity, or the ‘membership’ of a particular social context. Gifts can be representative of relationships, with gifts between intimate partners possibly having different meanings and characteristics when compared with gifts between two friends, for example (Jordan, 2000).

Psycho-pleasure involves people’s cognitive and emotional reactions. Usability can be associated with this pleasure. Difficulties in using a product may place high cognitive demands on the user which may result in negative emotions. A product which allows the user to avoid or minimise unpleasant feelings or tasks can be thought of as fulfilling a psycho-need pleasure (Jordan, 2000).

Ideo-pleasure pertains to people’s values; these may be tastes, morals or personal aspirations. Products are able to portray value, particularly through aesthetics and affect on the surrounding environment (Jordan, 2000). The statement that the product makes may directly affect the value that is assigned to it, by the owner and others, who therefore make conclusions about the owner of the product (Norman, 2004). The four pleasure types framework structures pleasure, but it is not an explanation as
to why people experience pleasure. Products may not be able to, nor do they need to, create all four of these pleasures during interaction (Jordan, 2000).

Lewis (1960, cited in Jordan, 2000) classified pleasures derived from entities, plants, animals or artefacts as being either ‘need pleasures’ or ‘pleasures of appreciation’. Need pleasures accumulate as one is moved from discontentment to contentment. Pleasures of appreciation are not affected by the current level of contentment, and accumulate when one finds something positively pleasurable. In these cases the pleasure inducer is appreciated either in its own right or for the additional pleasure that it delivers.

A study conducted by Jordan (1998) gathered opinion as to what qualities are essential for creating pleasurable products. Responses fit into four main categories – features, quality of manufacture, aesthetics and usability. Other qualities that were recorded included reliability, performance, maintenance needs and low level aspects of aesthetics such as colour (Jordan, 1998).

It is possible that emotions may be able to cover for any usability problems that the user may experience (Norman, 2004). Flaws in the product are likely to be dismissed if the object is enjoyable and fun according to Norman (2004). A pleasant mood enhances creativity and enables a user to overlook and cope with product problems such as usability. Anxiety on the other hand enhances the ability to focus (Norman, 2004). Norman states that we now have evidence that pleasing things work better, are easier to learn, and produce a more harmonious result (Norman, 2002).

### 6.3 Prolonging user pleasure

Davis (2002) states that the “reality of our consumer society is that the pleasure of owning or using a product is a transitory state”. People find pleasure in owning and using products but usually only for a short period of time, after which the product is discarded. It is therefore up to designers to ensure that not only is the pleasure experienced during the enhanced person-product relationship but that it is prolonged for as long as possible. The attachment to a product not only benefits the consumer emotionally but also has ecological benefits. The attached consumer is likely to care
for the product, maintaining and repairing it in order to postpone its disposal for as long as possible (Mugge, Schoormans and Schifferstein, 2008). The consumers’ pleasure should last until the end of the product’s serviceable life. Conversely, initial negative responses can sometimes turn to a positive sense pleasure after a period of use (Davis, 2002).

Esslinger (cited in Demirbilek and Bahar, 2003) believes people keep and take care of products longer due to the associated emotional value. The question of how to maintain a product’s excitement, interest and aesthetic pleasure for a lifetime is one that has sparked much interest. Norman (2004) suggests that the answer may lie in the study of those things that have stood the test of time such as particular music, literature and art, for example. He states that the reason behind this longevity may be due to richness and depth; that there is something different to perceive or focus on with each experience (Norman, 2004). Khaslavsky and Shedroff (1999) believe that longevity lies in the seduction process. It is essential that the user experiences an initial enthusiasm for the product, but it is the rich and compelling experience that allows a product to last the test of time.

A technique which has proven useful in predicting the effects of time on the product-person relationship is to consider the life cycle in terms of an interpersonal relationship (Davis, 2002). The first step of the life cycle is the individual’s first encounter with the artefact where first impressions are given and expectations are set. The individual will decide whether to commit to the artefact and purchase it or not. The individual is able to get to know the product intimately; this is known as the honeymoon period. One of two alternative outcomes will then take place. The product-person relationship will either breakdown, becoming an unpleasant experience or the relationship will endure and continue to provide pleasurable experiences.

There are a number of characteristics that prospective buyers will consider to be important. The release date, novelty and rarity of a product may be important to some, as are its aesthetics, style and fashion. Sociological factors will affect those who are looking to purchase products in order to fit certain cultural groups. The features, function, reliability and durability are other aspects that are often
considered before purchase. The perceived ease of use and the estimated time needed for learning the product’s operation as well as the cost and value for money are also considered when purchasing artefacts (Davis, 2002).

The product-person relationship breakdown can be due to the user’s misconceptions of particular features that were initially appealing but are difficult to use or are not what the user expected or as useful as was expected. If the product was bought due to its novelty, this very novelty may become annoying to the user and result in relationship breakdown. It is also possible that the product as a whole will fail and disappoint the user. Interest in newer versions of the product will also cause the product-person relationship to breakdown.

A prolonged relationship occurs when the needs of the user are more fully satisfied by the product and the passage of time does not reduce the pleasure obtained from the product. In some cases the sense of pleasure can actually increase over time as the user gains confidence in the product and it becomes a familiar, trusted friend. Many people develop sentimental attachments to products which have given pleasure or have served them well (Davis, 2002). Signs of use on the product such as scratching, may also increase a sense of attachment and memories (Mugge, Schoormans and Schifferstein, 2008).

The passage of time can also distort some negative effects into sources of pride and pleasure. For many consumers a product which is durable and which remains functional for longer than expected provides the greatest pleasure. Products also remain satisfying if they can maintain a sense of engagement and fun without being gimmicky. As the user’s needs, skills and abilities change over time, products which can be adapted or can be used in a flexible way will also provide greater satisfaction and pleasure (Davis, 2002).

The social aspects of product ownership and use play an important role in the user’s attachment to their products. The sharing of experiences, feelings and information is said to be rewarding, pleasant and enjoyable. The social facilitation effect is based on the fact that individuals find the product arousing and motivational when performing actions in the presence of others. This arousal makes the actions easier
and more rewarding for the individual (Zajonc, 1965, cited in Brandtzaeg, Folstad and Heim, 2003). Social contact allows for emotional happiness, cognitive stimulation, the opportunity for self-confirmation through the attention of other individuals, the opportunity to gain relevant self-knowledge through comparison with others in the group and the opportunity to gain emotional support and sympathy (Hogg and Adams, 1993, cited in Brandtzaeg, Folstad and Heim, 2003). Competition or contest is also an incentive to perform. It is essential that all humans experience a socially rewarding environment for enjoyment to occur.

6.4 Pleasure and design

Design is becoming more creative, staging a new compelling story for people to experience, speaking to the consumer’s heart rather than the brain (Crossley, 2004). The necessity to gauge the sensations felt by the individual when interacting with a product is becoming more important. There is a need for the product design process to move beyond functionality and usability towards a more complete pleasure-based approach (Bonapace, 2002). There are a number of methods and metrics that can be used to assess product pleasurability. It is apparent, however, that the design process will remain an iterative process, due to continual evaluation of the intended pleasures (Jordan, 2000). Products should, however, be seen as a whole and pleasurability research findings should be seen as independent from and complementary to the creativity and judgement of the designer (Bonapace, 2002).

According to Jordan (1999, cited in Bonapace, 2002) research should examine not only effective evaluation methods but methods for capturing user requirements and methods for early concept evaluation. Jordan (1999, cited in Bonapace, 2002) suggests attitude scales for measuring pleasure; potential behaviour correlates to pleasure and displeasure and the frequency of the product use (Bonapace, 2002). Human factors have methods that are effective in evaluating pleasure levels such as interviews, questionnaires with ranking and rating scales, focus groups and have methods that can be adapted to the investigation for pleasurability.

Data about the relationship between design elements and user evaluations is important and allows for product designers to formulate design strategies (Hsu,
Chuang and Chang, 2000). There are numerous research methodologies that have been used to determine users’ responses to products. Sensorial Quality Assessment Method (SEQUAM) analyses users’ responses to the products’ physical properties such as the visual, tactile and prehensile sensations (Bonapace, 2002). Perceptive sorting elicits stories and experiences of product use and reaction, particularly the functional and aesthetic aspects of the product, with photographic images (Forlizzi, Gemperle and DiSalvo, 2003). The semantic differential method, developed by Osgood et al. (1957, cited in Hsiao and Chen, 2006), surveys affective meanings, typically evaluating the affective responses elicited by product shapes using a set of bipolar adjective pairs, such as modern-classic, for example (Davis, 2002; Hsiao and Chen, 2006).

### 6.5 Summary

This chapter has outlined how important the consideration of user emotions has become in design research, as well as in design practice. It is evident that there are a number of factors that are involved in user pleasure and that a deeper understanding of the user needs and wants is needed in order for products to be pleasurable both in the short and long term.

The means by which a product communicates with the user dictates the interaction that will occur. The embodiment of user perceptions within product has been identified as a means for encouraging pleasurable and prolonged experiences. It is therefore necessary to identify user perceptions. This research aims to focus on the perceptions of the user in relation to the materials from which the product is made. Some of the perceptions that will be investigated are those relating to status and expense, which have been identified in this chapter as playing an important role in the way products are perceived. Jordan’s (1998) identification of pleasurable product qualities such as aesthetics and reliability are also areas that will be investigated in relation to materials as part of this research.

Past experience dictates the future product choices that a consumer will make. Identification of the consumers’ past experiences with materials is likely to therefore identify how they might react and interact with the material in the future. It is,
however, not just important to understand consumers’ expectations of materials, but how to generate and prolong pleasurable interaction through materials too.

The passage of time is the greatest unknown factor in the product-user relationship. There are many variables that will affect a product’s ability to maintain or increase the users’ attachment and interest. In terms of materials the characteristics that assist this attachment or detachment are not yet fully explored. Durability of the material can be thought of as both a physical and emotional characteristic which needs to be explored.

A number of the means by which product pleasure can be prolonged have been explored in this chapter and have been identified as areas of interest in this research. These identified areas, such as aesthetic, status, expense and durability are investigated in relation to materials as part of this research. Chapter 7 will identify research that relates specifically to materials, the perceptions that users have of them and their selection during the design process.
7. MATERIALS

This chapter will cover the literature that identifies the need for more research into what consumers’ conceive of the materials which make up the products that they interact with. The consideration of materials and their selection during the design process will also be examined. New materials and their potential success is also a consideration.

7.1 Materials

Consumers “interact with materials through products” (Ashby and Johnson, 2002, p.73). The selection of materials therefore plays an essential role in the product design process (Doordan, 2003). Science and engineering have both studied the aspects of materials that are significant in the design process (Karana, Hekkert and Kandachar, 2007). These studies have focused on the technical and physical characteristics of materials, such as the density, strength and price.

Many generalisations about material use and users’ responses have been made in the past. Crilly, Moultrie and Clarkson (2004), for example, stated that the consumption of products made from wood and metal reflects on the owner, with the owner considered to be traditional, skilled and precise themselves. Although statements such as these may in fact be correct, there is currently very little comprehensive research regarding the intangible aspects of materials such as consumers’ emotions or beliefs. There is still much to learn about emotional response to products and the aspects of the design or interaction that are able to trigger emotion (Desmet, 2003).

“What something is made of and how the material is employed affects the form, function and perception of the final design” (Doordan, 2003, p.3). Physical experiences, such as aesthetic or tactile feedback for example, and emotional experiences can both result from interaction with a products’ materials. Designers therefore need to consider the materials’ technical properties and the emotional appeal of the sensorial properties in order to create a successful product-user interaction (Karana, Hekkert and Kandachar, 2007).
The material itself is not the only consideration in the material selection process, the manufacturing processes used to make the product are also important (Ashby and Johnson, 2002). Processes can influence the shape, joining and surface of the material. These in themselves can give the product expression, whether it indicates the function of the product, its quality or is a purely decorative feature (Ashby and Johnson, 2002).

### 7.2 The materials selection processes

The technology aspects that dictate a materials’ selection have been extensively studied (Ashby and Johnson, 2002). Material selection tools or libraries have been compiled to facilitate the selection based mainly on the technical aspects of the materials. Properties such as tactile and auditory aspects of materials can be included in these library descriptions of a material, but these describe the technical specifications rather than the consumers’ emotional associations or reactions to the touch and sound (van Kesteren, 2008).

van Kesteren (2008) states that the consideration of materials can be a distinguishing factor in the product-user interaction success. The more that is understood of the link between materials, product and the end users the better the consideration of user-interaction can be taken into account by designers. In the field of material selection there are hardly any techniques which allow for the integration of user-interaction considerations (van Kesteren, 2008). The gap between technological knowledge and the user-interaction aspects regarding materials needs to be narrowed in order to better inform designers and thereby benefit the consumer.

Ashby and Johnson (2002; 2003) and van Kesteren (2008) state that understanding the product designers’ process and material selection can assist in improving the information about materials user-interaction aspects and enable them to better cater to the expectations and needs of the consumer. In the conceptual phases of the design process general and qualitative material choices, such as transparent or rigid, can be used to describe the product’s materials (van Kesteren, 2008). It is generally in the
later ‘specification of production stage’ of the design process that specific materials are selected (van Kesteren, 2008). Deng and Edwards (2005, cited in van Kesteren, 2008) state that the existing materials selection techniques do not support the selection of materials in the early stages of design.

Sleeswijk Visser et al. (2005, cited in van Kesteren, 2008) believe that the application of an understanding of consumer experience in the creative phases of the design can be of great value for product designers. It is this early conceptual design stage that would benefit most from an understanding of the consumer (van Kesteren, 2008). Karana et al. (2007) investigated the aspects of materials that predominantly shape the selection of materials in product design. This was done to emphasis the lack of suitable information available to product designers which focus on the more intangible aspects of materials (Karana, Hekkert and Kandachar, 2007). These intangible material aspects were considered to be important for the conceptual stage of the design process but were not supplied by the current material selection sources (Karana, Hekkert and Kandachar, 2007).

van Kesteren’s thesis (2008) explored how to bring together the technical specification and user consideration, thereby improving the materials selection process for user centred design. The product designers approach to the design process was investigated in order to understand the material selection considerations they have and how these interact. It was found that industrial designers were frustrated that they were not able to select materials based on characteristics other than the technical ones (van Kesteren, 2008).

### 7.3 Introduction of new materials

“Materials are not just a ‘given’ to be incorporated in the designer calculation but are part of the design problem” (Doordan, 2003, p.5). Designers need to match materials to the application. Traditional materials such as wood are embedded in designers’ experience, they know what it is and what it does, new materials however are not (Ashby and Johnson, 2002). Designers do not just rely on what they know of materials but “are always on the prowl for something new (Ashby and Johnson, 2002, p.157)”. The constant addition of new materials to a designers’ pallet can
create opportunity for existing products to be enhanced or for entirely new products to be envisaged (Doordan, 2003). New materials have the ability to improve the experiences that consumers have with their products (van Kesteren, 2008). Likewise, the needs for a particular application or product could create the opportunity for the evolution or creation of a material.

New materials can be found in research and in early stages of commercialisation. Additionally existing materials can be combined to create new materials or can be used in products for which they have not been used before (Ashby and Johnson, 2002). There are a number of factors that can affect the likelihood of new materials being appreciated and accepted by the consumer. Social and cultural attitudes, for example, can lead to rejection or acceptance of a material, but these attitudes can evolve over time (Doordan, 2003). It could be seen as part of the designers’ job to assist the acceptance of new materials through the way they incorporate them into products or the products that they choose to apply them to.

### 7.4 The consumers’ perception of materials

A product’s material interface is what a user interacts with. The user’s senses perceive the product and the material interface. This perception creates some of the experiences and emotions that the user has when engaging with the product (Doordan, 2003). Product designers need to understand the sensations that are perceived to create the appropriate quality of the interaction and experience that they would like in their products.

Ashby and Johnson (2002) state that technical material attributes are extensively documented in texts and software but that materials have many other attributes that are not as clear. These other attributes can include the materials’ affect on the consumers’ senses and their perceptions. The perceptions of a material can have a number of variations depending on the consumer, their culture, demographic, taste and the current fashion for example (Ashby and Johnson, 2002; Ljungberg, 2005). Products are often targeted at specific markets which can make it easier to select materials based on the specific perceptions of the group. It is the designers’ role to
provide this target market with a product that has an intrinsic personality that is sensitive to their context (Ashby and Johnson, 2002). Perceptions of materials do however change over time and it is therefore essential for designers to keep up to date with changes or in some cases instigate change (Ljungberg, 2005).

Karana and van Kesteren (2006, cited in van Kesteren, 2008) investigated the extent to which consumers considered materials when describing a product. It was found that the participants would only talk of materials when prompted about their likes and dislikes of the products’ material. The participants then described physical and sensorial characteristics rather than emotional ones. Studies such as these indicate that materials influence the use and experiences of a product through the sensorial interaction (van Kesteren, 2008).

One school of design thinking states that the ‘honest’ use of materials is essential (Ashby and Johnson, 2002). The deception and disguise of a material is deemed unacceptable. It is said that each material should expose its own intrinsic qualities such as appearance and strength. Ashby and Johnson (2002) state that this idea is the result of the craftsmanship tradition. Each craft, such as pottery or carpentry, exploits the qualities of the materials with which they work (Ashby and Johnson, 2002). Herein lies the argument that a polymer (plastic) has the ability to mimic and it is thus acceptable for it to mimic other materials as this is using the intrinsic qualities of the material (Ashby and Johnson, 2002). Ashby and Johnson (2002) however, debate this argument stating that consumers require other product qualities such as surprise or humour which promote the use of material deception.

**Material meaning**

Consumers interpret meanings in the products they use, own and see. Ashby and Johnson (2003), and Janlert and Stolterman (1997) state that a product personality or character is created by the aesthetics and the associations and perceptions the product invokes. Materials and the manufacturing process play a central role in the functionality, usability, aesthetics, association and perceptions of a product (Ashby, 2004). It can therefore be said that materials play a role in the personality of a product.
Ashby (2004) states that at first glance materials may not be seen as having a personality of their own when in fact they do and that it is the role of the designers to bring this personality to the fore. The properties of the material play an important role in the interaction between user and product and thereby partially influence the use possibilities and personality of the product (Doordan, 2003). A material’s personality will therefore affect the product-user experience (van Kesteren, 2008).

Intangible material aspects, such as the meaning that is attributed to a product through the materials, is something that Karana, Hekkert and Kandachar (2007) have researched. Firstly the aspects of materials that shape the materials selection process were researched, emphasising that the information available in existing material selection sources regarding the intangible characteristics of materials, such as personality or meaning, was insufficient (Karana, Hekkert and Kandachar, 2007).

Karana and Hekkert (2008) then focused on the meaning conveyed by a product’s materials. Materials invoke a meaning, however it is said that this meaning may change depending on the product for which it has been used (Karana and Hekkert, 2008). These meanings will affect the consumers’ evaluation of a product. The meaning of the product and material are derived from the users’ context and the experience a user has had, both with the current product and material, and in the past (Osgood et al., 1957, Mono, 1996 and Johnson, 2007 cited in Karana and Hekkert, 2008). These meanings will continue to change along with the users’ experience. The meanings or qualities of the product or material, such as modern or business-like, can be used by consumers to appraise that product or material (Karana and Hekkert, 2008). Karana and Hekkert (2008) aimed to reveal the aspects that play a crucial role in the attribution of meaning to materials. A ‘Meanings of Materials’ Model was developed as a result of this research. This model indicated that material properties, product use, product shape and product function all contribute to a material’s meaning. This model also expresses that manufacturing process can be considered to affect the material properties and product shape, but not the meaning of the material (Karana and Hekkert, 2008).
Karana, Hekkert and Kandachar (2009) focused on understanding how the sensorial properties of the materials and the manufacturing processes can be used to convey meaning. This study involved seven PhD researchers and eighteen students from the Faculty of Industrial Design Engineering of Delft University of Technology (Karana, Hekkert and Kandachar, 2009). The participants were asked to select five products that they considered to express the following meanings through their materials; (i) aggressive, (ii) nostalgia, (iii) professional, (iv) sexy, and (v) toy-like. These five meanings were linked to sensorial properties of the materials by the participants. It was found that metal and plastics meanings varied more easily over different products than glass and wood (Karana, Hekkert and Kandachar, 2009). The sensorial properties were put in order of the frequency of occurrence to determine their importance (Karana, Hekkert and Kandachar, 2009).

Participants were said to have difficulty selecting products that expressed a particular meaning predominantly by their materials (Karana, Hekkert and Kandachar, 2009). The materials meanings were, in general, found to mostly depend on the product to which they were embodied (Karana, Hekkert and Kandachar, 2009). The function, shape and context of use of the selected materials affected the meanings that the participants had of the product (Karana, Hekkert and Kandachar, 2009). Personal experiences and backgrounds were said to influence the association of meaning too (Karana, Hekkert and Kandachar, 2009).

Overall the Karana et al. study (2009) revealed that the meaning attributed to a material relies on the (i) the type of meaning, (ii) the type of materials, (iii) the product in which the material is embodied, (iv) how the product is used and (v) the background of the user. The sensorial properties of materials were said to play a crucial role in meaning that is attributed to materials. Manufacturing processes create certain sensorial experiences that might affect how we appraise materials, but the links between the manufacturing and sensorial experience were not detailed. “In general, it is impossible to determine a one-to-one relationship between a certain property and a meaning” (Karana, Hekkert and Kandachar, 2009, p.2784). It was the conclusion of this research that material meaning is complex and is influenced by more than just obvious properties (Karana, Hekkert and Kandachar, 2009).
More generally, Pallasmaa (2000) states that stone can speak of its geological origins and can be associated with durability and permanence, while brick is associated with earth, fire and traditional construction. Bronze conjures up thoughts of the extreme heat needed for its manufacture, the casting and the changing in patina as it ages. Wood can be thought of as having two existences and time scales, the first being its life as a tree and the second life is that of a human artefact. These materials and surfaces are able to speak of time in a pleasurable way.

7.5 Durable and sustainable material considerations

Materialistic orientation is said to be deeply rooted in Western culture, with the consumption and throw away attitude coming under much scrutiny due to concern for issues such as environmental resources and pollution (Belk, 1982, 1983, 1985; Tawney, 1922; Loft, 1971 and Fromm, 1978 cited in Dittmar, 1992). Philips Corporate Design (PCD) stated that as humans’ concern for the environment increases, the relationships with it will change too (Lambourne, Feiz and Rigot, 1997).

The quality and durability of a product are also highly influenced by the materials it has been made from. The prediction and assessment of a materials’ performance throughout the product’s life cycle is also needed by designers in order to guarantee a products’ reliability and durability. Specifications about the aging of a material can be found in some of the material libraries (van Kesteren, 2008). These, however, would be technical specifications rather than intangible attributes. Technical specifications may be able to tell a designer about the physical depredation of the material but what about the consumers’ reactions? Intangible attributes, such as consumer emotion relating to the durability of a material is something that has not been extensively researched. The wear and aging of a material may, depending on the product it has been applied to and context of use, elicit varying emotional responses from the consumers.

One of the design research topics that has received an increase of interest in recent years is that of sustainability. Limited resources and the serious environmental impacts of over consumption have made a more sustainable lifestyle increasingly
important (Ljungberg, 2005). Ljungberg (2005) states that a sustainable product aims to have as little impact on the environment as possible during its life cycle. It is not just the technical and physical constraints of the materials that are important in reducing the environmental impact of consumer products however. Aspects of the materials that relate to the consumers’ emotional relationship and understanding of products are also important. Whether the product or the material has the appropriate reputation or style for the users’ social and cultural situation is also important to sustainability (Ljungberg, 2005).

These emotional aspects make the designers’ job of selecting materials increasingly difficult, and this challenge is increased by the fact that consumer emotion has the ability to change with market trends (Ljungberg, 2005). Ljungberg (2005) states that educating and creating a more aware consumer can assist in prospective buyers making more sustainable decisions regarding product purchases. Designers are also able to some extent to control issues that occur during the product-user relationship. Creating pleasurable products that allow and encourage repair or reuse can facilitate prolonged product-user relationships and thereby be more sustainable (Ljungberg, 2005). The materials that a product is made from can play an important role in this being achieved.

7.6 Summary

The information discussed in this chapter indicates that user consideration in the selection of materials can play an important role in a product’s ability to provide appropriate interaction. Information relating to the users’ perceptions of materials needs to be better understood. It is for these reasons that this research aims to understand what the consumers conceive about the materials that are used in products. The pleurability of materials has yet to be specifically researched. How material characteristics, such as sensorial, contextual and durability, affect the user emotion will also be focused on.

A number of authors state that these user considerations need to take place in the conceptual or creative stages of the design process (Karana, Hekkert and Kandachar, 2007; Deng and Edwards, 2005 and Sleeswijk Visser et al., 2005 cited in van
Kesteren, 2008). It is probable that this research will contribute to this stage of the design process. New materials, an inevitable occurrence, and their success are affected by consumer opinion. Understanding the emotions linked to current materials may give some clues as to how these new materials will be taken up or possibly ways to encourage user interest.

Identity can be expressed by any number of material characteristics (Karana, Hekkert and Kandachar, 2009). Characteristics such as the users’ environmental stance and their emotions regarding the durability of materials were not, however, mentioned in this study. It is for this reason that this research aims not only to focus on the consumers’ perception of new products or materials but also what is thought of the effect of the aging and wearing process that inevitably takes place.
8. RESEARCH PLAN

Chapters 2 to 7 have covered available literature of the highest level of thinking spanning a number of decades that is relevant to the direction of this research. It can be seen that there is a need for a deeper understanding of consumers’ needs and wants, especially in relation to the materials that are used in the creation of products. It is due to this literature that the research question evolved. This research focused on understanding the consumers’ concepts of materials. This chapter outlines the evolved aim, objectives and questions behind this research. Documentation of the research plan and method that were formulated to generate information regarding the consumers’ concepts of materials is also shown.

8.1 Research aim and objectives

The aim of this research was to identify consumers’ concepts of materials.

In order to achieve this aim a number of objectives were identified. The objectives of this research were to:

- Explore the consumers’ concepts of specific materials
- Identify if there are differences in the concepts of males and females
- Identify how these consumer concepts of materials may be used to enhance emotional attachment with products to lengthen the duration of the product-user relationship

8.2 Research questions

The main question that this research therefore set out to answer was:

- What are consumers’ concepts about materials?
Sub-questions

Sub-questions were developed to better focus the direction of this research. The three sub-questions were:

- Do male and female consumers have different concepts of materials?
- Do durability and changes in the appearance of the material due to age and wear have an effect on the product-user relationship?
- How can consumers’ concepts of materials assist in the creation of emotionally durable product-user relationships?

8.3 Research plan

This study set out to collect data directly from consumers about their concepts of materials. Concepts for the purpose of this study have been defined as the abstract or general ideas or mental images inferred or derived from consumers’ experiences. To gather this information the research plan was divided into six stages: (i) experiment design, (ii) testing of the experiment, (iii) the experiment, (iv) analysis of the experiment data, (v) identification of the experiment findings and (vi) identification of the significant findings and the contributions of this research to knowledge. Figure 1 illustrates this research plan. The first stage of the research plan was to design an appropriate experiment that would gather the information on consumers’ concepts of materials. The development stages of the experiment are shown in Appendix A. Details relating to the final experiment design will be discussed in this chapter. The second stage of the research plan was to conduct a pilot study in order to verify that the research methods were effective in collecting the appropriate data. The success of the pilot study led to the third stage of the research plan which was to conduct the main study. The analysis (fourth stage) and the findings (fifth stage) from the experiment will be discussed in depth in Chapter 9. The sixth stage of the research plan was the identification of the implications of this research, and this will be discussed in Chapter 10.
There were many considerations involved in developing an appropriate experiment that would generate the type of information that was required to answer the research questions. Considerations included:

- Experiment methods
- Materials and concepts to be discussed by the participants
- Participant screening and organisation
8.3.1 Experiment methods

For the purpose of collecting data on consumers’ concepts of materials it was necessary to gather information directly from the consumer. It was decided that participants should take part in a co-discovery which requires two participants to talk together while being observed (Jordan, 2000). It was thought that experiment participants would feel more comfortable discussing their feelings and opinions about materials with someone whom they believed to have similar design and material knowledge. It was felt that if the participants had had to discuss their material concepts with the researcher they may have felt the need to give what they perceived to be the correct answer or opinion. The level of participant comfort was deemed to be the key to them revealing their emotions towards the materials.

It was also one of the objectives of the research to identify the concept differences between genders. It was for this reason that each of the co-discoveries consisted of one male and one female participant. This allowed clear documentation of the discussion between the two genders, which would allow the identification of any gender differences in material concepts.

There were 30 participants in total. Morse (1994) recommended that grounded theory studies should include 30 to 50 samplings. Due to the qualitative nature of this research 30 participants was deemed to be sufficient for retrieving meaningful data. The duration of each co-discovery allowed participants to discuss their material concepts in depth. As a result of the initial questionnaire and the co-discovery, rich textual, audio and visual data was recorded.

8.3.2 Materials and concepts prompts

It was the researcher’s intention to play a purely observational role in the co-discovery. A method of delivering information to the participants which would prompt the discussion was therefore necessary. Products, material samples and textual prompts were all considered. Textual prompts however were deemed to be the most appropriate for eliciting discussion about the concepts of materials. Written
prompts let the participants interpret and discuss the materials and concepts that were relevant to their experiences and memories.

To gain a broad understanding of the consumers’ concepts of materials the list of textual prompts was carefully selected. Both material name prompts and concept prompts were considered. The prompt selection process is outlined in Appendix A. Textual material prompts were used to direct conversation ensuring that only the materials of interest were discussed. It was found that six material categories sufficiently encapsulated the materials that are commonly used in the production of consumer items. Initially eight concept prompts were selected to assist participants’ in a broad discussion; the additional concept prompt of ‘context’ was later deemed necessary as a result of the pilot study findings.

The Concept Prompt Probe was designed to display the material and ‘concept’ prompts. The Concept Prompt Probe was shown and explained to the participants at the beginning of the experiment. The explanation of the experiment is shown in Appendix B. Table 1 shows the materials and the concept prompts shown on the probe.

Table 1. Concept Probe Prompts

<table>
<thead>
<tr>
<th>Materials prompts</th>
<th>Metal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plastic</td>
</tr>
<tr>
<td></td>
<td>Wood</td>
</tr>
<tr>
<td></td>
<td>Glass</td>
</tr>
<tr>
<td></td>
<td>Ceramic</td>
</tr>
<tr>
<td></td>
<td>Textile</td>
</tr>
<tr>
<td>Concept prompts</td>
<td>Appearance</td>
</tr>
<tr>
<td></td>
<td>Texture and touch</td>
</tr>
<tr>
<td></td>
<td>Properties</td>
</tr>
<tr>
<td></td>
<td>Context</td>
</tr>
<tr>
<td></td>
<td>Wear, aging and disposal</td>
</tr>
<tr>
<td></td>
<td>Pleasure</td>
</tr>
<tr>
<td></td>
<td>Displeasure</td>
</tr>
<tr>
<td></td>
<td>Status</td>
</tr>
<tr>
<td></td>
<td>Memories and favourites</td>
</tr>
</tbody>
</table>
8.3.3 Participant screening and organisation

The experiment required 30 participants, 15 of each gender, who were available for approximately one hour. Each experiment consisted of two participants, one male and one female. Due to the need for information regarding consumers’ concepts of materials, participants were screened to ensure that they had no specialist design education as this may have created bias in the research outcome. For this reason industrial designers, interior designers and architects, for example, were excluded from the experiment. It was deemed that trade knowledge or hobby activities involving the materials would be acceptable for the experiment; this information was collected via a questionnaire shown in Appendix B. Participants were also selected based on specified age demographics. Participants were recruited through current contacts of the researcher and through email advertisements. Interested participants were asked to select their own participant partner if possible. This procedure minimised selection bias as participants who were unknown to the researcher or not available through email contact were then also recruited.

For the purpose of recording visual and verbal data and ensuring consistency of context the participants were required to take part in the experiment in the People and Systems (PAS) Laboratory located on Level 4, D Block of Queensland University of Technology (QUT), Gardens Point Campus.

Participants were given the ‘Participant Information’ kit to read (Appendix C), informing them of the experiment and their participation and rights. Participants were required to sign the consent form attached (Appendix C).

An ‘Initial interview’ questionnaire was filled in by the participants (Appendix B). This short questionnaire obtained some basic information. Contact information was collected for further contact with the participants if necessary. Other information that might affect their concepts of materials was also requested in the questionnaire, such as their age, cultural heritage, profession and hobbies that involved the specified materials. The results of this ‘Initial interview’ questionnaire can be viewed in Appendix D. Appendix D shows the broad range of education levels, professions and
cultural backgrounds that the selected participants had. This wide variety of participants ensured the minimisation of bias due to demographic situations.

A short document was then given to the participants explaining the co-discovery process and the use of the Concept Prompt Probe (Appendix B), and any questions the participants had regarding the process were then answered. Visual and audio recordings began and the participants were verbally prompted to begin the co-discovery discussion. Two of the participants can be seen in Figure 2 using the Concept Prompt Probe.

![Image of study participants using the Concept Prompt Probe]

Figure 2. Study participants using the Concept Prompt Probe

The time participants spent discussing each of the concepts listed on the Concept Prompt Probe was monitored by the researcher. If participants spent too much time discussing one of the concepts they were verbally prompted to discuss any final or pressing points they would like to get across and then move on to the next listed concept. Once the discussion of all the concepts was over the participants were then free to leave the laboratory.

8.4 Main Study

A pilot study was implemented to identify and assess the direction of the research, the quality of the retrieved data and to identify any research plan changes that may need to occur. The Concept Prompt Probe was successful in prompting participants’ discussion on their concepts of materials and was therefore used in the main study.
One change to the Probe resulted from the pilot study’s indicative findings. This was
the addition of a concept prompt, which aims to reveal more information relating to
the context of the materials. This ‘context’ concept prompt was added with the
intention of gathering more specific information about how consumers currently
view the materials’ contexts and the contexts to which they believe the material is
best suited. The overall success of the pilot study resulted in the main study being
conducted in the exact same manner. A summary of the main study’s details can be
seen in Table 2.

Table 2. Summary of Study

<table>
<thead>
<tr>
<th>Number of Participants per experiment</th>
<th>2</th>
<th>Male</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>1</td>
</tr>
<tr>
<td>Number of experiments</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of participants</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender demographics</td>
<td>Male</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Number of participants for each of the age demographics</td>
<td>20 to 35 years old</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>36 to 50 years old</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>51 years old and upwards</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Participant screening</td>
<td>No participants with design training were used (to prevent bias results)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recruitment</td>
<td>Participants were already known by the researcher or recruited through advertisement emails and participated on a voluntary basis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment venue</td>
<td>People and Systems Laboratory, D Block, Gardens Point, Queensland University of Technology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment duration</td>
<td>Approximately 60 minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participant consent</td>
<td>Participant information packs and consent form given to the participants at the beginning of the session and signed before the recording began</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data retrieval methods</td>
<td>• Initial questionnaire: gained personal information about the participants such as age and profession</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Co-discovery: the Concept Prompt Probe explained and given to the participants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data collection methods</td>
<td>Audio tape and DVD used to gain audio recordings of the participants, and then transcribed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Analysis Tools</td>
<td>The transcribed conversations analysed in ATLAS.ti</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8.5 Summary

This chapter has outlined the research plan which shows the experiment process from the experiment design through to the identification of the research findings which contribute to research knowledge. Details relating to the experiment methodology and the way in which the main experiment was conducted have been explained. The following chapter will outline the results of the experiment. The analysis of retrieved data and findings of the experiment will be discussed.
9. ANALYSIS OF FINDINGS

The transcriptions of the discussions had by the participants were coded in the qualitative analysis program ATLAS.ti. The codes were used to identify consumers’ concepts of the materials and allowed each of these individual concepts to be analysed. This chapter will outline the coding that was developed and the consumers’ concepts of materials that have been identified.

9.1 The analysis and coding scheme

The transcriptions were coded to allow data comparison and analysis. An example of a transcribed experiment can be viewed in Appendix E. The codes emerged from the analysis of the pilot study transcripts and were later slightly modified during analysis of the main study. Three coding categories were developed; (i) material, (ii) participant and (iii) concept. The material codes identify what material the participant statement refers to. The participant codes identify which of the participants was responsible for the statement and the concept codes category identifies what concept the statement is linked with. The definitions of the material and concept codes can be seen in Table 3. A sample of the data analysis can be viewed in Appendix F.
Table 3. Material and concept code definitions

<table>
<thead>
<tr>
<th>Code</th>
<th>Definition of the Code</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Materials</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceramic</td>
<td>Shaped clay, hardened by baking. Examples include pottery and china</td>
<td></td>
</tr>
<tr>
<td>Glass</td>
<td>Hard, usually transparent. Examples include cut, blown or stained glass</td>
<td></td>
</tr>
<tr>
<td>Metal</td>
<td>Chemical element or mixture of elements such as iron, gold or stainless steel</td>
<td></td>
</tr>
<tr>
<td>Plastic</td>
<td>Artificial substance which is heated to form objects, may include hard and soft</td>
<td></td>
</tr>
<tr>
<td></td>
<td>plastics such as silicon, polyethylene and polypropylenes for example</td>
<td></td>
</tr>
<tr>
<td>Textile</td>
<td>Cloth woven by hand or machine. Examples include cotton, silk or polyester</td>
<td></td>
</tr>
<tr>
<td>Wood</td>
<td>Product derived from trees. Examples include teak, oak and pine</td>
<td></td>
</tr>
<tr>
<td><strong>Concepts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of Material –</td>
<td>When consumers believe that the material has only started to be used in recent years</td>
<td>New material</td>
</tr>
<tr>
<td>Contemporary or Traditional</td>
<td>(contemporary) or that it has been used for many years (traditional)</td>
<td>Modern</td>
</tr>
<tr>
<td>Appearance</td>
<td>The physical appearance or the way in which the material or object looks to the</td>
<td>Smooth</td>
</tr>
<tr>
<td></td>
<td>individual</td>
<td>Metallic</td>
</tr>
<tr>
<td>Context</td>
<td>Relates to the where or how the material/object is kept, produced, sold, used or</td>
<td>Antique</td>
</tr>
<tr>
<td></td>
<td>categorised</td>
<td>Office</td>
</tr>
<tr>
<td>Context – Specific</td>
<td>5 specific contexts were coded: Industrial/Architectural, Interiors/Wall Coverings,</td>
<td>Carpeting</td>
</tr>
<tr>
<td></td>
<td>Packaging, Products and Sculpture/Artistic</td>
<td>Bottles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chairs</td>
</tr>
<tr>
<td>Displeasure</td>
<td>The object or the material causes negative emotions</td>
<td>I hate it</td>
</tr>
<tr>
<td></td>
<td></td>
<td>It doesn’t look good</td>
</tr>
<tr>
<td>Disposal – Complete</td>
<td>When the product or material are no longer being used and are permanently disposed of</td>
<td>Just throw it away</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Burning</td>
</tr>
<tr>
<td>Disposal – Recycle</td>
<td>When the unwanted product or material is reprocessed in order to be used again</td>
<td>Recycling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Material used again</td>
</tr>
<tr>
<td>Disposal – Reuse</td>
<td>When the unwanted material or object is sold and reused for a different purpose</td>
<td>Making something else</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reuse it for…</td>
</tr>
<tr>
<td>Disposal – Biodegradable</td>
<td>When the material or object is able to be broken down by the elements</td>
<td>Biodegradable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Broken down</td>
</tr>
<tr>
<td>Durability</td>
<td>How long the material or product is used and the degradation due to aging or use</td>
<td>It is disposable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Warps/ Dents</td>
</tr>
<tr>
<td>Expense</td>
<td>The monetary value of the product or material</td>
<td>Cheap/Expensive</td>
</tr>
<tr>
<td>Maintenance</td>
<td>The process of continuing to keep in condition or existence</td>
<td>Painting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cleaning</td>
</tr>
<tr>
<td>Material name</td>
<td>The use of a specific material name or when referring to a specific material</td>
<td>Silk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Terracotta</td>
</tr>
<tr>
<td>Memories &amp; Favourites</td>
<td>Experiences or feelings associated with the material or object currently or in the</td>
<td>Remember…</td>
</tr>
<tr>
<td></td>
<td>past</td>
<td>I love/loved…</td>
</tr>
<tr>
<td>Origin – Natural or</td>
<td>Relates to the consumers’ belief regarding the origin of the material – from natural</td>
<td>Trees</td>
</tr>
<tr>
<td>Manufactured</td>
<td>resources or manmade resources</td>
<td>Organic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Artificial</td>
</tr>
<tr>
<td>Pleasure</td>
<td>A preference for or positive feeling associated with the material or object</td>
<td>I like…</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I love…</td>
</tr>
<tr>
<td>Properties</td>
<td>The material qualities or descriptions</td>
<td>Porous/Non-porous</td>
</tr>
<tr>
<td>Status – High, Neutral,</td>
<td>Amount of respect, admiration and importance received due to ownership of a material</td>
<td>Everyone likes it</td>
</tr>
<tr>
<td>Low or Variable</td>
<td>or object, as well as how it would make them feel</td>
<td>Utilitarian</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tacky</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Variable</td>
</tr>
<tr>
<td>Texture and Touch</td>
<td>The physical feel or tactile information received during interaction with the</td>
<td>Cold</td>
</tr>
<tr>
<td></td>
<td>material or object</td>
<td>Smooth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Varying</td>
</tr>
</tbody>
</table>
9.2 Study findings

A number of interesting findings were revealed through the study analysis. These will be explained in the appropriate detail in the remainder of this chapter.

9.2.1 Material name frequencies

The ‘material’ codes were used to identify what material or materials a participant statement referred to. Figure 3 illustrates the frequencies that each of the materials was referred to as a percentage of the total number of times all the materials were mentioned during all experiments. Figure 3 also shows comparisons between the frequencies of responses by the genders for each of the materials.

![Figure 3. Frequencies of total number of times each material mentioned](image)

Figure 3 indicates which of the materials the participants felt most knowledgeable about and had the most emotion towards, whether this was positive or negative emotion. Wood was mentioned slightly more than the other materials, followed by plastic. Metal had the third highest frequency, followed by textile and then glass. Ceramic was the least mentioned material, with a frequency difference exceeding 2% less than the other materials, the most significant difference indicated by Figure 3. For all six of the materials both the males and females made significant contributions to the discussions. The difference between the male and female contribution did not
exceed more than 1% of the total frequency for any of the six materials, indicating a very similar frequency of knowledge or opinion regarding each of the materials.

### 9.2.2 Concept code frequencies

Figure 4 shows the frequency for each of the ‘concept’ codes outlined in Table 3 (p. 105). The individual ‘concept’ code frequencies are shown as a percentage of the total frequency that the ‘concept’ codes recorded.

![Figure 4](image-url)

Figure 4. Frequencies of the ‘concept’ codes occurrence

Figure 4 shows ‘properties’ (18%) and ‘specific context’ (18%) were the most frequently mentioned ‘concepts’. The frequency difference between these two ‘concepts’ and the other recorded ‘concepts’ is 10% or more. Participants expressed varying concepts within each of the individual ‘concept codes’ for each of the materials. The remainder of this chapter will discuss the analysis of individual or groups of codes.

### 9.2.3 Pleasure and displeasure

The ‘pleasure’ and ‘displeasure’ codes were used to identify when a participant had either a positive or negative emotional reaction to one or more of the materials. The ‘pleasure’ code received the fourth highest concept code frequency with 8% (Figure 4). Figure 5 shows the frequency that ‘pleasure’ was mentioned for each of the six
materials as a percentage of the total ‘pleasure’ code frequency. Wood (28%) was clearly thought of as the most pleasurable of the materials. Textile (17%), glass (16%), metal (16%) and ceramic (14%) had similar response frequencies, whilst plastic received the lowest with 9%. Females had slightly more pleasurable associations with the materials than the males, with the exception of plastic and metal which received equal gender frequencies. Females tended to be more passionate and elaborate more than their male counterparts on the reasoning behind their pleasurable associations.

![Figure 5. Frequencies of ‘pleasure’ concept code occurrence](image)

‘Displeasure’ received 6% of the total concept code frequencies, and was the ninth most frequently mentioned concept (Figure 4). Figure 6 shows plastic (29%) had the highest ‘displeasure’ frequency. Female and male frequency differences (2% or less) appear to be minor, as reasons behind these associated emotions were agreed upon by both genders, with the passion for the beliefs changing slightly depending on the material and the reasoning for the emotions felt.
‘Pleasure’ seemed to outweigh ‘displeasure’ indicating that participants tended to focus more on positive emotions when talking of materials and the products that they relate the materials to. ‘Pleasure’ and ‘displeasure’ were linked to a number of the other codes. The links between pleasure or displeasure and the other concepts will be discussed in more detail in Chapter 10.

### 9.2.4 Properties

Figure 4 (p. 97) shows that the ‘properties’ code was the most frequently recorded code. The distribution of the ‘property’ code frequency amongst the materials is illustrated in Figure 7. Gender frequencies had a maximum of 1% difference. The ‘property’ participant statements indicate that both genders had an equal depth of ‘properties’ concepts. The frequencies for the materials were distributed, with textile having the highest response of 19% and ceramic having the lowest with 5%.
The “properties” were often linked to the other physical and emotional “concepts” by the participants. Material properties and their linkages with other concept codes such as ‘appearance’ and ‘texture and touch’ will be discussed where relevant during the analysis of the other codes.

### 9.2.5 Specific contexts

The category of ‘specific context’ was the second most frequent ‘concept’ with 18% (Figure 4, p. 97). It is evident from the discussions that participants had a tendency to relate the materials to an object as a means to describe the materials’ physical and emotional attributes. Alternatively, participants also described a physical or emotional attribute and then justified themselves by providing an example of an object. This indicates that it was difficult for the participants to think of the materials as an object in their own right.

Participants described six very distinct ‘specific contexts’ whilst discussing the specified materials. Figure 8 shows each of the six ‘specific contexts’ as a percentage of the total number of times ‘specific contexts’ were mentioned. The ‘product’ ‘specific context’ dominated the participant discussions (55%). The
‘industrial/architectural’ (13%), the ‘clothing/bedding’ (11%) and the ‘wall and floor interiors’ (11%) ‘specific concepts’ had a moderate number of responses. The least number of responses were those received by the ‘packaging’ (5%) and the ‘sculptural/artistic’ (4%) ‘specific contexts’.

Figure 8. Frequencies of the ‘specific contexts’ codes occurrence

The ‘product’ context can be seen to have the most significant gender frequency difference with male responses exceeding female responses by 4%. This was thought to have occurred as females were inclined to discuss products in depth whilst male participants tended to list product associations without expanding on their feelings to the same extent.

Appendix G shows examples of the objects that were discussed by the participants for each of the materials. Many of the ‘specific contexts’ were common discussion points amongst many of the participants, whilst some were only mentioned by one participant. The ‘specific contexts’ discussed indicate where and for what the participants have noticed the use of the materials. These ‘specific contexts’ included current applications, such as plastic takeaway containers, or previous applications,
such as wooden televisions. These concepts of past and current ‘specific context’ and the emotions associated with them may have an effect on what the consumers believe the materials should and should not be used for in the future.

9.2.6 Durability

The ‘durability’ frequency was 8% of the total ‘concept’ codes (Figure 4, p. 97). The ‘durability’ concept relates to the wear and aging properties of the material. It also includes participant discussion that related to what physical durability issues would dictate the disposal of an item. The materials’ ability to induce emotional attachment, and thereby either increase or decrease the duration of use or ownership, is also included. Figure 9 shows that participants discussed plastic (21%) the most, with a frequency of 4% more than wood (17%) and glass (17%). Metal followed closely with 16%, then textile (15%) and ceramic (12%).

![Figure 9. Frequencies of ‘durability’ concept code occurrence](image)

**Plastic**

Plastic (21%) had the highest ‘durability’ frequency and tended to be thought of as disposable right from the beginning of the consumer object relationship. Female participant 3 thought that plastic is “not something that anyone is particularly attached to or will need to keep for a long time or really put a lot of thought into
buying”. Statements such as this indicate a link between the consumers’ attitude towards the disposal of an object due to a particular material.

Most participants believed that plastic does not age or wear particularly well. Scratching was said to occur easily and diminish the appreciation of plastics’ appearance. Wear due to the sun, such as deterioration and discolouration, was a common topic touched upon by the majority of participants. A common example that participants gave to justify these thoughts was white plastic outdoor furniture. These outdoor chairs were also a common example given when participants were explaining plastics’ flexibility and ultimate snapping, splitting or breakage. Plastic was also thought of as rigid and brittle, and that these properties lent themselves to breaking, cracking or shattering as a result. Plastic was viewed as a material to be replaced rather than repaired.

‘Designed obsolescence’ was also referred to by three of the participants as a reason for plastic being less durable than some of the other materials. Female participant 5 linked her displeasure of plastic with consumerism, that with plastic “everything’s disposable, everything’s convenient, you just use it and throw it away”. Participants related plastic to waste and thereby displeasure.

Pleasure and the durability was said to depend on the type of plastic and what it was made into, with ‘properties’ such as substantial weight being able to convey quality, expense and status. One of the positive points made about the durability of plastic was that in some situations, mainly for outdoor activities such as camping, plastic was more appropriate due to its resistance to breaking when dropped.

Participants were of two opinions relating to the durability of plastic; (i) it has a short usable life and (ii) that it has an extremely long physical life. Participants felt that plastic does not tend to last, such as Female participant 10 who in her search for a new sewing machine would “go and tap them all”. She stated that “I might come to one if I’m lucky that’s not plastic and that’s the one I’ll zero in on.” Participants were also of the opinion that with plastic “once it’s there it’s there forever” (Male participant 7), unless it were specifically designed to be biodegradable.
Wood

Wood had the second highest frequency (17%) for the ‘durability’ concept (Figure 9). There appeared to be three main topics that the participants discussed relating to woods’ durability. These were (i) the accumulation of character, (ii) that it was long lasting and (iii) the properties that resulted in it wearing badly.

Female participant 2 felt that “as aging goes it seems to be better as it gets older”, which seemed to be a consensus amongst many of the participants. Wood was also said to increase in value with age and that the aging process of wood tended to be a graceful one. The blemishes and wear that appear on wood were said to be a part of the story that the product told and the accumulation of character.

The durability of wood was said to be extremely good, with the majority of participants stating that it ages well and does tend to last for years. It was, however, thought that woods’ longevity depended on the type of wood that was used, what it was being used for and the maintenance that it received. Although wood may over time become worn it was said to be a pleasure that wood could be regenerated to its former appearance or reused for another application.

Termites, borer, dry rot and wet rot were said to be very displeasurable. Moisture was associated with chipboard and its disintegration which was viewed as displeasurable. The warpage and brittleness were said to be the result of aging and the location that the objects were kept in. Scratching of the surface was also displeasurable but was also repairable, which was considered pleasurable. Overall, wood was considered to have extremely pleasurable durability. The severity of the displeasure regarding woods’ durability seemed to be inflated by the fact that the majority of objects that were mentioned by participants as having succumbed to these displeasurable wear characteristics were cherished possessions.

Glass

Participants thought that glass ages and wears very well, with Male participant 13 stating that it lasts for “thousands of years”. Wear was attributed to how much, and for what, the glass was used. Glass, like ceramic, was said to be long lasting but has
the ability to break, shatter and crack. It was mentioned by a number of participants that contemporary glass products tend to be more durable and they “aren’t as fragile as they used to be” (Male participant 11). As a result of the understanding that glass is fragile, participants discussed how they attempt to treat glass objects with the appropriate level of care. Use was described as resulting in a scratched or cloudy appearance in some instances. A significant number of participants also mentioned that glass windows tend to “seep down” over time as a result of it being a “super cool liquid” (Male participant 13).

**Metal**

Metal had a frequency of 16% (Figure 9) and was thought to be extremely well wearing; that it is “tough and uncompromising” (Female participant 14). It was a common concept that metal can tend to corrode but this did not seem to alter the participants’ opinion that it was long lasting. Different methods of reducing corrosion were also mentioned by participants.

**Textile**

Textile had a frequency of 15% (Figure 9) and was the fifth most frequently mentioned material in relation to durability. Textile curtains and furniture coverings were considered to be long lasting, while items such as clothing were considered to be less so. The wear and aging of textile included softening, fading, stretching and losing tension, which was considered to be both pleasurable and displeasurable for varying reasons. Participants felt that clothing and upholstery may become softer and more comfortable with age. On the other hand it was also said that textile could have a displeasurable appearance due to age and wear.

The care one takes with textile was said to reflect upon how it wears. Appropriate care was said to significantly increase the life of the textile, depending on where they were made, what they were made from and how much they cost. Textile was said to be temperamental and cause displeasure due to becoming threadbare, fading, discolouring, picking up smells and being eaten by moths. Tearing and ripping, another symptom of the aging and wearing of textile was also considered
displeasurable. The fact that one can mend or fix textile was, however, a slight redeeming point.

Textile had much emotional value placed upon it, with wear and aging being deemed displeasurable for this reason. Fashion was considered to dramatically affect the emotional durability of the textile, resulting in textile being “highly disposable” (Female participant 12). Natural and synthetic textiles or a blend of the two were said to have differing durability. Cotton and other organic textiles were said to wear to the point of disintegration and that this was pleasurable due to environmental concerns. Synthetics, on the other hand, were thought of as being displeasurable because they are hard to dispose of once they are not needed anymore.

**Ceramics**

Ceramic had a 12% frequency on the durability code occurrence (Figure 9). Ceramics’ wear and aging was considered by most of the participants to be negligible. A number of participants referred to the fact that ceramic can last thousands of years and referred to remnants of ancient pottery that have been discovered in archaeological digs. It was noted by most that although ceramic may wear very well it is also subject to damage such as chipping, cracking and breaking if not cared for. A small number of the participants mentioned that fine china and porcelain is surprisingly stronger than one would think and that “just ordinary everyday ceramics are quite crude and I don’t think they last as long” (Female participant 8). Replacement of ceramics was said to be rare. Ceramic was said to be something that was not easily disposed of, that although ceramic artefacts may go out of fashion consumers are likely to agree with Male participant 15 and think that “the only time you dispose of something [ceramic] is when it actually breaks”.

**9.2.7 Appearance**

The ‘appearance’ concept had the fifth highest concept code frequency of 7%, (Figure 4, p. 97). Figure 10 shows the ‘appearance’ code frequency distribution between the six materials. The difference between glass (25%), the highest frequency, and plastic (11%), the lowest frequency, is considerable.
Glass

Glass (25%) received the highest frequency and was said to come in many forms, with ‘appearance’ concepts being based on the ‘specific context’ in which participants associated the use of glass. The most common ‘appearance’ was that it was transparent, with windows and drinking glasses being the most common ‘specific context’ link. Glass was also described as appearing bubbly, rippled, mirrored, coloured, tinted, frosted and etched. The appearance was also closely linked with ‘texture’ such as smooth, rough, cool, sleek and slippery, and the properties such as delicate, fragile, strong, pure and useful due to its transparency.

Pleasure was closely linked to the appearance of glass which was described as beautiful, awesome, gorgeous and amazing for example. These positive descriptors were mostly used in conjunction with ‘specific contexts’ such as collectables, crystal and cut or coloured glass. Glass was also found pleasurable due to its “cleanness and simplicity” (Female participant 12), with most participants acknowledging the pleasure associated with windows in the architectural context. Pleasure resulted from the experience of light, expanse and scenery or weather changes allowed by these transparent windows.

Figure 10. Frequencies of ‘appearance’ concept code occurrence
A few of the male participants felt that glass was used in purely functional ‘specific contexts’ and they were therefore not emotionally affected either way. Male participant 3, for example, stated that “you sort of see the shape of glass more than the material…it’s about the way the light goes through it” or “what it contains”. This neutral opinion of the appearance of glass by some of the male participants is one of the reasons why the female frequency was 2% higher than the male responses; the largest gender difference for the ‘appearance’ concept.

Displeasure was rarely mentioned in relation to the appearance of glass apart from changes in the appearance due to aging such as scratching and the loss of its lustre. The majority of participants felt that glass was pleasurable in one context or another. It was acknowledged that the appearance of glass has changed as a result of the advance of manufacturing techniques and changes in fashion. These changes appeared to neither increase nor decrease the pleasure or displeasure which was felt towards the original or the new appearance.

**Wood**

Wood (21%, Figure 10) was said to have many appearances ranging from rough to smooth, sanded and polished to untreated and a very wide range of colours. “There’s so much that you can do with it, the potential”, stated Female participant 12. The majority of the participants stated that they ‘love’ or associate pleasure with the appearance of wood. This affection was based on the natural origins of the material, the variety of finishes and types of wood, and its ‘uniqueness’. The ‘uniqueness’ due to irregularities in the colour, grain and knots was said to add character resulting in participants thinking wood was beautiful, elegant, deep and warm. Pleasure was also derived from the minimal effect or enhancing capabilities of wear upon the wood and the time and skill involved in woodworking. Participants found displeasure in ‘fake’ wood such as chipboard or laminate, which did not measure up to ‘real’ wood. Displeasure was also associated to degradation of the appearance due to scratches and dents, and the need for maintenance of the appearance.
Metal

Metal had 18% of the total frequency of comments relating to appearance (Figure 10). Metal was considered “pleasurable due to smoothness and shininess” (Female participant 7), in particular the application of stainless steel, or the like, in electronic appliances. These new, modern appliances were said to be “expensive” (Female participant 3), “beautiful” (Male participant 2) and have “prestige” (Female participant 9). It was said that stainless steels’ attractive and clean appearance was easy to maintain. Metal also gave a number of the participants a sense of pleasure due to the extent of the preciseness or gracefulness in which it was made and applied. Pleasure was also associated with metal for the application of jewellery.

Metal was also said to be quite varied in appearance and that it could be both “nice and ugly” (Female participant 1) depending on the metal, the application and the preservation of the original appearance. Neutral terms that referred to the appearance of metal included smooth, shiny, metallic, matte, brushed, black and even coloured. Appearance descriptors also related back to metals’ ‘specific context’ of use due to it being sharp, strong, structural, utilitarian, industrial and fairly basic.

Displeasure was associated with metal being cold, surgical, clinical and manufactured. The liberal use of metal in the home environment and for appliances was said to result in an unhomely, institutional and impersonal feeling. A number of the participants felt that metal could be attractive if it was less refined or if more man-hours were put into it being produced. On the other hand, less refined metal used for construction purposes was said to be ugly according to a number of the participants. The term ‘manufactured’ was used in a negative way, and associated with the reduction of positive emotion on the behalf of the participants. Metal was even said to have a “heartless” (Female participant 8) appearance. Displeasure was also associated due to damage such as scratching or denting and corrosion such as rusting or tarnishing. There was, however, some appreciation for the discolouring of metal due to aging expressed by three of the male participants.
Ceramic
Ceramic had 15% of the responses regarding appearance (Figure 10). Many of the participants felt that ceramic varied considerably in appearance. The emotion attached to the appearance varied depending on shape, colouration, painting, treatment and the appropriateness of the decoration for the application. The perceived time that it took to make the ceramics was also deemed important to the appearance, with more time equalling higher status and increased positive emotion felt by the participants. Neutral appearance descriptors included textured, smooth, shiny, matte, painted, glazed, patterned and hard. Colour was mentioned by most with varying opinions on what was a pleasurable or displeasurable colour or colour intensity, with traditional blue and white ceramics being the most mentioned. Traditional or classical compared to the modern designed ceramic was also discussed, with modern design being said to go out of fashion and the more traditional shapes and colours being treasured by the owners.

Ceramic was described as being pleasurable due to its distinctive, gorgeous, elaborate, creative, hand painted and unique appearance. The ‘natural’ and ‘earthy’ origins of the material and its finishes were seen by many as making it more personal and pleasurable than glass, metal or plastic. The consistency of appearance over time and ease of cleaning was also said to bring pleasure, while the collection and showing of dust was considered displeasurable. Displeasure was also associated with the appearance of ugly, cheap and tacky ceramics, particularly ornaments. Chipping, cracking, staining and other forms of wear or aging were also cause for displeasure regarding the appearance of ceramic.

Textile
Textile had a frequency of 11% (Figure 10) and was said to have an extremely large range of appearances. Participants felt textile could be ‘really smart’, ‘plain’ or ‘really cheap’. Other descriptors ranged from plain to decorative, natural to dyed colour, rigid to flowy, and transparent to opaque. Participants linked the appearance with the texture, stating that it could be rough, hairy, smooth, soft, comfortable and inviting for example.
Textiles’ appearance was said to have changed over time due to the introduction of new colours and types of fabrics, with participants expressing both pleasure and displeasure towards these changes based on their personal preferences. Pleasure and displeasure was also associated with the particular patterns, fashions and personal tastes. Participants also thought that textile “can tend not to look so good when it’s older” (Male participant 6) as it fades, stains or loses tension.

**Plastic**

Plastic (11%) had the lowest frequency of responses by a fraction of a percent behind textile (Figure 10). Responses regarding plastic were varied. A minor segment of the participants said that it was good, with these statements referring to the colour and that in a very few cases it has a very modern appearance. New plastic products were said to be nice and easy to clean. The appearance, however, was said to deteriorate with it becoming less attractive in a short period of time. Cracking, staining, scratching, and yellowing, fading and wear due to sun exposure were displeasurable.

Plastic was said to have a very cheap appearance according to the majority of participants. It was also said to be common, that “it’s something that you see every day so you don’t pay much attention to it” (Female participant 8). Plastic was said to not have the unique patterns that wood does, and it was plastics’ uniform surface appearance that resulted in the opinion that it had very little character or personality. The colour of plastic was said to be “grey” (Female participant 14), “cloudy” (Female participant 10), and “dim” (Male participant 15). Plastic was viewed by some as having imperfections or as being less clear than a similar product made out of glass. Some participant statements referred to plastic as looking fragile and temporary, even disposable, whilst others stated that it can look unbreakable.

A number of participants felt that plastic did not have an appearance of its own, that it was “made to look like something else quite deliberately” (Female participant 14). Plastics’ imitation of other materials’ surface appearance was deemed to be rarely successful. This indicates that the applications of these ‘false’ appearances need to be carefully considered by designers in order to ensure the consumers’ satisfaction and long term pleasure.
Plastic was associated with a number of neutral statements such as woven, smooth, shiny or matte for example. It was said to come in any colour one could imagine and that it could also be transparent or opaque. The appearance was said to change depending on the product that it was used for. These responses are closely linked to the properties of the material. Overall the majority of responses related to plastics’ appearance in a negative manner. Male participant 3 made the observation that the perception of plastic relied strongly on the finish and colour. More textured and coloured plastic were said to be more appealing than smooth, white plastic in his opinion.

9.2.8 Material names
The ‘material name’ code was used to examine the extent of the participants’ knowledge in relation to the names of the different materials available under each of the material names given. Figure 11 shows the frequency of occurrence that ‘material names’ were used by the participants. Participants in some instances believed material finishes were actually entirely different materials, such as galvanised metal.

Figure 11. Frequencies of ‘material names’ concept code occurrence
Wood (33%) had the highest frequency, followed by textile (31%), metal (25%), glass (6%), ceramic (4%) and then plastic (2%). Pine and chipboard were the most recorded wood names by a significant margin. Wool, cotton and silk were the most commonly known textiles. Stainless steel and gold were clearly the most well known of the metal names. Crystal and fibre glass were the most used glass terms, and terracotta, porcelain and china were the most mentioned for ceramic. Vinyl and acrylic were the most mentioned plastic names. It can be assumed that wood, textile and metal material names are commonly used as a selling point for products and are part of the participants’ vocabulary. It is surprising, however, that a larger percentage of the participants did not know the names of the different types of ceramics, as it is such an established and traditional material. It is understandable that plastic received the lowest percentage as it is the newest of the materials and it is uncommon for products to mention the type of plastic as a selling point of the product. It is however common for plastic name abbreviations to be used to indicate recycling capabilities on the majority of products which should have given the participants some depth of vocabulary.

9.2.9 Context

The ‘context’ code is different from the ‘specific context’ code and was used to identify those statements made by participants that related to where or how the material or object is kept, produced, sold, used or categorised into a style. Figure 12 illustrates the frequency of the ‘context’ code for each material.
Plastic (24%) received the highest ‘context’ frequency (Figure 12). The significant concepts mentioned related to the short term or prolific applications of plastic. This is an extremely significant finding as it was closely linked with displeasure. Participants also felt that plastic could be versatile, unbreakable and convenient, which were deemed to be pleasurable qualities. Outdoor use, a common context of use, was said to be either pleasurable due to the plastics’ robustness or displeasurable due to the damage sustained by prolonged exposure to the sun. Other displeasurable ‘contexts’ included participants’ beliefs that plastic goods were poorly made and were not suitable for large scale indoor applications.

Wood received the second highest ‘context’ frequency with 17% (Figure 12). Wood ‘context’ related to the making process of wooden objects, with many participants stating that they felt that they had the ability to make or repair wood objects themselves. A considerable amount of skill and time were thought to be invested in making wooden objects, and it was this time investment that was said to result in a more pleasurable object. Participants regarded wood as being pleasurable due to its valued environmental origins.
Textile received a ‘context’ frequency of 16% (Figure 12). Textile ‘context’ related to where and how it was used. A large number of responses were linked to the appropriateness and pleasure of a textile for certain situations, including climate, specific tasks and special occasions. Textiles were said to either be suitable or unsuitable for a particular climate depending on how it made the user feel physically. The suitability for climate was largely based around the discussion of synthetic and organic materials, with organic being thought of as more pleasurable in both hot and cold climates.

Ceramic and glass had equal ‘context’ frequencies of 15% (Figure 12). Ceramic had a high number of different ‘contexts’. The majority of responses related to the craftsmanship thought to be involved in the making of ceramic and the countries or companies where objects were made. Other ‘contexts’ spoke of how it was used for different applications or occasions depending on the physical properties of the material or the attributed stylishness or traditional appearance.

Glass (15%, Figure 12) ‘context’ included the pleasurable use of glass to enhance the surroundings of houses or buildings by capturing a view or allowing light and warmth into an indoor space. The versatility and the expense of glass were also said to be highly pleasurable.

Metal had the lowest ‘context’ frequency of 12% (Figure 12) and was said to be extremely versatile due to its properties and therefore having varying suitability for different contexts. For example, the ability to have an extremely sharp edge was said to be pleasurable for cutting with, whilst its ability to heat up due to exposure to the sun was said to be displeasurable for some outdoor applications such as furniture.

9.2.10 Status

Status received the seventh highest percentage of all the concept codes with 6% (Figure 4, p. 97). Status was divided into four categories; (i) ‘high status’, (ii) ‘neutral status’, (iii) ‘low status’ and (iv) ‘varied status’ (Figure 13). Each of the categories will be discussed, as will some details regarding the ‘expense’ concept, for which the full details are available in Appendix H.
Figure 13. Frequencies of the ‘status’ concept codes occurrence

**High status**

‘High status’ was used by participants for something they tended to think highly of, or if they thought others may highly appreciate it. The high status concept received the highest frequency amongst all of the status codes with 46% (Figure 13), over twice that of any other status comments. The figure showing the frequency for each of the materials for the ‘high status’ concept can be viewed in Appendix I.

Textile had the highest frequency of ‘high status’ comments with 22% (Appendix I). The type and quality of the textile or object, the designer and where it was purchased, were the biggest indicators of ‘high status’. Texture played an important role in the participants’ judgement of the type, quality and therefore status of the textile. The designer or style of the object influenced ‘high status’, but this opinion may vary greatly over time. ‘High status’ fabrics were generally regarded as those made from natural fibres. The appropriateness of the textile or object was said to vary with the context of use, with the opinion of ‘high status’ being changeable accordingly.

Wood (22%) was the second highest ‘high status’ frequency due to it being thought of as having a unique and personalised appearance. The type of wood was said to
influence its expense and thereby its status. Wood was also said to have a ‘high status’ or “ecological status” (Male participant 12) due to the diminishing availability of natural resources, and that this may increase the financial and emotional value of particular types of wood. Wood was said to have high pleasure and durability thereby increasing its status.

Metal had a frequency of 19% for ‘high status’ due to metals’ properties such as strength and durability. The type of metal also changed participants’ views of status with precious metals’ expense and appearance being thought of as ‘high status’. Stainless steel applications in kitchen appliances and cookware were also some of the metal products that were considered fashionable and ‘high status’ at present.

Glass and ceramic both had a ‘high status’ frequency of 16%. Glass was said to be ‘high status’ when used in the construction of houses and high rises. Antique and well-renowned crystal, and artistic or sculptural applications of glass were some of the most mentioned ‘high status’ applications. Ceramic ‘high status’ comments were due to participants’ belief that depending on the type, style and designer of the ceramic it can being incredibly beautiful and sought after. The culture of the user was said to influence the appreciation of ceramic, with the English class system of tea drinking being mentioned as placing a “prestige” (Male participant 3) upon the type, style and designer of the ceramic tea set used. Ceramic was thought of as being pleasurable and ‘high status’ due to its natural origins and in some cases being handmade.

Plastic only received 5% of the ‘high status’ frequency, 11% or more less than the other materials. ‘High status’ was attributed to plastic objects that were heavy, coloured and textured. All other responses related to the fashion at the time of manufacture, such as the plastic furniture made in the ’50s and the toys based on a recently released movie.

Neutral status

‘Neutral status’ is used to describe a material or object that has neither low nor high status. ‘Neutral status’ received 22% (Figure 13) of the total ‘status’ concept
responses. Plastic received the highest response for ‘neutral status’ with 26% (Appendix I) due to the belief that it is functional, versatile and practical. There was very little pleasurable emotion attached to plastic. For example Female participant 10 stated that “it’s functional, but it’s not nice”. Metal was said to be useful, functional and utilitarian and has a 22% frequency for ‘neutral status’ (Appendix I). These qualities along with metals’ durability and reliability resulted in participants linking it to the construction industry.

Ceramic (21%) (Appendix I) was thought of as functional, ordinary and “everyday” (Female participant 5). Products such as ceramic crockery were said to be simple, plain and have a “down home feel” (Male participant 6). Glass (18%) received many responses describing it as functional, mostly referring to the windows in houses and cars (Appendix I). A number of the participants, however, did on second thought state that it is possible that “we sort of take it for granted” (Female participant 11).

Textile (7%) was said to include a number of types, some of which were thought to be common such as hemp and calico (Appendix I). Textile was said to be very practical. Clothes that are worn every day were considered to have ‘neutral status’ when compared to the clothes worn for a formal or important event. Wood received the least responses with 6% (Appendix I). Some participants thought that wood was purely functional in specific environments such as the construction of a house frame.

**Low status**

‘Low status’ was the third highest frequency ‘status’ with 20% (Figure 13). Plastic had two thirds of the total frequency for ‘low status’ with a frequency of 66% (Appendix I). The weight, texture, appearance and wear of plastic were associated with displeasure and therefore ‘low status’. Many participants stated that there is “no status with plastic”. Plastic was thought to be cheap and disposable. Textile had the second highest ‘low status’ frequency with 12% (Appendix I) as a result of the displeasure and ‘low status’ of synthetic textiles. Synthetic textiles were said to be cheap, nasty and uncomfortable.
Metals had an 8% frequency for low status (Appendix I), resulting from opinions that it was manufactured or synthetic, and that some metals such as aluminium and ‘ordinary steel’ were cheap. Metal was said to be cold in appearance and touch perhaps resulting in a cold emotional response to the material. Corroded metal was also said to be ‘low status’. Wood had a 6% ‘low status’ frequency (Appendix I). Products such as chipboard and fibreboard were deemed to be ‘low status’.

Ceramic had a 4% frequency for ‘low status’ (Appendix I), as objects were said to be tacky or ugly in some instances. It was also speculated that Australians may not place as much value in ceramics as other nationalities like the Chinese or English. Glass had the lowest ‘low status’ frequency with 3% (Appendix I) and was said to be a cheap material. Objects such as stamped glasses could be produced and purchased for very little money according to the participants. Glass objects, like ceramic, were said to be small, cheap and nasty in some cases.

**Variable status**

‘Variable status’ was used to code participant statements which described a material or object as possibly being high, neutral or low status. ‘Variable status’ received the lowest frequency of all of the status codes with 12% (Figure 13).

Textile was the most frequently mentioned material with a 25% frequency for ‘variable status’ (Appendix I) and with ‘variable status’. Textiles’ status was said to vary depending on the type of textile, the fashion of the time, the designer and where the textile was applied or worn. Ceramic’s (21%, Appendix I) ‘variable status’ was due to participants’ beliefs that it could vary between being expensive and sought after, and cheap and somewhat tacky depending on the application.

Wood had the second highest frequency for ‘variable status’ with 20% (Appendix I). Wood had ‘variable status’ due to the different types of wood, the surface finish and how much it had been ‘processed’. Woods’ status was also dependent on how the object had been made and when. Glass and metal shared the fourth highest frequency for ‘variable status’ with 13% (Appendix I). The status of glass was said to depend on the application and the fashion of the time. The place or manufacturer of the glass
object was also said to dramatically vary the expense and status. Metals had a 13% frequency for ‘varied status’ (Appendix I), with status depending on the type and expense of the metal.

Plastic was the least mentioned material for ‘variable status’ with a frequency of 8% (Appendix I). The type of plastic dramatically changed the attributed level of status. It was not specified exactly what type of plastic was considered to be high, neutral or low status, rather judgement was attached to the plastics’ properties such as weight, texture, and where or by whom it was designed. Plastics’ status also varies depending on the context of its use.

### 9.2.11 Texture and touch

The ‘texture and touch’ code was used to identify how participants believed a material would physically feel. ‘Texture and touch’ had 5% of the total concept code frequency (Figure 4, p. 97). Figure 14 shows the ‘texture and touch’ frequencies for each of the six materials.

![Figure 14. Frequencies of ‘texture and touch’ concept code occurrence](image-url)
Textile clearly received the highest ‘texture and touch’ frequency with 30% (Figure 14). It was said to have many textures ranging from smooth to rough. Climate played a role in what types of textile were thought to have a ‘pleasurable’ texture. ‘Natural’ textiles were considered the most ‘pleasurable’ texturally, while ‘man-made’ textiles were associated with ‘displeasure and were said to be “coarse’ (Female participant 8) and “not as good” (Female participant 5).

Wood was the next most frequently discussed material with 19% (Figure 14) and was said to be “whatever you want it to be” texturally (Male participant 6). Wood was said to be extremely ‘pleasurable’ to touch. The temperature of wood was said to be pleasantly cool, that this ‘organic’ cool was different from manufactured “dead” cool of plastic (Female participant 3). Displeasure was mentioned due to ‘unfinished’ wood and the possibility of splinters.

Glass had a 16% frequency for ‘texture and touch’ (Figure 14) and was said by most to be hard, cool and smooth. Some exceptions to this stereotype were mentioned where glass was made with a bubbled or ripped surface texture. Ceramic and metal both had 14% of the total ‘texture and touch’ frequency. Ceramic was mostly said to be smooth, although it was acknowledged that it could also be extremely rough. Smooth textures were associated with crockery and rough textures were said to be more “earthy” (Male participant 12). Ceramic was thought to have an ‘organic cool’ and be intrinsically cold unless exposed to considerable heat, in which case it would tend to hold this heat. Metal (14%) was said to have the same first impressions that glass did, with participants thinking that metal too was mostly hard, cold and smooth.

### 9.2.12 Memories and favourites

The ‘memories and favourites’ code was 3% of the concept codes frequency (Figure 4, p. 97). ‘Memories and favourites’ coded expressions of present and past experiences or feelings associated with the material or object. The occurrence of the ‘memories and favourites’ concept was associated more with the ‘pleasure’ concept than it was with ‘displeasure’. This may indicate that consumers prefer to focus on positive rather than negative memories.
Wood was mentioned the most with 20%, while glass, metal and textile all received 18% (Figure 15). Ceramic had a frequency of 14% followed by plastic (11%) which had the lowest frequency of responses (Figure 15).

Almost all of the participants claimed that wood was either their favourite material or that they had favourite possessions made from wood. Females had 4% more statements regarding wood and ‘memories and favourites’ than males, indicating that they were more passionate about it.

Glass ‘memories and favourites’ were closely linked to the ‘specific context’. Glass was deemed pleasurable due to the products that it formed and the context that these were subsequently used in. Products that were considered as memories or favourites included soft drink, beer and wine bottles, champagne glasses, vases, ornaments and collectables. Collections of glass, whether the participants owned them or knew of someone with a collection, brought much ‘pleasure’ and envy in all cases where they
were mentioned. Windows in houses or high-rises were also mentioned as pleasurable ‘memories and favourites’ with the scenery experienced mentioned.

Metal frequency of 18% (Figure 15) was associated with a number of favourite products such as jewellery, vehicles, bicycles, appliances, kitchen equipment, gaming figurines and playground equipment. One participant, of Sri Lankan background, had memories of brass and gold which are heavily used within his culture, and brought him and his family much pleasure. Many participants struggled to think of ‘memories and favourites’ associated with metal at first, with three participants stating that they could not think of anything relating to this concept.

Textile had a frequency of 18% (Figure 15) and invoked three types of statements for pleasurable ‘memories and favourites’. The first type of statement related to the pleasure of the ‘specific context’, such as clothes, curtains, bedding, upholstered furniture and teddy bears. The second pleasurable aspect of textile was the ‘properties’ such as texture, weight and colour and the third pleasurable facet involved the type of textile, referring to natural fabrics only. Displeasure included degradation of favourite items.

Ceramic had a 14% frequency (Figure 15) with ‘memories and favourites’ including links to ‘specific contexts’, ‘properties’ and ‘context’ codes. ‘Specific contexts’ ‘memories and favourites’ included crockery, baking dishes, bathroom fittings, tiles, mosaics, hand crafted items and antique figurines. Favourable ‘properties’ included the weight in the hand, heating or cooking properties and decoration, especially decoration by well-renowned ceramic manufacturers. Ceramics’ memorable ‘context’ of use included the use of favourite crockery or tea sets for special occasions. Items hand crafted by the participants and their children were also pleasurable memories. The cold feel of tiles in hot weather was also recalled as pleasurable by a few of the participants.

Plastic had the lowest frequency of 11% (Figure 15). Plastic was related to ‘memories and favourites’ due to particular objects, such as outdoor furniture, camping gear and toys, and the situations in which they were used. Plastic toys such as Barbie dolls and Lego were said to be highly pleasurable, but some participants
felt that the ease with which plastic toys break is highly displeasurable. A large portion of the participants felt that they could not associate ‘memories and favourites’ with the material plastic.

### 9.2.13 Disposal

The disposal code was broken down into four categories. These were ‘complete disposal’, ‘recycling’, ‘reuse’ and ‘biodegrading’. Plastic clearly received the highest frequency of responses for disposal and was thought by most participants to be landfill.

![Disposal Concept Codes Occurrence](image)

**Figure 16. Frequencies of ‘disposal’ concept codes occurrence**

**Biodegrade**

Ceramic, metal and glass were not thought to be biodegradable. Plastic caused some uncertainty in regard to biodegrading. Biodegradable plastic bags were mentioned but they require direct sunlight which was said to be a problem. Natural textiles and wood were said to be the most biodegradable due to their organic origins. Biodegrading was pleasurable as materials such as natural textile and wood “never really clutter up the environment” (Female participant 8).
Complete disposal

‘Complete disposal’ refers to the material life ending after use, such as being taken to landfill or destroyed completely through burning. Metal, glass and textile received the lowest frequency with very few of the participants feeling that there was a need to ‘completely’ dispose of these materials. Wood had a number of responses relating to the fact that one might burn it as an alternative to putting it in landfill. There was some concern expressed regarding the thought that ceramic does not break down and was potentially a landfill issue. Plastic received the highest frequency for ‘complete disposal’ and it was said to be highly likely that it would end up in landfill. Participants felt that non-recyclable plastic such as plastic bags and the inability to repair plastic products would most certainly result in plastic being a “burden on the environment” (Male participant 15) and “problematic” (Male participant 6) in the future.

Recycle

Wood had no statements referring to it being ‘recycled’, and very few textiles were thought to be recyclable. There was some discussion between participants over whether ceramic was or was not recyclable, with very few participants being certain either way. Plastic had the third highest frequency for ‘recycle’, with drink bottles being the most mentioned recycled plastic product. Glass was thought to be highly recyclable, that the recycling process was easy and that glass could be recycled repeatedly with very little problem. Metal had the highest frequency for ‘recycling’, and was said to be very recyclable. Overall the thought that a material was recyclable was often said to be pleasurable by the participants.

Reuse

‘Reuse’ identified statements referring to a material being reused and altered to be used for another purpose. Plastic received the lowest ‘reuse’ frequency, with participants only mentioning two types of reuse: the filling of empty printer cartridges and the reuse of ‘disposable’ food containers or cutlery. Metal was said to be reused for artworks and other unnamed applications. Ceramic and glass had a number of responses relating to mosaics. Glass received additional comments relating to the reuse of bottles and other containers. Textiles were said to either be
passed on to others once they were not wanted or used for rags. Wood received the highest frequency of comments with participants feeling that they would rather repair the object or use the wood to create something else than see it go to waste.

9.3 Summary

This chapter has outlined the analysis and coding scheme used to identify consumers’ concepts of materials. Each of these concepts has been illustrated in terms of the frequency with which they were mentioned and the statements made by participants. The participants’ statements indicated their perception of the materials in question. These perceptions were both descriptive and emotive in most instances. The judgement the participants had regarding the pleasure or displeasure of the materials was based on a number of material characteristics, products, contexts and past experiences. These findings indicate that most of the consumer concepts are interlinked with other concepts. Each concept cannot be considered alone, but rather as part of a network of consumer concepts.

Although there are concepts that are specific to each of the materials there are some findings that encapsulate most, if not all, of the materials. A summary of the major findings for each of the concept codes is shown in Appendix J. The next chapter will clearly identify the linkages between the concepts and outline the implication and limitation of this research.
10. DISCUSSION AND IMPLICATIONS OF FINDINGS

In Chapter 9 the findings of the research identified a number of consumer concepts of materials. The concepts which the consumers have of materials are significant, but it is the combinations of these concepts which result in emotional judgements which are the most significant findings. This chapter will outline the concept links which are likely to result in the consumer emotionally judging the material. The implications of this research and its limitation will also be discussed in this chapter.

10.1 Discussion of findings

The discussion of findings will be presented in relation to the concept titles that were previously identified in Chapter 9. The identified concepts will be shown to be interdependently evaluated by the consumer to form emotional judgements about materials. These findings will also be discussed in relation to the literature covered in Chapters 2 to 7.

Material categorisation

The material categorisation (metal or wood, for example) is said to affect the material meaning according to Karana and Hekkert (2008), where meaning is related to a material characteristic, such as businesslike for example. The material categorisation in this research variably affected the emotions relating to the materials. Wood and textile, although considered enormously pleasurable, were also said to be considerably displeasurable too. It is the findings of this research that there are a number of individual material concepts and groupings of material concepts which are likely to be evaluated by the consumer in order to emotionally judge a material. The category of the material (wood or metal for example) can therefore never be thought to imply pleasure in all instances. There does however seem to be an exception to this rule when it comes to plastic. Plastic was considered to be the least pleasurable and the most displeasurable. In this instance most consumers did not seem to have enough knowledge of the material to be able to distinguish one
plastic type from another, and this lack of plastic concepts led to emotional judgements based on the material category and their past experiences with it.

**Specific contexts**
The specific contexts that consumers associated with materials and the properties of the materials were the most mentioned concepts. Females were more passionate about the products that they associated with the materials and put more emphasis on the emotional attributes of the specific context or materials in general. Oliveira and Sarmento (2003) state that emotions will affect future decisions regarding products. It is likely that the emotions regarding the materials will affect future consumer decisions regarding product.

Specific contexts, such as products, were often used as a means to describe the physical and emotion attributes of the materials. Consumers’ concepts of past and present applications of materials and their emotional responses to these indicate to some extent what materials will be accepted, resisted or met with scepticism when applied to specific contexts in the future. Specific contexts and the consumers’ links to what are pleasurable or displeasure material attributes in these instances can to some extent indicate if there are more appropriate materials that can be used or developed.

Ceramics are associated with technologically advanced applications such as high-pressure temperature valves and space shuttle tiles (Ashby and Johnson, 2002). According to the concepts expressed by consumers, ceramic is still considered to be traditional and old fashioned in many instances. This gap between actual application and the perceived uses of a material indicates that part of the process of either introducing a new material or changing the application of an old material is informing the user of the benefits and qualities of the material. This understanding may lead to more pleasurable first impressions and long term interactions with the products. This lack of material understanding is most evident with the consumers’ concepts regarding plastic. Although the types and characteristics of plastic are extensive, the displeasurable concept association consumers have with plastic
applications such as packaging, for example, seemed to result in most other plastic applications being categorised similarly.

Crozier (1994) refers to the possibility that the meanings associated with a design will be affected by the first encounter or experience with the product. It is thought that the same can be said for materials in some instances. Plastic, for example, was first experienced by younger participants as a child in the form of toys. The displeasure associated with the loss of these toys due to breaking seems to have left a lasting impression on the consumers. On the other hand, one of the older participants who experienced products before and after the introduction of plastic was really appreciative of plastic and the products that had resulted from its introduction. It is a finding of this research that consumers require an understanding about the advantages and benefits of the application of the material to be perceived as physically acceptable or pleasurable.

**Durability**

The concepts consumers had regarding the durability of the materials were one of the most significant findings of this research. Durability was closely linked to the emotions of the user. Materials play an important role in the durability judgements that the user makes regarding products. The knowledge regarding the intangible consumer concepts of a materials’ durability will assist in understanding material selections environmental implications. Current knowledge regarding materials environmental considerations is largely based on technical knowledge of the materials wear and aging.

The durability consumer concepts were found to overlap with a number of the other consumer concepts. The points at which the durability consumer concepts overlap or intersect with other concepts have been found to prompt the consumers’ emotional judgement. The interlinked consumers’ specific context, context, appearance and durability concepts is one such case. One case where this was found was with Female participant 4, who found the fading of the natural dyes in her Afghan and Iranian rugs in her home to be beautiful. Male participant 3 presented another example when he stated that he likes the way his study desk shows signs of his using
it for 10 or more years. These examples illustrate that the pleasure associated with the durability is not independent but relies on consumers’ concepts of the appropriateness of the material for the product and the context in which it is used. The acceptance of the durability is also linked to the changes in appearance and whether these are judged to be appropriate for the product and the context. The overlapping of two or more of the durability, appearance, specific context and context concepts has been found to have the potential to prompt an emotional judgement by the consumer. The possibility of emotional judgements occurring as a result of the combinations of these concepts is illustrated in Figure 17.

Figure 17. Intersection of durability, context, specific context and appearance concepts

The consumers’ concepts about the linkages between materials’ properties, specific context and context also played a large role in the perceived durability and emotional judgement of materials. Displeasure and pleasure were attributed to the selection of materials based on the context of storage and use of the product. In some instances the materials selection was deemed pleasurable for a context if the product properties endured exposure and use, and was displeasurable if the context resulted in the possibility of wear, aging or breaking of the material. This was evident in concepts relating to plastic, which was displeasurable in outdoor seating contexts due to the aging resulting from long exposure to the sun, but pleasurable when used for camping, as periods of use were short but products could endure if dropped or
mistreated. The intersections (∩) of the durability, specific context, context and properties concepts that prompt emotional judgement can be expressed in the following formulas:

\[
\begin{align*}
\text{durability} \cap \text{specific context} & \rightarrow \text{emotional judgement} \\
\text{durability} \cap \text{context} & \rightarrow \text{emotional judgement} \\
\text{durability} \cap \text{properties} & \rightarrow \text{emotional judgement} \\
\text{durability} \cap \text{specific context} \cap \text{context} & \rightarrow \text{emotional judgement} \\
\text{durability} \cap \text{specific context} \cap \text{properties} & \rightarrow \text{emotional judgement} \\
\text{durability} \cap \text{context} \cap \text{properties} & \rightarrow \text{emotional judgement} \\
\text{durability} \cap \text{context} \cap \text{specific context} \cap \text{properties} & \rightarrow \text{emotional judgement}
\end{align*}
\]

The formulas highlight that it is the intersections (∩) of the various concept linkages where the emotional judgement occurs. These formulas also express the fact that an emotional judgement can happen at each and every combination of intersecting concepts.

The appearance durability heavily affected the emotional perception of a material. In some instances the consumer would like the appearance to be maintained, especially in the cases of materials such as plastic, ceramic and glass. The consumers’ concepts regarding the durability of the appearance of materials such as wood, metal and textile varied depending on the products and context in which they were used however. These three materials were said to be able to pleasurably accumulate signs of wear or aging and be able to tell a story of the ownership or the history of the possession. This concurs with Ashby and Johnson (2002) who state that the acquisition of signs of aging can be pleasurable.

In instances where changes in the appearance are not wanted, consumers need to have knowledge regarding the maintenance of the materials’ appearances in order for them to care for it as best they can. The understanding and implementation of techniques to preserve the material appearance were found to lead to pleasure. Similarly restoration or repairs were considered pleasurable in most instances. The durability concepts therefore intersect with the appearance and maintenance concepts of the consumer. It is in these intersections where consumers are likely to form an emotional judgement. The consumers found that the ability to carry out these maintenance or restoration activities was largely dependent on the properties of the
materials. The properties of a material that allowed the consumers to easily restore the material appearance were deemed pleasurable. The formulas which express these intersections (∩) which prompt emotional judgement are:

- \( \text{durability} \cap \text{appearance} \rightarrow \text{emotional judg} \)
- \( \text{durability} \cap \text{maintenance} \rightarrow \text{emotional judg} \)
- \( \text{durability} \cap \text{properties} \rightarrow \text{emotional judg} \)
- \( \text{durability} \cap \text{properties} \cap \text{maintenance} \rightarrow \text{emotional judg} \)
- \( \text{durability} \cap \text{maintenance} \cap \text{appearance} \rightarrow \text{emotional judg} \)
- \( \text{durability} \cap \text{properties} \cap \text{maintenance} \cap \text{appearance} \rightarrow \text{emotional judg} \)

Consumers understood that there is often a gap in time between when the usable or emotional life of a possession ends and when the actual life of the materials used in the construction of the possession ends. This gap was said to be dependent on the materials used. The duration of this gap led to emotional judgements of displeasure and pleasure, with long periods of durability and wasteful behaviour being deemed displeasurable. Consumers would much rather see their discarded possessions biodegrade or be reused or recycled. Knowing that the materials would not end up in landfill was extremely pleasurable to the consumer. The material properties that contributed towards the consumers’ ideals of disposal were therefore also deemed to be pleasing. The intersections (∩) of the durability, disposal and properties consumer concepts are shown in Figure 18 and the following formulas:

- \( \text{durability} \cap \text{properties} \rightarrow \text{emotional judg} \)
- \( \text{durability} \cap \text{disposal} \rightarrow \text{emotional judg} \)
- \( \text{durability} \cap \text{properties} \cap \text{disposal} \rightarrow \text{emotional judg} \)

The findings relating to the durability and disposal of materials show a positive trend towards a more environmentally conscious consumer. This trend was mentioned by Ljungberg (2005) as being a step towards creating more sustainable products and can be seen as an opportunity for designers to embrace a new target audience.
Figure 18. Intersection of durability, disposal and properties concepts

Figure 19 summaries all the concepts that may have a significant effect on the consumers’ emotional judgements of the materials’ durability. Each of the intersections of concepts that are shown in Figure 21 has the potential to result in its own emotional judgement.

Figure 19. Summary of the concepts that intersect with the durability concepts
**Appearance**

Materials have characterising aesthetic attributes (Ashby, 2004), but materials’ aesthetic perceptions are harder to define than the technical appearances (Ashby and Johnson, 2002). Yet Ashby and Johnson (2002) consider understanding the role of these aesthetic perceptions to be important in communicating product information to the consumer.

This study revealed that consumers considered all of the materials to have very varied appearances. Materials considered to be of natural origins were said to have more personality and thereby pleasurable appearances due to uniqueness or irregularity. The material appearance and origin consumer concepts were also linked to the consumers’ concepts of the status of the material. The perceived uniqueness of natural materials increased the status significantly. Plastic, a material considered to be synthetic, was said to have a uniform surface appearance and therefore have no personality or character, and was deemed to be neutral to low status. The intersections ($\cap$) of the appearance, origin and status and expense concepts which result in emotional judgements are shown by Figure 20 and these formulas:

- $\text{appearance} \cap \text{origin} \rightarrow \text{emotional judgement}$
- $\text{appearance} \cap \text{status} \& \text{expense} \rightarrow \text{emotional judgement}$
- $\text{appearance} \cap \text{origin} \cap \text{status} \& \text{expense} \rightarrow \text{emotional judgement}$

![Figure 20. Intersection of consumers’ material concepts of appearance, status & expense and origin](image-url)
The consumer concepts involving the variation in material appearance was also attributed to the manufacture. The manufacturing time, method and skill involved were all being said to affect the appearance and type of product application, which thereby affected the emotions of the consumer. The company or designer and their origins were also said to affect the way in which the material appeared in the specific context for which it was used. Ceramic appearance was commonly mentioned as being significantly different depending by whom and where it was made. The emotional judgements of the materials’ appearance, manufacture and material application were thereby also determined by the concepts the consumer had regarding status and expense. The intersections (∩) of these four concepts are shown in these formulas:

\[
\begin{align*}
\text{appearance} \cap \text{status} \& \text{expense} & \rightarrow \text{emotional judgement} \\
\text{appearance} \cap \text{specific context} & \rightarrow \text{emotional judgement} \\
\text{appearance} \cap \text{manufacture} & \rightarrow \text{emotional judgement} \\
\text{appearance} \cap \text{status} \& \text{expense} \cap \text{specific context} & \rightarrow \text{emotional judgement} \\
\text{appearance} \cap \text{status} \& \text{expense} \cap \text{manufacture} & \rightarrow \text{emotional judgement} \\
\text{appearance} \cap \text{specific context} \cap \text{manufacture} & \rightarrow \text{emotional judgement} \\
\text{appearance} \cap \text{status} \& \text{expense} \cap \text{specific context} \cap \text{manufacture} & \rightarrow \text{emotional judgement}
\end{align*}
\]

Familiarity and the belief that it can result in reduced positive emotion (Martindale, cited in Crozier, 1994) does not seem to be completely true when considering materials. Materials that have been used for centuries were considered to be traditional in appearance and were considered to be high status and extremely pleasurable. Other schools of thought that state that preference is positively correlated with exposure (Crozier, 1994) did not match up with the emotions regarding materials either. The increasing high application of plastic was considered to be displeasurable as it was too familiar. It was the consumers’ judgements of the materials’ appearance, properties, texture and durability that led to emotions rather than the consumers’ exposure to the materials.

Texture is very closely linked to the consumers’ concepts of a materials’ appearance. It was found that the appearance prompted the consumers desire to touch a material. If a haptic experience matched the expectations created by the appearance the consumer tended to be pleased. Dissatisfaction was sometimes said to be caused by
the unexpected tactile feedback. The intersection (\(\cap\)) of the appearance and texture and touch concepts is shown by this formula:

\[
\text{appearance} \cap \text{texture & touch} \rightarrow \text{emotional judgement}
\]

Male and Female participant 4 made mention of mobile phones which appear to be metal, but that touching revealed it was plastic. There was displeasure expressed for materials that imitated other materials, and it was said that these fake appearances were rarely convincing. This finding supports the school of design thinking that supports the ‘honest’ use of materials (Ashby and Johnson, 2002). It was however pointed out by Ashby and Johnson (2002) that plastic’s imitation of other materials was an intrinsic quality of this material and it is therefore an honest application. Consumers, however, did not appreciate this mimicry and did not believe that material deception contributed to a product’s character, such as surprise for example, as was the argument put across by Ashby and Johnson (2002). The surface finish and colour were also deemed to contribute to the appearance both positively and negatively.

Figure 21. Summary of the concepts that intersect with the appearance concepts

Emotional judgements of material appearance were also overlapped with consumer concepts of the material durability, properties and maintenance, as previously discussed in the durability section. A summary of all the concepts which
significantly contribute to the emotional judgements that consumers make of a materials appearance is shown in Figure 21. Each of the concept intersections shown has the potential to result in an emotional judgement of the material appearance.

**Context**

The context was used by consumers to judge the materials that are currently used within that environment. The emotional judgements by consumers regarding a context are not altogether independent; they are also influenced by a number of other concepts. It is the overlap or intersection of the context concepts with other consumer concepts that provides opportunities for emotional judgement to occur.

Figure 22 shows that the consumers’ material context and appearance concepts are interlinked. The intersection of these two consumer concepts is where an emotional judgement is likely to occur. It was found that consumers take into consideration the appearance of the material when forming an emotional judgement of the suitability of a material for the context. Female participant 1, for example, felt that ceramic tiles with a matte appearance were pleasurable in a bathroom context. In contrast, an example of a displeasurable emotional outcome was expressed by Male participant 5 who did not like particular tapestry prints to be hung in the home context. Figure 22 illustrates that the intersection (∩) of the context and appearance concepts can result in an emotional judgement by the consumer, as does this formula:

\[ \text{context} \cap \text{appearance} \rightarrow \text{emotional judgement} \]

---

Figure 22. Intersection of consumers’ material concepts of context and appearance
Durability and context consumer concepts were also found to intersect and create the possibility of emotional judgement as shown in the formula:

\[ \text{context} \cap \text{durability} \rightarrow \text{emotional judgement} \]

The durability of the material was used to judge the appropriateness of its use within particular contexts. One instance when an emotional judgement occurred as a result of the consumers’ consideration of both the material durability and context was when Female participant 13 declared that depending on the context of use, metal would have varying durability. If used outdoors she felt that it may wear displeasurably, whereas indoors it would wear very well.

Consumers’ concepts of material properties may also affect the emotions felt about the application of a material for a particular context. Male participant 5, for example, was interested in the context of the home workshop and discussed in length the pleasure and displeasure of trying to make things. His emotional judgement relied to a large extent on the properties of the material and the way in which these properties lent themselves to the work he was doing. The ease of sanding wood was attributed to its properties and was pleasurable when compared with metal which he found much harder to manipulate. An emotional judgement also resulted when Male participant 2 was considering the lightweight properties of plastic. It was said that this could be pleasurable when the context dictates that it must be easily moved or transported. The emotional judgements that result from the consumers’ concepts of a materials properties and their suitability for a particular context are illustrated by this formula:

\[ \text{context} \cap \text{properties} \rightarrow \text{emotional judgement} \]

Consumers’ concepts of context were also found to be affected by the origin of the material, promoting the possibility of emotional judgement. Male and Female participant 3, for example, discussed how using an organic material such as wood in a commercial context such as businesses or universities in large scale applications was a waste of resources and was therefore considered displeasurable. When used in the home environment warm, natural materials such as wood were said by many of
the participants to enhance the homely feel, which resulted in a pleasurable judgement. The consumers’ concepts of context were also found to intersect with concepts of material status and expense enhancing the likelihood of emotional judgements. It was mentioned by a number of the participants that the status or expense of an item is linked to the appropriateness for the context. Female participant 14, for example, stated that many people find pleasure in having a high status kitchen, which currently involves the application of stainless steel.

A three-way intersection between context, origin, and status and expense was also found to result in emotional judgements. It was found that natural origin infers high status and expense whilst manmade materials had varying implications on the status and expense concepts of the consumer. Participants discussed the appropriateness of varying levels of status and expense, and differing material origins for particular contexts. Textile was commonly discussed in relation to all three of these concepts, with emotional judgements relating to the appropriateness of the status, expense and origin of a textile for a particular climatic or social context. Male participant 7, for example, found pleasure in the status he received from the cloak he had made from a camel hair textile, which he used for his medieval re-enactments. His feelings of pleasure and status were due to the origin of the fabric and its suitability for the cold morning starts and the social situation. The following formulas express the emotional judgements that may occur from consideration of the context, origin and status and expense material concepts:

\[
\text{context} \cap \text{origin} \rightarrow \text{emotional judgement} \\
\text{context} \cap \text{status} \& \text{expense} \rightarrow \text{emotional judgement} \\
\text{context} \cap \text{origin} \cap \text{status} \& \text{expense} \rightarrow \text{emotional judgement}
\]

Context also intersects (\(\cap\)) with consumers’ concepts relating to extent of use to produce varying emotional judgements. The emotional judgement depended on the perceived appropriateness of the extent to which the materials were used for a particular context. Metal, for example, was said by many to not be appreciated in large quantities in the home environment as it was said to give a feeling of sterility. The formula which represents these concepts’ intersection (\(\cap\)) is:

\[
\text{context} \cap \text{extent of use} \rightarrow \text{emotional judgement}
\]
The manufacturing skill, method and time also affected the consumers’ emotional judgement depending on their perceived appropriateness of the material for the context. Plastic mass production was said by a number of participants to be appropriate for contexts in which functional goods were needed. This functionality was deemed to be slightly pleasurable in most instances. The consideration of both of these concepts in order to form emotional judgements is expressed by the formula:

\[ \text{context} \cap \text{manufacture} \rightarrow \text{emotional judgement} \]

Figure 23 diagrammatically shows how all of the aforementioned significant concepts intersect with the context concept. Each of the intersections shown in Figure 23 is able to generate emotional judgements regarding the suitability of a material for a particular context.

![Figure 23. Summary of consumers’ concepts related to context](image)

**Status and expense**

If a material were considered high status it was also thought to be high in expense or if it were low in expense it was often judged to be low status. Products and the context or way they were used had an influence over the perceived status of a
material. If the product was an ornament and was not used, only viewed, it was considered high status. If a product was considered to be functional however, it was either thought of as having neutral or low status. The intersections (\(\cap\)) of these consumer concepts relating to the status and expense and the specific context and context indicate where it is likely that emotional judgements will occur and are shown by these formulas:

\[
\text{status} \& \text{expense} \cap \text{context} \rightarrow \text{emotional judgement} \\
\text{status} \& \text{expense} \cap \text{specific context} \rightarrow \text{emotional judgement} \\
\text{status} \& \text{expense} \cap \text{context} \cap \text{specific context} \rightarrow \text{emotional judgement}
\]

The appearance, texture and origin of material were linked to status and expense. It was also found that the origin of the material, and whether it was judged as being a natural or synthetic material, had a large influence over the judgement of status and expense. Natural materials were deemed as being of a much higher status than synthetic materials. Natural materials were thought of as being unique or more personalised due to their appearance and texture. The intersections (\(\cap\)) between the status and expense, origin, appearance and texture concepts are shown in these formulas:

\[
\text{status} \& \text{expense} \cap \text{texture} \rightarrow \text{emotional judgement} \\
\text{status} \& \text{expense} \cap \text{origin} \rightarrow \text{emotional judgement} \\
\text{status} \& \text{expense} \cap \text{texture} \cap \text{appearance} \rightarrow \text{emotional judgement} \\
\text{status} \& \text{expense} \cap \text{origin} \cap \text{texture} \cap \text{appearance} \rightarrow \text{emotional judgement}
\]

Properties also played a role in the consumers’ concepts about status and expense. Material attributes such as the high strength of some metals or the fragility of a crystal glass were able to increase status in some cases. The status and expense and the properties concepts were used by consumers in combination to make an emotional judgement in some cases. The intersection (\(\cap\)) of these two concepts where the emotional judgement is likely to occur is shown in this formula:

\[
\text{status} \& \text{expense} \cap \text{properties} \rightarrow \text{emotional judgement}
\]

How the materials were made into products was linked to the associated emotions, and this finding concurred with Crozier (1994) and Norman’s (2004) opinions that
construction method affects attachment. The time spent making a product was also linked to status, with the more time spent the more status and positive emotion attributed to the product. If the product was produced by a less technical method consumers tended to think of the status being increased. Manufacturing or mass production was referred to negatively and led to the perception of neutral to low status and moderate to low expense. Consumers feel that they are able to classify the status and expense of a product through its appearance. Consumers are also confident that they can identify the manufacture method, time and skill through the appearance of the product. The intersections (∩) of the status and expense, appearance and manufacture concepts identify likely combinations of concepts which will prompt an emotional judgement are shown by these formulas:

\[
\begin{align*}
\text{status} & \cap \text{expense} \cap \text{appearance} \rightarrow \text{emotional judgement} \\
\text{status} & \cap \text{expense} \cap \text{manufacture} \rightarrow \text{emotional judgement} \\
\text{status} & \cap \text{expense} \cap \text{appearance} \cap \text{manufacture} \rightarrow \text{emotional judgement}
\end{align*}
\]

The more reliable and durable the material the higher status it was seen to have. Materials considered to be of low status and cheap were often those that were considered to be disposable. These formulas show the status and expense emotional judgements can be affected by consumers’ concepts relating to a materials’ durability and disposal:

\[
\begin{align*}
\text{status} & \cap \text{expense} \cap \text{disposal} \rightarrow \text{emotional judgement} \\
\text{status} & \cap \text{expense} \cap \text{durability} \rightarrow \text{emotional judgement} \\
\text{status} & \cap \text{expense} \cap \text{disposal} \cap \text{durability} \rightarrow \text{emotional judgement}
\end{align*}
\]

A summary of the concepts that significantly affect the consumers’ emotional judgements of the status and expense of a material is shown in Figure 24 (in Appendix I). Each of the previously discussed concepts that are linked with the status and expense concepts are shown in Figure 24.
Texture and touch

The properties of the material and the context for which it was used were closely linked to whether a texture was emotionally judged as being pleasurable (Figure 25). Materials that were breathable were more pleasurable for hot weather for example. Natural materials were said to be more pleasurable in texture, temperature and use than synthetics for any climate. Plastic, considered to be synthetic, was said to have a ‘dead’ warmth and become uncomfortably sticky in hot weather. The following formulas express the intersections (∩) between these 3 concepts that have the potential to create emotional judgements:

- \( \text{texture & touch} \cap \text{context} \rightarrow \text{emotional judgement} \)
- \( \text{texture & touch} \cap \text{properties} \rightarrow \text{emotional judgement} \)
- \( \text{texture & touch} \cap \text{origin} \rightarrow \text{emotional judgement} \)
- \( \text{texture & touch} \cap \text{context} \cap \text{properties} \cap \text{origin} \rightarrow \text{emotional judgement} \)
Memories and favourites

The memories and favourites consumer concepts were also linked to a number of other physical concepts. Specific context concepts were seen to be linked to memories and favourites. The intersection (∩) of the memories and favourites concepts and the specific context concepts often resulted in the participants expressing an emotion. This finding can be expressed by the following formula:

\[ \text{memories & favourites} \cap \text{specific context} \rightarrow \text{emotional judgement} \]

Overall, memories were associated with pleasurable products and the experiences that the consumer has had. This finding is contradictory to the survey conducted by Norman (2004) which found that the objects that were loved were too obvious or entangled in the consumer’s life to be noticed. Norman’s (2004) finding that overall people are passionate about their belongings and experiences is however backed up by the findings of this research.

The context was also something that was commonly linked to memories and favourites. Context of use, how or where the product had been made or received, and the designer or manufacturer of the product played an important role in the consumers’ judgement of the product being a pleasurable or displeasurable memory. How and where the product had been made was most pleasurable when the consumer had themselves contributed to the making, restoration or maintenance of
the product. These concept relationships were seen to result in emotional judgements, as expressed by these formulas:

\[
\text{memories \& favourites} \cap \text{context} \rightarrow \text{emotional judgement}
\]

\[
\text{memories \& favourites} \cap \text{manufacture} \rightarrow \text{emotional judgement}
\]

\[
\text{memories \& favourites} \cap \text{context} \cap \text{manufacture} \rightarrow \text{emotional judgement}
\]

Appearance, texture and the properties greatly contributed to pleasurability judgement of the memories concepts too. Materials were said to be the most memorable and pleasurable in appearance, texture or properties when they were considered to be of natural origin. Very distinct memories concerning the engagement of the senses were often mentioned by participants. Such memories contradict Norman (2004) who states that surface appearance plays a minor role in memory and attachment compared to interaction. It is this research’s findings that viewing the object is an extremely important part of both short and long term interaction. Depending on the type of object in question, viewing may be the sole interaction. At the very least surface appearance can be used to encourage physical interaction. It was said by many participants that woods’ appearance in particular encouraged touch. The following formulas identify the intersections (\(\cap\)) between the memories and favourites concepts and the appearance, texture and touch, properties and origins of the materials which may result in an emotional judgement by the consumer:

\[
\text{memories \& favourites} \cap \text{texture \& touch} \rightarrow \text{emotional judgement}
\]

\[
\text{memories \& favourites} \cap \text{appearance} \rightarrow \text{emotional judgement}
\]

\[
\text{memories \& favourites} \cap \text{properties} \rightarrow \text{emotional judgement}
\]

\[
\text{memories \& favourites} \cap \text{origin} \rightarrow \text{emotional judgement}
\]

\[
\text{memories \& favourites} \cap \text{texture \& touch} \cap \text{appearance} \rightarrow \text{emotional judgement}
\]

\[
\text{memories \& favourites} \cap \text{texture \& touch} \cap \text{properties} \rightarrow \text{emotional judgement}
\]

\[
\text{memories \& favourites} \cap \text{appearance} \cap \text{origin} \rightarrow \text{emotional judgement}
\]

\[
\text{memories \& favourites} \cap \text{properties} \cap \text{origin} \rightarrow \text{emotional judgement}
\]

\[
\text{memories \& favourites} \cap \text{texture \& touch} \cap \text{appearance} \cap \text{properties} \cap \text{origin} \rightarrow \text{emotional judgement}
\]

Durability concepts were also linked to the emotional judgements of the memories and favourites concepts. The memories that participants associated with items made
the emotional judgement of the material durability go one of two ways. The wear or aging either contributed to the memories and build up a character or story in the surface of the material resulting in pleasure, or were considered to be intolerable and displeasurable as they scarred the surface. The texture and touch and appearance concepts were also found to link with durability when consumers judge the emotions associated with the memories or favourites concepts. The effect that the material durability had on the tactile and visual experiences that the consumers had was often judged emotionally. The intersections ($\cap$) of all of these four concepts are shown in the following formulas:

\[
\begin{align*}
\text{memories & favourites} \cap \text{texture & touch} & \rightarrow \text{emotional judgement} \\
\text{memories & favourites} \cap \text{appearance} & \rightarrow \text{emotional judgement} \\
\text{memories & favourites} \cap \text{durability} & \rightarrow \text{emotional judgement} \\
\text{memories & favourites} \cap \text{texture & touch} \cap \text{appearance} & \rightarrow \text{emotional judgement} \\
\text{memories & favourites} \cap \text{texture & touch} \cap \text{durability} & \rightarrow \text{emotional judgement} \\
\text{memories & favourites} \cap \text{appearance} \cap \text{durability} & \rightarrow \text{emotional judgement} \\
\text{memories & favourites} \cap \text{texture & touch} \cap \text{appearance} \cap \text{durability} & \rightarrow \text{emotional judgement}
\end{align*}
\]

The tolerance associated with the wear of some materials was due to the positive memories that the consumer had with the product. This is similar to the finding by Norman (2002) that pleasure associated with a product will make users more tolerant of difficulties or problems with the interface. Participants associated the maintenance or restoration of materials to memories and favourites. This link between the maintenance and the memories and favourites concepts was due to the actual maintenance process, which was said to be either a displeasurable or pleasurable memory depending on the participant. Pleasurable emotions were also associated with the results of the maintenance. Restoring a material to its former self realigned the material with memories of when the material was new. The following formula illustrates the maintenance and memories and favourites concepts intersection:

\[
\text{memories & favourites} \cap \text{maintenance} \rightarrow \text{emotional judgement}
\]

Figure 26 shows all of the significant concepts that contribute to the consumers forming an emotional judgement about the memories and favourites concepts. Each
of the intersections shown in Figure 26 has the potential to illicit an emotional reaction from the consumer.

Figure 26. Consumers’ concepts of material memories and favourites

10.2 Implications and limitations of this research

As previously discussed this research has a number of findings that concur with previous research done on materials and product pleasurable. This research has, however, identified new knowledge relating to consumers’ concepts of materials. The combinations of consumers’ material concepts that create an emotional response from the consumer are significant new findings. The understanding of these combinations of concepts which result in the consumers’ emotional judgement is able to contribute to knowledge regarding user-centred material selection and material pleasureability. Findings of this research indicate that consumers’ emotions are significantly affected by the materials that are used in the products that they buy and interact with.

It has been identified that consumers are conscious of the durability of their products and the materials that they are made from. An understanding of the emotion consumers attribute to the effect wear and aging had on the materials’ physical appearance has been achieved. This knowledge contributes to the support of
environmentally conscious design, as well as user-centred design knowledge and practice. The understanding of consumers’ physical and emotional concepts of materials enables material selection that could prevent consumer displeasure regarding the durability, disposal and environmental impact of their belongings. Using the knowledge gained about why and how items are disposed of, as well as understanding what consumers do not know about appropriate environmental waste disposal is an important consideration of environmentally conscious design. Catering to the ideals of the user and ensuring that they have pleasurable experiences through the materials that they come into contact with will add to current user-centred design knowledge.

This research is limited to the 30 participants’ concepts of materials. The experiment was specifically designed not to give the consumers any physical material prompts and focused purely on the material recollections of the consumer. All of the information that was collected from these participants relied on what was memorable to them. These findings are limited by the types of materials that the user has had contact with and had remembered. Materials that the participants may not have been as familiar with were therefore not considered. The number of participants involved in the study may also have limited the findings of this study. Demographics such as gender, age, culture and professional background were, however, carefully considered when selecting participants, ensuring that there was as little bias as possible.

10.3 Summary

This chapter has outlined the significant findings of this research. The linkages and intersections between the consumers’ concepts of materials have been identified. These provide a new understanding of the ways in which consumers form their emotional judgements of the materials. The material concepts and concept links have been compared to existing literature, identifying where this research contributes to current and new knowledge. Identification of the intersection of consumers’ concepts of materials represents the significant new knowledge contributions. The implications of these findings have also been identified, along with the limitations.
11. CONCLUSION AND FUTURE DIRECTION

This research has explored consumers’ concepts of materials. The interest that inspired this research was the emotion elicited by products. The focus of this research was to increase the understanding of the roles that materials can play in the enhancement or prolonging of the emotional product-user relationships.

The literature demonstrates that understanding relating to the use of materials in product design has been investigated from both engineering and design perspectives. However, none of these studies have explored the consumers’ concepts of the materials; rather they have focused on participants’ discussions of material samples. Consumers’ emotional reactions to the materials themselves or the consumers’ reaction to the durability of the materials have not been previously explored in depth either. This research has investigated these issues and has found that consumers’ have very specific concepts about materials. Furthermore, the combinations of consumer concepts that are likely to illicit an emotional judgement by the consumer have also been identified. This understanding of consumers’ emotional reactions to materials can significantly contribute not only to design considerations but to knowledge regarding the promotion of prolonged product-user relationships.

This research indicates that there are a number of consumer concepts regarding materials that need to be taken into account. These are not only physical concepts such as material appearance or properties but concepts relating to the appropriateness of a materials’ use for particular product or context. Consumer concepts relating to the entire life of the product or material were also extremely significant findings. It has been found that the consumers’ choices are affected by their concepts of the durability and disposal of an artefact’s materials. This indicates that the entire life of a material needs to be a consideration of both researchers in this area and designers involved in the material selection process.
11.1 Contribution and transfer of knowledge

The findings of this research convey new knowledge that is relevant to the design domain. The findings of this research primarily provide the answers to the main aim and question that this research set out to investigate which was:

- What are consumers’ concepts about materials?

This research has achieved its aim of finding new knowledge pertaining to what consumers’ concepts about materials are. In addition to identifying the physical and emotional consumers’ concepts of materials this research has provided qualitative data for each of the six materials under investigation. More significantly however this research has identified that these concepts are used individually and in combination by consumers to form emotional judgements about the materials. These consumer emotional judgements will affect the likelihood of a pleasurable product user interaction and relationship. This is the most novel and significant finding of this research. Understanding how these judgements are formed can enhance designers’ ability to select materials that will promote pleasurable product experiences. This research will contribute to design knowledge in the areas of materials, emotion and product experience and user-centred design. This understanding of emotional judgements of materials is not only a significantly contributions to design knowledge but is applicable in many other domains. An example of this is the domain of Human Computer Interaction (HCI) which will be able to benefit from knowledge regarding the enhancement of the user interface experience in the virtual or second life environment.

The three sub-questions developed to better focus the direction of this research were:

- Do male and female consumers have different concepts of materials?
- Do durability and changes in the appearance of the material due to age and wear have an effect on the product-user relationship?
- How can consumers’ concepts of materials assist in the creation of emotionally durable product-user relationships?
There was an expectation that male and female consumers would have significantly different concept of materials. This was not the case. It can be seen in Chapter 9 that there are many slight differences between male and female consumers’ concepts but very few situations where the percentage frequency difference was more that 2%. There were only three occasions where the frequency difference exceeded 4%. The first of these was an 8% higher frequency of female participants’ regarding the low status of plastic. The second and third are the higher female frequency regarding the origin of textile, with a 10% higher frequency regarding the synthetic origin and a 12% higher frequency regarding the natural origin. The only other difference between the genders worth mentioning is the female participants’ ability to more elaborately and passionately articulate their emotions concerning the materials.

The second of the three sub-questions has been clearly answered in both the appearance and the durability concept findings in Chapter 9. It has been found that durability and changes to the appearance of the materials due to age and wear do have an effect on the product-user relationship. This effect is largely dependent on a number of variables. The product-user relationship can be either enhanced or worsened depending of the type of material, the consumers’ concepts of that materials’ properties, durability, maintenance, the resulting appearance and the memories that the user had created with the product in question.

The third sub-question asks how the consumers’ concepts of materials can assist in the creation of emotionally durable product-user relationships. This question is the hardest to answer. Chapter 10 shows that understanding the linkages between all the concepts will enhance the understanding of how many considerations need to be taken into account when selecting materials to ensure pleasurable experiences. Consumers have pre-existing concepts that affect their judgements as to whether a particular material deserves a pleasurable emotionally durable relationship. The consumers’ concept of the origin of the material is just one example that is seen to affect this judgement. It has also been found that there is consumer displeasure experienced at the end of product-user relationships with products deemed to have a short usable life span. This is not due to an emotional attachment to the product but rather a deep dissatisfaction with some materials’ inability to be reused, recycled or biodegraded instead of being placed in landfill. It is evident that in some cases
disposal causes displeasure, anger and even guilt. It is apparent that consumers are dissatisfied with the gap between the usable and the actual life of particular products. It is evident that designers need to better match consumers’ expectations of a products’ life span with the materials that are selected for its manufacture.

This research has made contributions to previous research involving the investigation of material meanings (Karana and Hekkert, 2008; Karana, Hekkert and Kandachar, 2009). Knowledge relating to the emotional attributes of materials and the changes in material concepts over time will add to the knowledge regarding the material meanings. It was also found that sensorial characteristics of materials not only contribute to the meaning (Karana, Hekkert and Kandachar, 2009), but also to the intensity of the emotion the consumer experiences.

This research contributes to knowledge in the product-user considerations in design practice. The consideration of the consumers’ material concepts and the way in which the consumers link these concepts to one another in order to emotionally judge the materials will allow designers to better predict the outcome of their materials selection of the product-user interaction. Understanding and consideration of consumers’ concepts of materials and the material concept intersection diagrams or formulas will allow designers to select materials which will promote pleasurable enjoyment with a product. Ashby (2004) considers the satisfaction of the user as being central to contemporary product design. The selection of materials is an integral part of providing this satisfaction to the user. The literature research has indicated that user-centred material considerations are best taken into account in the early stages of the design process (Karana, Hekkert and Kandachar, 2007; van Kesteren, 2008). The consideration of the users’ concepts in these early phases of the design can be critical to ensuring the designer’s efforts are directed appropriately (Fulton Suri and Marsh, 2000 cited in van Kesteren, 2008) and the quality of the product-user relationship is enhanced (Bonapace, 2002). The findings of this research can better inform designers of the short and long term effects the material choices they make will have on the emotions of the consumers. This research assists in decreasing the gap between technical and user-material considerations in the design process.
The consumers’ material concepts and concept linkages that promote pleasurability do not only contribute to the material selection based on currently available materials. Newly developed materials may also be evaluated using the information gathered from the consumers about what are pleasurable or displeasurable sensations, depending on the type of application and the context in which it is used. Designers or material manufacturers may be able to predict how consumers will react to the new materials that they intend to use based on the knowledge they have of consumers’ concepts of current materials. This evaluation of new materials may not just occur in the physical realm but also in the virtual.

Norman (2004) states that neither the designer nor the manufacturer can guarantee attachment. McCarthy and Wright (2003) state that it is only possible to design for an experience but that the certainty of a particular experience cannot be predicted or dictated. The same can be said for promising a particular emotional response from a product according to Hassenzahl (2004). This research, however, shows that informed material selection can bring designers or manufacturers one step closer to being able to providing attachment, experience and emotional response. It has been shown in Chapter 10 that consumers use their concepts of materials to emotionally judge the outcome of their use. If a designer or manufacturer would like to consider attachment or experience for example, they would benefit from considering the consumers’ material concepts that have been linked with the memories and favourites, status or durability concepts. Consideration of the way in which consumers emotionally judge materials both on initial contact and over time will better inform the material selection process in order to prevent consumer disappointment due to unwanted material characteristics or behaviours.

This research has also developed a unique methodology for acquiring information directly from the consumer about their material concepts. This methodology and probing technique can be transferred into further research in this area.
11.2 Future research directions

This study provides the foundation for future research into consumers’ concepts of materials and has created a number of interesting avenues of investigation that can be further pursued. Firstly, further investigation is needed on the consumers’ concepts of the materials’ durability and disposal. A greater understanding of the products and contexts for which materials’ wear and aging will contribute to the consumers’ emotional attachment and experiences is needed. The disposal of a product marks the end of the product-user relationship but is no less important than the start. Wasteful behaviour has been found to generate consumer displeasure. Determining when and how consumers would like to dispose of their unwanted belongings would contribute to the overall pleasurability of the product-user experience.

Secondly, this research has identified new design knowledge in the form of the consumers’ concepts of materials and the diagrams and formulas which identified the concepts intersections that illicit emotional judgement. These diagrams and formulas can be translated into a methodology/tool for practicing designers to consider and implement in their own material selection and design process. This methodology or tool can then be assessed to identify the effects it has on the material selection outcome.

Finally, an additional area of research could investigate the implications of applying consumers’ concepts of real world materials to the virtual environment. This investigation may reveal one of two outcomes. One, consumers may have identical concepts of both real and virtual materials or two, a completely different set of concepts may be needed for virtual environments. Either of these outcomes can contribute greatly to the enhancement or prolonging of virtual experiences.

11.3 Summary

This research has contributed significant new knowledge regarding the consumers’ concepts of the materials experienced in the products that they come into contact with. This research is unlike any other study on materials, focusing on the
consumers’ concepts of materials rather than physical samples. This research identified physical and emotional concepts relating to the entire life of the material, from the origin of the material right through to its disposal. This research is the first of its kind to look at consumers’ emotional reactions to materials and the concepts of the durability and life of the materials in depth. The concepts relationships that are likely to invoke emotional judgements by the consumer were also identified and expressed as diagrams and formulas. The understanding of the material concepts and the concept intersections contributes to design knowledge. The consideration of the consumers’ material concepts and concept intersections provides interesting possibilities for design practice implementation. This research’s findings can enable designers to better consider the consumers in the material selection process in order to enhance or prolong the product-user relationship. From a design research point of view these findings provide a number of interesting avenues for further work in this area.
REFERENCES


APPENDICES

Appendix A. Pilot study development
- The 10 development stages of the Concept Prompt Probe

Appendix B. Data collection tools
- Initial questionnaire
- Introduction to the experiment

Appendix C. Participant information pack
- Information sheet
- Participant consent form

Appendix D. Results of initial questionnaire

Appendix E. Data sample
- Transcript of male and female participant 4

Appendix F. Data analysis sample

Appendix G. Specific context examples

Appendix H. Expense findings

Appendix I. Status findings

Appendix J. Summary of analysis findings
Appendix A. Pilot study development
For the purpose of information retrieval on consumers’ concepts of materials it was decided that participants should take part in a co-discovery. This method was used as it was believed that participants would prompt one another. Discussion was thought to be able to reveal more information than a single participant would if unprompted by another person.

To assist both of the participants with their discussion a prompt instrument was envisaged. The final design was aptly named the Concept Prompt Probe. This directed the discussion to focus on specific materials and concepts that were under investigation. The process of designing the final experiment prompt instrument was a long process with many iterations and testings. The following attachment documents this process.

1. Flip cards

Two groups of cards were developed, one with material names and the other with concepts. These were to be stacked in front of the participants, who would be prompted to flip through the piles and discuss the topics. This was not thought to be very engaging and was possibly not structured enough.

2. Word association

It was then thought that maybe the participants may work better with many words using grouping or word association to express their ideas about the materials. It was decided that this would be time consuming and would not promote the expression of their own thoughts, rather the arrangement of the researcher’s thoughts.

3. Cards

Due to the number of ‘concept’ words they were reduced and grouped into categories. This was done in order to speed up the experiment and to allow the participants to be more expressive of their own thoughts.

4. Flip through book

Due to the grouping of the concepts into categories it was thought that the expression of the group on one page may be more beneficial than multiple loose cards. An example of a page is shown in Figure 27.
5. Round page for each material

All of the pages from the previous experiment variation were then put onto one page for each of the materials to reduce the users’ interaction with the experiment instrument and to promote a full view of the concepts of the material.
6. First moving round instrument

A reduction in the visual data was thought necessary and an instrument was developed to show only one material and one group of concepts at a time.

7. Second moving round instrument

A concept reduction was then thought necessary.

8. Third moving round instrument

Further terms were changed. A test of the time involved in discussing all the materials and concepts was conducted and deemed to be too long to hold the
participants' attention. A repetition of discussion was also observed as participants referred to materials and concepts that had yet to be revealed.

![Figure 29. 3rd round experiment tool](image)

![Figure 30. 3rd round experiment tool](image)

9. PowerPoint instrument

All the material names were to be shown at once, reducing repetitive discussion and reducing the time of the experiment. A reduction in concept terminology was again done to reduce the experiment time (Figure 31 and 32). It was later decided that the paper instrument and round table discussion would be more comfortable for the participants and therefore produce better data.
10. Concept Prompt Probe

To reduce the experiment time and to allow the participants more freedom of discussion topics the four concepts from each side were revealed at once. This is the final instrument that was used for the pilot experiment; it was named the Concept Prompt Probe.

The term ‘materials’ was defined, and it was decided that six terms encompassed products sufficiently. These were:

- Metal
- Plastic
- Wood
- Ceramic
- Glass
- Textile
These material terms were thought to encompass the majority of materials used in the making of the products that users would interact with on a daily basis in home, work and leisure environments. Each of these terms covers a number of materials which are different in origin and application. The broad terms allow for maximum participant interpretation and association. These six material terms were shown on the instrument for the participants to discuss.

The Concept Prompt Probe also provided prompts for key concepts focusing around the two broad topics of physical qualities and emotional qualities.

Under the physical qualities topic area were the terms:

- Appearance
- Texture/touch
- Properties
- Wear, aging and disposal

Figure 33. Concept Prompt Probe at start of experiment

Figure 34. Concept Prompt Probe with physical concept prompts revealed
The term ‘appearance’ was used to gather information on the physical appearance of the material. It may also prompt the participants to discuss the different applications and types of products that the materials are used in. Participants may also reveal their feelings and thoughts on the colour, shape and varying surface finishes of the materials.

‘Texture and touch’ were the terms used to determine the users’ opinions of the physical feel of the material. This may include temperature, variety of textures created with the one material and preferences in textures.

The term ‘properties’ was used to establish the participants’ views on qualities such as weight, flexibility and lifespan of the materials.

‘Wear, aging and disposal’ was used to prompt discussion about the appearance and appeal of the materials once it began to age and how the participants view the disposal of the material.

Under the emotional topic area were the terms:

- Pleasure
- Displeasure
- Status
- Memories and favourites

Figure 35. Concept Prompt Probe with emotional concept prompts revealed

The terms ‘pleasure’ and ‘displeasure’ were used to prompt any emotional opinions that may not have been previously voiced about the materials. Participants may reveal what they specifically like and dislike about the materials and the applications they are used for.

‘Status’ was used to prompt discussion about how the participants may view materials in terms of their impressions of others or others’ impressions of them, the expense of the materials and possibly what applications of the materials would invoke status.

‘Memories and favourites’ was used in evoke favourite applications or products which use the materials. These terms may also reveal information regarding
attachments to objects and whether the materials they are made of play a part in this attachment.
Appendix B. Data collection tools

- Initial questionnaire
- Introduction to the experiment
Initial Questionnaire

Personal Information

1. Surname or Family Name
   ______________________________________________________________________
   First or Given Names
   ______________________________________________________________________

2. Email Address
   ______________________________________________________________________

3. Telephone number during business hours
   ______________________________________________________________________

4. Age at last birthday
   _____ Years

5. Nationality
   ______________________________________________________________________

6. Family’s Cultural Heritage
   (For example I am Zimbabwean in nationality, but British by Heritage)
   ______________________________________________________________________

7. Gender
   ☐ Male
   ☐ Female

8. Profession
   ______________________________________________________________________
9. Highest level of education achieved

- High school
- Tafe/College/Trade
- Bachelor Degree
- Masters
- PHD
- Other – please specify

10. Do you work with any of the following materials?

- Metal
- Plastic
- Wood
- Ceramic
- Glass
- Textile
- None of the above

11. Do your hobbies involve working with any of the following materials?

- Metal
- Plastic
- Wood
- Ceramic
- Glass
- Textile
- None of the above

12. Living arrangements

- Rent
- Own
- Other – please specify
This exercise is to help generate information relating to consumers’ concepts or ideas about particular materials. These materials will be revealed to you during the session.

The session will be conducted with the use of a cardboard tool. There will be two types of words displayed on this tool. The main panel will show 6 material categories. The 2 slide out panels will show discussion prompts. One at a time you are to pull out and discuss each of these 2 prompt panels in relation to the material categories displayed.

In your pair please talk to and prompt one another, expressing any ideas or assumptions. Feel free to discuss anything with your partner that you feel relevant.

A brief demonstration of the tool will be given prior to starting the session. If there are any questions or concerns please let me know and I will clear up any uncertainty.

Thank you for your valuable participation.

Shayne
Appendix C. Participant information pack
PARTICIPANT INFORMATION for QUT RESEARCH PROJECT

USERS'/CONSUMERS' CONCEPT ABOUT MATERIALS

<table>
<thead>
<tr>
<th>Research Team Contacts</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Shayne Beaver (Researcher)</td>
<td>Prof Vesna Popovic (Principle Supervisor)</td>
</tr>
<tr>
<td>0438830634</td>
<td>3138 2669</td>
</tr>
<tr>
<td><a href="mailto:s2.beaver@student.qut.edu.au">s2.beaver@student.qut.edu.au</a></td>
<td><a href="mailto:v.popovic@qut.edu.au">v.popovic@qut.edu.au</a></td>
</tr>
</tbody>
</table>

Description
This project is being undertaken as part of a PhD for Shayne Beaver.

The purpose of this project is to identify the users'/consumers’ concept about a number of specified materials currently used in the consumer products.

The research team requests your assistance in identifying the above concepts by your participation in a video and audio recorded experiment.

Participation
Your participation in this project is voluntary. If you do agree to participate, you can withdraw from participation at any time during the project without comment or penalty. Your decision to participate will in no way impact upon your current or future relationship with QUT (for example your grades).

Your participation involves being paired with another participant for the exercise. Prior to the start of the exercise the two of you will fill in a short document to obtain some primary information such as gender and age. You will then be given a short explanation of the session and information relating to the methods and tools that will be used. The session will use visual cues in the form of written words or physical samples to prompt an open discussion between the two of you about your concepts/thoughts and impressions about materials. During the experiment you will be videoed and audio recorded so the information can be analysed at a later date.

The experiment will take place at the Human-Centred Design Research and Usability Laboratory located in Level 4, D Block of QUT Gardens Point Campus. The experiment will take no longer than an hour of your time. Please note that all materials required to complete the experiment will be provided. Due to the nature of the testing you may require prescription glasses if worn.

Key findings of the experiments will be published in my thesis, as well as any published research papers or conferences.
**Expected benefits**
The outcome of this research will benefit the broader design community and product users through its contribution to knowledge.

**Risks**
There are no risks beyond normal day-to-day living associated with your participation in this project. Every endeavour has been taken to reduce additional risks associated with your participation. The cameras and audio devices will be as unobtrusive as possible and will not interfere with your discussion. They will be in a fixed position and you will be informed where they are located before you begin the experiment. The researcher will be in the room adjacent throughout the duration of the research task. If anything out of the ordinary occurs, or if you have a question, the researcher will be immediately available.

**Confidentiality**
Participation in this project is not possible without being video and audio recorded. The video and audio recordings will not be destroyed after analysis; rather they will be kept as backup and securely stored in a lockable space within the Human-Centred Research Laboratory which will only be accessible to the research team. At no stage will individuals’ names be displayed on any of the video footage.

Only the research team will be able to connect you with your personal information. Comments made during the experiment will be published without the verification of the participants. All comments and responses are anonymous and will be treated confidentially. Your anonymity and confidentiality will be safeguarded in any publication of the results of this research through the use of pseudonyms.

**Consent to Participate**
We would like to ask you to sign a written consent form (enclosed) to confirm your agreement to participate.

**Questions / further information about the project**
Please contact the researcher team members named above to have any questions answered or if you require further information about the project.

**Concerns / complaints regarding the conduct of the project**
QUT is committed to researcher integrity and the ethical conduct of research projects. However, if you do have any concerns or complaints about the ethical conduct of the project you may contact the QUT Research Ethics Officer on 3138 2340 or ethicscontact@qut.edu.au. The Research Ethics Officer is not connected with the research project and can facilitate a resolution to your concern in an impartial manner.
CONSENT FORM for QUT RESEARCH PROJECT

THE USERS'/CONSUMERS’ CONCEPT ABOUT MATERIALS

Statement of consent

By signing below, you are indicating that you:

- have read and understood the information document regarding this project
- have had any questions answered to your satisfaction
- understand that if you have any additional questions you can contact the research team
- understand that you are free to withdraw at any time, without comment or penalty
- understand that you can contact the Research Ethics Officer on 3138 2340 or ethicscontact@qut.edu.au if you have concerns about the ethical conduct of the project
- agree to participate in the project
- understand that the project will include audio and/or video recording

☐ I agree to the publication of my images in the documentation of this research project
☐ I do not agree to the publication of my images in the documentation of this research project

Name  

Signature  

Date  /  /  
Appendix D. Results of initial interview
<table>
<thead>
<tr>
<th>Gender</th>
<th>Age</th>
<th>Nationality</th>
<th>Family Heritage</th>
<th>Countries lived in</th>
<th>Profession</th>
<th>Education</th>
<th>Work with materials</th>
<th>Hobbi es with materials</th>
<th>liv ing</th>
</tr>
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<tbody>
<tr>
<td>Females (20 – 35)</td>
<td>27</td>
<td>Australian</td>
<td>Scottish/ British</td>
<td>Australia (27)</td>
<td>Nurse/student</td>
<td>Bachelor Degree</td>
<td>-</td>
<td>Rent</td>
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<tr>
<td></td>
<td>29</td>
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<td>Norwegian</td>
<td>Norway(22) UK (2) Australia (5)</td>
<td>Photographer</td>
<td>Bachelor Degree</td>
<td>-</td>
<td>Textile</td>
<td>Rent</td>
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<tr>
<td></td>
<td>23</td>
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<td>Australian</td>
<td>Australia (21) Taiwan (1) Thailand (1)</td>
<td>Engineering student</td>
<td>Bachelor Degree</td>
<td>-</td>
<td>Rent</td>
<td></td>
</tr>
<tr>
<td></td>
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<td>Israeli</td>
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<td>-</td>
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<td>32</td>
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<td>Own</td>
<td></td>
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<td>-</td>
<td>Textile</td>
<td>Rent</td>
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<td>Wood</td>
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<td>Wood</td>
<td>Live with family</td>
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<td>Masters</td>
<td>-</td>
<td>Own</td>
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<td>Australian</td>
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<td>Own</td>
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<td>Metal</td>
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<td>Indian</td>
<td>Tanzania (9) UK (30) Australian (10) India (1.5) Israel (1) Germany (1)</td>
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<td>Masters</td>
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<td>Wood</td>
<td>Metal</td>
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<td>Masters</td>
<td>-</td>
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<td>British</td>
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<td>Bachelor Degree</td>
<td>Metal</td>
<td>Wood</td>
<td>Own</td>
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<td>Italian</td>
<td>Australia (53)</td>
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<td>-</td>
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<td>Executive officer</td>
<td>Masters</td>
<td>-</td>
<td>Own</td>
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<td>Family Heritage</td>
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<td>Education</td>
<td>Work with materials</td>
<td>Hobbi es with materials</td>
<td>Living</td>
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<td>-----------------</td>
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<td>---------------------</td>
<td>-------------------------</td>
<td>----------</td>
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<tr>
<td></td>
<td>61</td>
<td>New Zealand/ British/ Australian</td>
<td>British</td>
<td>Australia () New Zealand () UK () Kenya ()</td>
<td>Customs officer</td>
<td>Tafe/college/ trade</td>
<td>Metal Plastic Ceramic Glass</td>
<td>Textile Wood Metal</td>
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<td>55</td>
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<td>British</td>
<td>Australia (22) UK (33)</td>
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<td>Sri Lankan</td>
<td>Australia (18) Sri Lanka (38) Kenya (2)</td>
<td>Engineer</td>
<td>PhD</td>
<td>-</td>
<td>-</td>
<td>Own</td>
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<td>Australia (57)</td>
<td>Medical Scientist/ academic</td>
<td>Other - Fellowship</td>
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</table>
Appendix E. Data sample

Transcription of Pilot Experiment 4 with male participant 4 (Mp4) and female participant 4 (Fp4)

10 November 2007
<table>
<thead>
<tr>
<th>Time</th>
<th>User</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:15</td>
<td>Mp4</td>
<td>Ok Appearance, texture, touch, properties, wear, aging and disposal, and I’ll have a look in this one, pleasure, displeasure, status, memories and favourites. Metal</td>
</tr>
<tr>
<td>00:46</td>
<td>Fp4</td>
<td>Why metal, because it’s the first one</td>
</tr>
<tr>
<td>00:50</td>
<td>Mp4</td>
<td>Metals new</td>
</tr>
<tr>
<td>00:52</td>
<td>Fp4</td>
<td>Well it’s ancient</td>
</tr>
<tr>
<td>00:54</td>
<td>Mp4</td>
<td>It is but I think of, I think of old I think of wood, I think of metal I think of new</td>
</tr>
<tr>
<td>01:05</td>
<td>Fp4</td>
<td>Because we are able to use metal to create all these new things</td>
</tr>
<tr>
<td>01:09</td>
<td>Mp4</td>
<td>yup</td>
</tr>
<tr>
<td>01:13</td>
<td>Fp4</td>
<td>And they last for a long time</td>
</tr>
<tr>
<td>01:19</td>
<td>Mp4</td>
<td>Although wood is memories and favourites, like you think of your favourite things</td>
</tr>
<tr>
<td>01:19</td>
<td>Fp4</td>
<td>Yes wood is lovely</td>
</tr>
<tr>
<td>01:22</td>
<td>Mp4</td>
<td>Like…</td>
</tr>
<tr>
<td>01:23</td>
<td>Fp4</td>
<td>And it’s organic</td>
</tr>
<tr>
<td>01:25</td>
<td>Mp4</td>
<td>It’s organic, I think of old things like antique things</td>
</tr>
<tr>
<td>01:30</td>
<td>Fp4</td>
<td>And it invokes memories because it has its own feel doesn’t it</td>
</tr>
<tr>
<td>01:35</td>
<td>Mp4</td>
<td>Yup. What about glass?</td>
</tr>
<tr>
<td>01:39</td>
<td>Fp4</td>
<td>I really like glass, because I like the way you can create with glass</td>
</tr>
<tr>
<td>01:44</td>
<td>Mp4</td>
<td>I find glass and metal</td>
</tr>
<tr>
<td>01:46</td>
<td>Fp4</td>
<td>That’s your favourite?</td>
</tr>
<tr>
<td>01:48</td>
<td>Mp4</td>
<td>Goes together like that’s what most new things are made from, like architecture and new houses</td>
</tr>
<tr>
<td>01:55</td>
<td>Fp4</td>
<td>Yeah</td>
</tr>
<tr>
<td>01:58</td>
<td>Mp4</td>
<td>And plastic</td>
</tr>
<tr>
<td>02:01</td>
<td>Fp4</td>
<td>And plastic, sometimes depending on what sort of plastic, I don’t like plastic very much</td>
</tr>
<tr>
<td>02:07</td>
<td>Mp4</td>
<td>Mmmm</td>
</tr>
<tr>
<td>02:08</td>
<td>Fp4</td>
<td>I quite like ceramics</td>
</tr>
<tr>
<td>02:11</td>
<td>Mp4</td>
<td>Ceramics like what, pottery?</td>
</tr>
<tr>
<td>02:13</td>
<td>Fp4</td>
<td>Yeah, particularly creative ceramics but some larger context ceramics like in buildings are quite beautiful because you can put such a brilliant shiny glaze</td>
</tr>
<tr>
<td>02:28</td>
<td>Mp4</td>
<td>What about status, that’s an interesting one</td>
</tr>
<tr>
<td>02:32</td>
<td>Fp4</td>
<td>Glass and ceramics have a status don’t they</td>
</tr>
<tr>
<td>02:35</td>
<td>Mp4</td>
<td>Glass, ceramics and metal</td>
</tr>
<tr>
<td>02:38</td>
<td>Fp4</td>
<td>Metal, but textile too, print</td>
</tr>
<tr>
<td>02:42</td>
<td>Mp4</td>
<td>Yeah textile, I find… I find a lot of new architecture and design are metal, glass and plastic were as the old stuff, the stuff that’s really expensive are mostly wood and textile</td>
</tr>
<tr>
<td>03:03</td>
<td>Fp4</td>
<td>Yeah, do you like the new stuff though?</td>
</tr>
<tr>
<td>03:05</td>
<td>Mp4</td>
<td>No, I like wood</td>
</tr>
<tr>
<td>03:07</td>
<td>Fp4</td>
<td>I do too, I’m predisposed to wood, I’ve got wood and that and when I think back to that house that we lived in, that was my design and that was timber the whole thing was timber</td>
</tr>
<tr>
<td>03:21</td>
<td>Mp4</td>
<td>Yeah, pine</td>
</tr>
<tr>
<td>03:24</td>
<td>Fp4</td>
<td>No the um… Oregon, what’s it called the Canadian stuff?</td>
</tr>
</tbody>
</table>
03:30 Mp4 Teak
03:31 Fp4 No, no, no it’s a soft wood, it was really beautiful and it had a
fragrance, which it gradually lost over the years but you could always
still imagine it just a little bit, it was lovely, do you remember the
whole room, ceiling and everything
03:45 Mp4 Yeah vaguely
03:48 Fp4 The ceiling and the stair, cedar
03:54 Mp4 Cedar
03:56 Fp4 I got in trouble from dad, he thought it looked like a box
04:02 Mp4 (laughing)
04:03 Fp4 But it wasn’t it was beautiful to the point where it was just so warm,
’cause it’s organic I guess
04:06 Mp4 That what I like about wood
04:08 Fp4 Out of all of them, I suppose you could say that metal is organic
04:12 Mp4 So is plastic
04:12 Fp4 Do you remember that iron earrings I had from western Australia that
were like thousands and thousands of years old
04:24 Mp4 It funny because plastic isn’t something that you’d talk about like
wood, it seems to be in everything these days, like everything that you
buy is plastic
04:34 Fp4 It’s very utilitarian, I suppose you can mould it, can’t you?
04:39 Mp4 Yep
04:40 Fp4 But it’s not very pretty, it’s not very appealing, in and of itself is it?
04:49 Mp4 No
04:50 Fp4 Not like wood or glass. Have you ever seen any of (name)’s glass?
04:55 Mp4 Nope
04:56 Fp4 It’s awesome ****
04:58 Mp4 I don’t find that plastic has anything to do with status or memories and
favourites
05:02 Fp4 No, no
05:03 Mp4 Wood does, ceramics do to a certain extent
05:08 Fp4 What about the spaceship
05:10 Mp4 Na, it’s all crap
05:13 Fp4 Oh **** (laughing)
05:15 Mp4 But like that table
05:17 Fp4 That’s beautiful, that came from ……..
05:19 Mp4 Yeah well ?????????????????
05:22 Fp4 (Name)’s got blow from Venice glass, I’ve got some at home, it’s
gorgeous stuff, but you can have something very tiny and exquisitely
small with it, but you can also have enormous things made from glass,
it’s gorgeous, and that only sand isn’t it
05:39 Mp4 What about displeasure and wear, that’s what we’re talking about
anyway?
05:44 Fp4 I find that plastic displeases me, it’s crap
05:46 Mp4 Displeases you (laughing) I like wood
05:54 Fp4 I like wood too
05:56 Mp4 I don’t like glass and metal, I find it sterile
05:59 Fp4 But glass is gorgeous (name)
06:02 Mp4 No the whole new architecture thing, if you put it into the context of
pleasure and displeasure I think of metal and glass

What about hand blown?

I think of dad’s place, it’s very cold and sterile, glass and ceramic

That’s ’cause he’s in there

No, it’s more than that, it’s the design of the house, it doesn’t matter who was in there, the design of the house very much made up of metal, glass and ceramic

Is it new?

Yeah, it’s like ceramic tiles, a lot of metal fittings and a lot of glass

Ah, I don’t know I haven’t seen it, but has he got textiles

Not really

To soften it

Na

No timber

It’s really hard

No timber

No not much, no there’s none

He’s just got no imagination

There’s not, even the table, it’s glass, so when I walk into a house like that I feel cold

Yeah

Where as if I walk into a house with wood and ceramic I feel warm

I’ve never really thought about it, but every house I’ve ever moved into I’ve put wood into

Yeah

And wood into my flat

Yeah, wood is…

Like shutters, those cedar shutters I’ve got

Yeah, I find that wood is really nice, but it’s interesting if you think about that and then you think about, um, places like your place, or whose else’s place have I been in…(Name)’s got a lot of wood in his house

A lot of fittings and the polished floor boards, a lot of people wouldn’t have it, I don’t know why people would choose not to have it

Yeah I don’t know

I’d rather parquetry than tile floor

Yeah, yeah, yeah

Or like a cork

It’s like (name)’s place downstairs, like the floors are just beaten up

She got timber?

It’s got paint splatters all over it, yeah she’s got timber

I quite like old…

It’s 120 years old, but I like it like that and they’re keeping it like that

That’s awesome

It’s nice

I think wood’s very beautiful and probably brings people a lot of pleasure and it also has a lot of memories, well I guess everyone loves trees and wood’s a product of trees isn’t it

Don’t you reckon that plastic is more like
I see it as a sort of chemical concoction and it’s just utilitarian.

It serves a purpose.

Yeah, you can blow it and mould it into any shape.

Yeah but most of the things that we find these days, like electrical stuff.

Yup.

Is metal and plastic…and glass.

Yeah.

Like microwaves, TVs.

But some.

Fridges.

You seen I don’t think of ceramics, metal and glass in the context of large buildings because I don’t know any of them and I don’t like any of them so I choose not to even see them.

I think of metal and glass.

But I think of ceramic tiles that have been…you know that are pieces of artwork or some that have a really brilliant red lacquer on.

Is that what you think about when you think of ceramic.

Yeah, ‘cause I…

I think of cold and sterile.

Well you know how some of the have brilliant, brilliant cherry red ceramic, with a high, high gloss on it, it’s gorgeous (name), it makes you want to touch it.

Yeah it’s funny.

But I would never have it….I suppose you know some textiles I like, I like mostly natural textile anyway.

Yeah

Cotton or wool, um…(name) got this awful bamboo blanket, and it’s toxic.

Bamboo blanket.

Yeah it came from Asia. It’s meant to be…

That’s disgusting.

I know, she put it on her bed and all this crap fell out of it.

(laughing) if you lived in a straw hut.

I don’t…I think…which one is your favourite out of all of them.

Wood.

Mine’s wood, my cello’s wood.

But textile’s more…I think of textile as being more just clothes.

Yeah…yeah.

Ordinary stuff, I think of textile as being almost in the same category as plastic.

Do you?

Yep, because they… like you say they.

But you like cotton though.

Yeah well they serve a purpose.

Yeah, but you don’t buy it…you only choose what you like.

Yeah, based on design and print, I don’t…
So say
I don’t choose it based on the material it’s made from
Yeah you do, you prefer to buy a cotton rather than a polyester cotton
Yeah but most of the times I don’t even know what it’s made from I purchase based on price and I know if it’s relatively expensive…
What a great t-shirt you’ve got on
And if it’s relatively expensive it’s good, I don’t look at the label to check it’s a 100% cotton
But you obviously do don’t you?
No
You should
It doesn’t bother me
It’s much better for you to wear cotton than it is to wear a cotton-synthetic mix
I judge…I judge by the feel
But you only buy stuff you like
Yeah
So it’s textile that’s created…you know the shape and the print or whatever it is
It’s the design and the feel of the shirt, if it’s thin and crappy I don’t buy it
You wouldn’t wear lycra pants would you (name)
No, I hate lycra
(laughing)
Actually, no don’t fucking go there
(laughing)
I don’t like lycra
No I don’t like lycra either, but I would have a house made out of wood totally, I’d have a house made out of wood and stone, and I’d have glass and I’d have ceramic
Stone?
It’s…..
No, not really
I like metal but I like it in it’s less refined forms, I like that iron look
Oh, the iron ore
Yeah, I love…I love, um, you know that what’s a ma call it
Cast iron
Cast iron, yeah, that’s beautiful, I like it much less refined, but I find…
So you don’t like shiny aluminium
It depends, sometimes it’s aesthetically pleasing, but I don’t know how much I’d like to live in a very modern house with a lot of kind of metal, it always seems quite clinical, like stainless steel kitchens, they’re pretty good
I like stainless steel kitchens
I like stainless steel kitchens but I would have timber around it to give it some warmth, but in a utilitarian fashion stainless steel is good, even that plastic stuff for kitchens
The metal looking plastic
<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Text</th>
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</thead>
<tbody>
<tr>
<td>12:51</td>
<td>Fp4</td>
<td>No, no, no, the um…</td>
</tr>
<tr>
<td>12:53</td>
<td>Mp4</td>
<td>I hate that shit</td>
</tr>
<tr>
<td>12:54</td>
<td>Fp4</td>
<td>It’s got a name, I can’t remember, it’s some kind of synthetic thing…. I think that in terms of status wood would have to be the best for me….I think also in today, in this world now, when there’s no… there are very little natural resources left, in terms of like you status and society it gives you even more status to have timber</td>
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<td>13:26</td>
<td>Mp4</td>
<td>I like teak</td>
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<td>13:27</td>
<td>Fp4</td>
<td>Yeah, well you know teak’s really…</td>
</tr>
<tr>
<td>13:29</td>
<td>Mp4</td>
<td>Expensive</td>
</tr>
<tr>
<td>13:31</td>
<td>Fp4</td>
<td>Do you know that all the benches in the Prince Charles Pathology Lab is made out of teak</td>
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<td>13:36</td>
<td>Mp4</td>
<td>No</td>
</tr>
<tr>
<td>13:36</td>
<td>Fp4</td>
<td>Which is ludicrous, in a pathology lab</td>
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<tr>
<td>13:39</td>
<td>Mp4</td>
<td>Why</td>
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<td>13:40</td>
<td>Fp4</td>
<td>Well why…what a waste…I mean it’s got to have huge amounts of stuff layer on it to stop any of the crap they do coming into it</td>
</tr>
<tr>
<td>13:49</td>
<td>Mp4</td>
<td>Oh yeah</td>
</tr>
<tr>
<td>13:51</td>
<td>Fp4</td>
<td>They should have just had plastic, but some boffin’s idea of…</td>
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<td>13:57</td>
<td>Mp4</td>
<td>Metal</td>
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<td>13:58</td>
<td>Fp4</td>
<td>Yeah, metal or plastic… or glass even</td>
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<td>14:01</td>
<td>Mp4</td>
<td>I think of a lab, I think of metal</td>
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<tr>
<td>14:03</td>
<td>Fp4</td>
<td>But you can get those ceramic sinks which are good, not as good as metal</td>
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<td>14:07</td>
<td>Mp4</td>
<td>It’s like the sink they’ve got in the kitchen at home, my place</td>
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<td>14:11</td>
<td>Fp4</td>
<td>Yeah</td>
</tr>
<tr>
<td>14:12</td>
<td>Mp4</td>
<td>It’s crap</td>
</tr>
<tr>
<td>14:13</td>
<td>Fp4</td>
<td>Is it</td>
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<td>14:15</td>
<td>Mp4</td>
<td>It’s white</td>
</tr>
<tr>
<td>14:16</td>
<td>Fp4</td>
<td>Yeah</td>
</tr>
<tr>
<td>14:17</td>
<td>Mp4</td>
<td>I don’t know why they put it in</td>
</tr>
<tr>
<td>14:19</td>
<td>Fp4</td>
<td>So does it absorb stuff?</td>
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<tr>
<td>14:21</td>
<td>Mp4</td>
<td>Yeah it stains</td>
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<tr>
<td>14:23</td>
<td>Fp4</td>
<td>And you can also see marks</td>
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<tr>
<td>14:24</td>
<td>Mp4</td>
<td>I prefer stainless steel</td>
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<tr>
<td>14:24</td>
<td>Fp4</td>
<td>Yeah</td>
</tr>
<tr>
<td>14:25</td>
<td>Mp4</td>
<td>’cause it’s cleaner</td>
</tr>
<tr>
<td>14:26</td>
<td>Fp4</td>
<td>Yeah</td>
</tr>
<tr>
<td>14:26</td>
<td>Mp4</td>
<td>I think of stainless steel being clean</td>
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<tr>
<td>14:29</td>
<td>Fp4</td>
<td>Have you got tiles around the kitchen</td>
</tr>
<tr>
<td>14:34</td>
<td>Mp4</td>
<td>Na, ah yeah we have</td>
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<tr>
<td>14:36</td>
<td>Fp4</td>
<td>Pretty non…nothing tiles, generic tiles</td>
</tr>
<tr>
<td>14:38</td>
<td>Mp4</td>
<td>Yep</td>
</tr>
<tr>
<td>14:40</td>
<td>Fp4</td>
<td>Do you remember the tiles I had in my old house</td>
</tr>
<tr>
<td>14:43</td>
<td>Mp4</td>
<td>No</td>
</tr>
<tr>
<td>14:44</td>
<td>Fp4</td>
<td>They were nice, in Hardgrave Road</td>
</tr>
<tr>
<td>14:47</td>
<td>Mp4</td>
<td>The pink ones</td>
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<tr>
<td>14:48</td>
<td>Fp4</td>
<td>And the tiles I’ve got on my floor, the ceramics I’ve got on the floor</td>
</tr>
<tr>
<td>14:54</td>
<td>Mp4</td>
<td>No I like your tiles</td>
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</table>
The gloss and the little black glass tiles, they’re glass, they were only 9 bucks a meter because they were seconds from Indonesia.

Really

(laughing) yup, but I like them because they are kind of earthy

Nice colour

What else (name)?

I tend for metal being clean and wood not being clean

I saw a glass bath

Would you put your mouth on a wood table or a metal table?

I wouldn’t put my mouth on any table, why would you…

It’s a question to make you think which one would be cleaner, I think of metal as being cleaner… think about it, I think…

Why did you use that as an analogy?

I think of wood being disgusting, like wood…like what about if you…

Well what about if you play the clarinet you’ve got to put your mouth on wood

That’s what I’m talking about, that’s disgusting, I would never use someone else’s reed, but if it was metal I could take it and wash it, it’d be cleaner

You can clean timber… I guess

Not really

You couldn’t clean…

What about cutting boards

Yeah you can scrub a cutting board with salt

Yeah you can clean them but they absorb all sorts of shit

Yeah but you can clean them

The only reason you can’t use metal is because they’d blunt the knife, but if they didn’t blunt the knife everyone would use it because it’s so much cleaner

It’s not very nice to cut on though, it’s too hard, it’s like glass cutting boards, they’re useless

Glass

Yeah you can get glass cutting boards

Why are they bad

Because they don’t have any give in them, no, um, flexibility, and when you cutting stuff you need to have a bit of flexibility

Yeah, I need a cutting board

You haven’t got one have you

Na

Have you got ???????

Na

You still using the ones I gave you

Yup

What else have you got to get?

Everything

What qualities are you looking for in them (name)

Wood, I want to get wood

Wood chopping board

I just like expensive shit, it’s like when I went over to my friend
(name)’s place and she was in Malawi and she’s got the nicest furniture.

Does she?

You know that old thick furniture, were you can’t just pick it up and move it, like those…

Solid

Yeah, I like that stuff

It was a really tasteful house and the kitchen was all stainless steel which I like because again it’s clean

Yeah, what’s the floor, was it warm

Yeah, the floor was wood, really high ceilings

Nice light?

Nice lights, it was nice and warm, it had a warm feel to it

Who’s (name)?

A friend I work with, I was going over to feed the cats

Does she own it? Did she do it herself?

Mmm

She’s got an enormous picture of Grace Kelly on her wall, massive

She’s got another picture, the walls are like three storeys high and she’s got another massive picture of New York City, like it’s huge

I was watching this program on this restoration of a medieval house in the UK, it was destroyed by fire, it had a thatch roof and the owners loved it so much that they decided to rebuild it and the first, the second floor was burnt, gone

And the first floor part of it remained intact, it was mainly stone, and brick work, it was very ancient, it had been added to over the centuries, and they redesigned some of it, and they got live, green oak beams made, and they kept as like a feature of the place and they kept they so they were exposed and they had to conform to the local conservation code and building regulations so they were only allowed to do certain things to it, but one of the things they did was at each end, the gable end, there was like two lots of gable in this very old building, the whole of the end gable while it still had the frames, what would have been filled in normally with like brick or stone was glass, so it opened the whole thing out

And they still had thatch on the roof

Well glass…

It was awesome (name) and it really melded well with the um, like it was a 16th century house, that’s like 1500s

The place I’m living is a 120 years old

Yeah

And I like it

Yeah, I do too

And it’s wood
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<tbody>
<tr>
<td>19:52</td>
<td>Fp4</td>
<td>Yeah</td>
</tr>
<tr>
<td>19:54</td>
<td>Mp4</td>
<td>It’s a hard wood, I’m not sure what it is, it’s a mariner’s cottage, you don’t think about it now but back then…</td>
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<tr>
<td>19:59</td>
<td>Fp4</td>
<td>Is it a mariner’s cottage?</td>
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<tr>
<td>20:00</td>
<td>Mp4</td>
<td>Yeah, and back then where the bridge is, they used to dock there and they used to walk up and there used to be a little café there and they used to stay in the cottage</td>
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<tr>
<td>20:11</td>
<td>Fp4</td>
<td>It’s probably been a house of ill repute</td>
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<tr>
<td>20:13</td>
<td>Mp4</td>
<td>It was once</td>
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<tr>
<td>20:14</td>
<td>Fp4</td>
<td>And it is again (laughing)</td>
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<tr>
<td>20:20</td>
<td>Mp4</td>
<td>Well (name) was telling me that she used to drive past it on the bus on the way to work every day about 5 years ago and it used to be derelict, like one of those squatter houses</td>
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<tr>
<td>20:27</td>
<td>Fp4</td>
<td>Yeah, it was when I first came here, I remember that whole row of house being all for sale in one block and they were all really run down</td>
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<tr>
<td>20:35</td>
<td>Mp4</td>
<td>Now they would be worth a bomb</td>
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<tr>
<td>20:37</td>
<td>Fp4</td>
<td>Yeah, shit loads of money</td>
</tr>
<tr>
<td>20:40</td>
<td>Mp4</td>
<td>And they’re wood</td>
</tr>
<tr>
<td>20:41</td>
<td>Fp4</td>
<td>But they’re beautiful, they could probably do with more of a barrier between you and the road</td>
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<td>20:48</td>
<td>Mp4</td>
<td>And air-conditioning</td>
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<td>20:50</td>
<td>Fp4</td>
<td>See that’s…that would be an example of combining old and new things</td>
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<td>20:57</td>
<td>Mp4</td>
<td>It’s all plastic…</td>
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<tr>
<td>20:58</td>
<td>Fp4</td>
<td>I don’t think you compromise your original structure by using new technology, do you?</td>
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<td>21:04</td>
<td>Mp4</td>
<td>I don’t know, it depends</td>
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<tr>
<td>21:04</td>
<td>Fp4</td>
<td>Like you can keep the colour and warmth, you can keep all of that in your old structure but you can slide a bit of new technology in</td>
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<tr>
<td>21:14</td>
<td>Mp4</td>
<td>I think, I find that a lot of the stuff now, like if you go down to like freedom and IKEA and that and buy those put together, do it yourself furniture kits, they’ll all shit</td>
</tr>
<tr>
<td>21:21</td>
<td>Fp4</td>
<td>Yeah, it’s all crap</td>
</tr>
<tr>
<td>21:23</td>
<td>Mp4</td>
<td>It’s just shitty plastic</td>
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<tr>
<td>21:25</td>
<td>Fp4</td>
<td>It is, moulded plastic</td>
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<tr>
<td>21:28</td>
<td>Mp4</td>
<td>But that crud is cheap, and that’s why it comes under status, and that’s why status is such a good question, ‘cause it does make you think of status</td>
</tr>
<tr>
<td>21:34</td>
<td>Fp4</td>
<td>Those, see, IKEA always used to um, promote themselves on their uber trendy design so…and the fact that they have flat packs, and some of their design is good if you choose carefully what you buy from them, but the bulk of their stuff is just massed produced in Asia anyway</td>
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<tr>
<td>21:54</td>
<td>Mp4</td>
<td>Yeah</td>
</tr>
<tr>
<td>21:55</td>
<td>Fp4</td>
<td>And it’s crap, there’s no, you know, there no kind of cache in owning IKEA anymore is there?</td>
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<tr>
<td>22:04</td>
<td>Mp4</td>
<td>Na</td>
</tr>
<tr>
<td>22:05</td>
<td>Fp4</td>
<td>Or freedom</td>
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<td>22:09</td>
<td>Mp4</td>
<td>(laughing) I’d rather get my stuff from a second hand antique dealer</td>
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<td>Time</td>
<td>Speaker</td>
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<td>22:13</td>
<td>Fp4</td>
<td>I’d rather do that, I’d rather have six different chairs than a set of IKEA chairs, I’d rather have any chairs rather than my little chairs that are broken (laughing)</td>
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<tr>
<td>22:23</td>
<td>Mp4</td>
<td>Yeah, see that’s typical cheap IKEA stuff</td>
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<tr>
<td>22:25</td>
<td>Fp4</td>
<td>No it’s not, it typical of badly maintained timber, because timber moves</td>
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<td>22:35</td>
<td>Mp4</td>
<td>Ah right ’cause you haven’t put the screws in yet</td>
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<td>22:43</td>
<td>Fp4</td>
<td>Because you haven’t put the screw in yet (laughing), you haven’t got your allen key out, but that’s the thing isn’t it, I’d rather have them than plastic moulded chairs, wouldn’t you?</td>
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<tr>
<td>22:54</td>
<td>Mp4</td>
<td>Yeah I would</td>
</tr>
<tr>
<td>22:56</td>
<td>Fp4</td>
<td>I don’t think there’s any status in either of them though</td>
</tr>
<tr>
<td>22:59</td>
<td>Mp4</td>
<td>Plastic moulded chairs are comfortable though, my favourite chair was those plastic moulded chairs, you know the ones that you can lean back on?</td>
</tr>
<tr>
<td>23:08</td>
<td>Fp4</td>
<td>Well that was a classic chair, well the guy that did that in the ’50s, every chair that’s used in every institution all over the world is based on his mould, I can’t remember his name, he was an American guy I think and he did the first all in one back and bum</td>
</tr>
<tr>
<td>23:27</td>
<td>Mp4</td>
<td>Plastic chair</td>
</tr>
<tr>
<td>23:28</td>
<td>Fp4</td>
<td>On legs and now they’re used in schools, universities, hospitals, they’re used everywhere</td>
</tr>
<tr>
<td>23:33</td>
<td>Mp4</td>
<td>Yeah but they’re cruddy, they’re like ten bucks</td>
</tr>
<tr>
<td>23:35</td>
<td>Fp4</td>
<td>Functional crap, cheap functional crap</td>
</tr>
<tr>
<td>23:41</td>
<td>Mp4</td>
<td>They are comfortable, it’s like those Vietnamese squatter chairs that I bought made out of Vietnamese forest timber</td>
</tr>
<tr>
<td>23:49</td>
<td>Fp4</td>
<td>I don’t like them</td>
</tr>
<tr>
<td>23:49</td>
<td>Mp4</td>
<td>They’re crap because they are so uncomfortable</td>
</tr>
<tr>
<td>23:51</td>
<td>Fp4</td>
<td>They are uncomfortable, well they look nice but they’re uncomfortable</td>
</tr>
<tr>
<td>23:56</td>
<td>Mp4</td>
<td>They’re rubbish</td>
</tr>
<tr>
<td>23:58</td>
<td>Fp4</td>
<td>How much were they?</td>
</tr>
<tr>
<td>23:59</td>
<td>Mp4</td>
<td>300 bucks a pop, 600 together</td>
</tr>
<tr>
<td>24:01</td>
<td>Fp4</td>
<td>Just sell them on eBay</td>
</tr>
<tr>
<td>24:03</td>
<td>Mp4</td>
<td>I should sell them, because they look</td>
</tr>
<tr>
<td>24:05</td>
<td>Fp4</td>
<td>They look nice</td>
</tr>
<tr>
<td>24:06</td>
<td>Mp4</td>
<td>Sell them to the next sucker</td>
</tr>
<tr>
<td>24:07</td>
<td>Fp4</td>
<td>But they’re no good to sit in, didn’t you sit in them when you bought them?</td>
</tr>
<tr>
<td>24:11</td>
<td>Mp4</td>
<td>Na, they looked good</td>
</tr>
<tr>
<td>24:14</td>
<td>Fp4</td>
<td>See, see that’s were…it looks nice but it’s totally impractical you can’t use it, what’s the point of it?</td>
</tr>
<tr>
<td>24:22</td>
<td>Mp4</td>
<td>It looks nice</td>
</tr>
<tr>
<td>24:24</td>
<td>Fp4</td>
<td>But it’s not enough is it</td>
</tr>
<tr>
<td>24:25</td>
<td>Mp4</td>
<td>Na</td>
</tr>
<tr>
<td>24:27</td>
<td>Fp4</td>
<td>It’s not status if you sit in it</td>
</tr>
<tr>
<td>24:29</td>
<td>Mp4</td>
<td>I like those chairs that I stole from (name), that’s metal, they’re metal and glass</td>
</tr>
<tr>
<td>24:34</td>
<td>Fp4</td>
<td>Which? Oh yeah, they’re ok</td>
</tr>
<tr>
<td>Time</td>
<td>Speaker</td>
<td>Text</td>
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<td>-------</td>
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</tr>
<tr>
<td>24:37</td>
<td>Mp4</td>
<td>They’re alright, and textile</td>
</tr>
<tr>
<td>24:40</td>
<td>Fp4</td>
<td>Yep</td>
</tr>
<tr>
<td>24:41</td>
<td>Mp4</td>
<td>Metal, glass and textile</td>
</tr>
<tr>
<td>24:43</td>
<td>Fp4</td>
<td>Plastic textile</td>
</tr>
<tr>
<td>24:44</td>
<td>Mp4</td>
<td>Yep</td>
</tr>
<tr>
<td>24:45</td>
<td>Fp4</td>
<td>Weather proof</td>
</tr>
<tr>
<td>24:46</td>
<td>Mp4</td>
<td>Yep, shade cloth</td>
</tr>
<tr>
<td>24:48</td>
<td>Fp4</td>
<td>And it’s a glass table isn’t it</td>
</tr>
<tr>
<td>24:51</td>
<td>Mp4</td>
<td>Yup, I’ve got to get the screws from you place to put it together</td>
</tr>
<tr>
<td>24:53</td>
<td>Fp4</td>
<td>Do you know where they are?</td>
</tr>
<tr>
<td>24:55</td>
<td>Mp4</td>
<td>No, (name) said they’re in a wooden jar</td>
</tr>
<tr>
<td>24:57</td>
<td>Fp4</td>
<td>Oh they’ll be around somewhere</td>
</tr>
<tr>
<td>24:59</td>
<td>Mp4</td>
<td>I should give her some money for that</td>
</tr>
<tr>
<td>25:00</td>
<td>Fp4</td>
<td>There’s lot of little jars…</td>
</tr>
<tr>
<td>25:02</td>
<td>Mp4</td>
<td>I shouldn’t say that actually Shayne’s recording (laughing)</td>
</tr>
<tr>
<td>25:04</td>
<td>Fp4</td>
<td>Hey?</td>
</tr>
<tr>
<td>25:08</td>
<td>Mp4</td>
<td>Shayne will record that and play it to (name)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prompted to move onto the next set of concepts</td>
</tr>
<tr>
<td>25:28</td>
<td>Mp4</td>
<td>Appearance, texture, touch, is that what we are talking about?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Confirmed</td>
</tr>
<tr>
<td>25:39</td>
<td>Mp4</td>
<td>Appearance, texture, touch, properties, age, wear and disposal, texture and touch, again….properties, glass, unnatural, glass is just heated up sand</td>
</tr>
<tr>
<td>26:00</td>
<td>Fp4</td>
<td>Glass in natural it’s just reformed sand</td>
</tr>
<tr>
<td>26:02</td>
<td>Mp4</td>
<td>I don’t see it that same way</td>
</tr>
<tr>
<td>26:04</td>
<td>Fp4</td>
<td>Silica</td>
</tr>
<tr>
<td>26:06</td>
<td>Mp4</td>
<td>Wood</td>
</tr>
<tr>
<td>26:07</td>
<td>Fp4</td>
<td>What if you...what if...it can be really tactile, glass, it’s beautiful stuff, you should see (name)’s maroon glass collection</td>
</tr>
<tr>
<td>26:16</td>
<td>Mp4</td>
<td>Yeah, but I’m talking about most of the shit that you see everyday</td>
</tr>
<tr>
<td>26:19</td>
<td>Fp4</td>
<td>Windows</td>
</tr>
<tr>
<td>26:20</td>
<td>Mp4</td>
<td>Yep, lots of glass, plastic is from fossil fuels</td>
</tr>
<tr>
<td>26:34</td>
<td>Fp4</td>
<td>Wear, aging and disposal, I like to dispose of just about anything</td>
</tr>
<tr>
<td>26:39</td>
<td>Mp4</td>
<td>Plastic…plastic is disposable, perhaps that’s why plastic…</td>
</tr>
<tr>
<td>26:43</td>
<td>Fp4</td>
<td>Yeah plastics is disposable but it’s not…uh destroyable, what do you do with it, how do you dispose of plastic?</td>
</tr>
<tr>
<td>26:51</td>
<td>Mp4</td>
<td>But that’s what…plastic is disposable though, most shit that you buy that’s plastic is not meant to last very long</td>
</tr>
<tr>
<td>26:58</td>
<td>Fp4</td>
<td>You recycle</td>
</tr>
<tr>
<td>27:00</td>
<td>Mp4</td>
<td>It lasts five years and then you throw it out</td>
</tr>
<tr>
<td>27:02</td>
<td>Fp4</td>
<td>But that’s what consumer durable world we live in</td>
</tr>
<tr>
<td>27:05</td>
<td>Mp4</td>
<td>And that’s why I reckon we don’t…</td>
</tr>
<tr>
<td>27:07</td>
<td>Fp4</td>
<td>Do you know I tried to order some ink for my dell printer and I found my way around it and it took ages (name) to find the ??? model, it’s only like 2 and half years old, they don’t make them anymore, they make the ink cartridge which is plastic</td>
</tr>
<tr>
<td>27:24</td>
<td>Mp4</td>
<td>Yeah</td>
</tr>
<tr>
<td>27:25</td>
<td>Fp4</td>
<td>55 bucks and to buy a new printer that does exactly the same thing as mine from Dell is 65 dollars</td>
</tr>
<tr>
<td>Time</td>
<td>Speaker</td>
<td>Text</td>
</tr>
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<td>------</td>
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<td>------</td>
</tr>
<tr>
<td>27:32</td>
<td>Mp4</td>
<td>I know, that’s what I mean</td>
</tr>
<tr>
<td>27:34</td>
<td>Fp4</td>
<td>So it’s been made to become</td>
</tr>
<tr>
<td>27:37</td>
<td>Mp4</td>
<td>That’s why I reckon we have no…</td>
</tr>
<tr>
<td>27:40</td>
<td>Fp4</td>
<td>Derelict after 2 years</td>
</tr>
<tr>
<td>27:42</td>
<td>Mp4</td>
<td>That’s why I think wood is associated with memories, you think about it</td>
</tr>
<tr>
<td>27:46</td>
<td>Fp4</td>
<td>Oh yeah</td>
</tr>
<tr>
<td>27:47</td>
<td>Mp4</td>
<td>Because plastic is disposable</td>
</tr>
<tr>
<td>27:49</td>
<td>Fp4</td>
<td>Well look at (name)’s 10 million dollar violin</td>
</tr>
<tr>
<td>27:51</td>
<td>Mp4</td>
<td>And I don’t think of metal being anything, it’s…it’s just always there, none of my favourite things are metal, it’s like that chair, like that table that you gave me, that old green outdoor table</td>
</tr>
<tr>
<td>28:10</td>
<td>Fp4</td>
<td>I liked that</td>
</tr>
<tr>
<td>28:11</td>
<td>Mp4</td>
<td>That’s wood, that’s what…15 years old</td>
</tr>
<tr>
<td>28:13</td>
<td>Fp4</td>
<td>Yeah</td>
</tr>
<tr>
<td>28:16</td>
<td>Mp4</td>
<td>And it’s crappy and burnt and falling apart but I place a lot of sentimental value to it</td>
</tr>
<tr>
<td>28:22</td>
<td>Fp4</td>
<td>Yeah</td>
</tr>
<tr>
<td>28:23</td>
<td>Mp4</td>
<td>I don’t think I’d like it like that if it was plastic</td>
</tr>
<tr>
<td>28:27</td>
<td>Fp4</td>
<td>No you would have chucked it</td>
</tr>
<tr>
<td>28:29</td>
<td>Mp4</td>
<td>yeah</td>
</tr>
<tr>
<td>28:30</td>
<td>Fp4</td>
<td>You wouldn’t have taken it, you would have left it at my house</td>
</tr>
<tr>
<td>28:34</td>
<td>Mp4</td>
<td>I would…yeah that’s the thing about wood though, it looks better once it ages, I suppose you can’t tell how old glass is, unless it gets that sort of milky veneer to it</td>
</tr>
<tr>
<td>28:43</td>
<td>Fp4</td>
<td>Yeah but then it’s an object but functionally stuff like windows and that don’t</td>
</tr>
<tr>
<td>28:51</td>
<td>Mp4</td>
<td>Stuff like textiles and that wear and age, like clothes</td>
</tr>
<tr>
<td>28:55</td>
<td>Fp4</td>
<td>Unless they are Japanese and then they are a national treasure</td>
</tr>
<tr>
<td>28:58</td>
<td>Mp4</td>
<td>What</td>
</tr>
<tr>
<td>28:59</td>
<td>Fp4</td>
<td>They are like 3 or 4 hundred year old, they perform their kabuki plays in national treasure costumes, they are literally 400 years old</td>
</tr>
<tr>
<td>29:10</td>
<td>Mp4</td>
<td>Shit</td>
</tr>
<tr>
<td>29:11</td>
<td>Fp4</td>
<td>They are pretty awesome but then it’s pretty anal as well</td>
</tr>
<tr>
<td>29:15</td>
<td>Mp4</td>
<td>What about ceramic, you don’t through out much ceramic stuff</td>
</tr>
<tr>
<td>29:20</td>
<td>Fp4</td>
<td>Yeah but it depends on the quality of it and what it’s purpose is, if it’s just the tile in your kitchen, then when you next remodel the kitchen you just bash it down</td>
</tr>
<tr>
<td>29:32</td>
<td>Mp4</td>
<td>True but it’s not like plastic</td>
</tr>
<tr>
<td>29:34</td>
<td>Fp4</td>
<td>It’s not like dangerous to the environment</td>
</tr>
<tr>
<td>29:35</td>
<td>Mp4</td>
<td>But think about this…</td>
</tr>
<tr>
<td>29:37</td>
<td>Fp4</td>
<td>Yeah</td>
</tr>
<tr>
<td>29:39</td>
<td>Mp4</td>
<td>That’s why plastic is crap</td>
</tr>
<tr>
<td>29:42</td>
<td>Fp4</td>
<td>At least it can be recycled, but generally it’s not is it, a lot of plastic is just cast aside</td>
</tr>
<tr>
<td>29:48</td>
<td>Mp4</td>
<td>Mmm, that’s why it’s not good, and like I said I don’t notice metal</td>
</tr>
<tr>
<td>29:57</td>
<td>Fp4</td>
<td>You can recycle metal too though can’t you</td>
</tr>
<tr>
<td>29:59</td>
<td>Mp4</td>
<td>Yeah, you can recycle just about anything</td>
</tr>
<tr>
<td>30:04</td>
<td>Fp4</td>
<td>I could make myself a metal prosthetic finger</td>
</tr>
<tr>
<td>Time</td>
<td>Speaker</td>
<td>Dialogue</td>
</tr>
<tr>
<td>-------</td>
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</tr>
<tr>
<td>30:08</td>
<td>Mp4</td>
<td>Why cause you’re finger’s….</td>
</tr>
<tr>
<td>30:11</td>
<td>Fp4</td>
<td>It would be a lot stronger than the one I’ve got</td>
</tr>
<tr>
<td>30:14</td>
<td>Mp4</td>
<td>What about properties?</td>
</tr>
<tr>
<td>30:16</td>
<td>Fp4</td>
<td>Properties, ah I don’t know, metal’s strong</td>
</tr>
<tr>
<td>30:22</td>
<td>Mp4</td>
<td>It is strong</td>
</tr>
<tr>
<td>30:23</td>
<td>Fp4</td>
<td>So for the structure of a building it’s good to use, it is strong metal, and it can be really beautiful depending on what you are doing, anything that’s time intensive al, like if you go to a place and they have lots of struts and stuff and they just churn them out, but anything that’s taken a long time to make is usually better</td>
</tr>
<tr>
<td>30:47</td>
<td>Mp4</td>
<td>Metal’s usually designed to last a lot longer</td>
</tr>
<tr>
<td>30:52</td>
<td>Mp4</td>
<td>And it’s replicated these days, a lot of metal you can see, plastic is designed now to look like metal</td>
</tr>
<tr>
<td>31:01</td>
<td>Fp4</td>
<td>Ahhh (unsure)</td>
</tr>
<tr>
<td>31:02</td>
<td>Mp4</td>
<td>It’s true, look around, look at that (indicating his mobile phone), it’s plastic but it’s designed to look like it’s metal</td>
</tr>
<tr>
<td>31:09</td>
<td>Fp4</td>
<td>Is it all plastic</td>
</tr>
<tr>
<td>31:10</td>
<td>Mp4</td>
<td>yeah</td>
</tr>
<tr>
<td>31:11</td>
<td>Fp4</td>
<td>Even that bit</td>
</tr>
<tr>
<td>31:13</td>
<td>Mp4</td>
<td>Yeah</td>
</tr>
<tr>
<td>31:16</td>
<td>Fp4</td>
<td>hmmmm</td>
</tr>
<tr>
<td>31:18</td>
<td>Mp4</td>
<td>It’s just paint</td>
</tr>
<tr>
<td>31:21</td>
<td>Fp4</td>
<td>Mmm…. it doesn’t age well, it doesn’t age like proper metal does it</td>
</tr>
<tr>
<td>31:30</td>
<td>Mp4</td>
<td>nope</td>
</tr>
<tr>
<td>31:31</td>
<td>Fp4</td>
<td>It’s plastic, but everything in our lives now is plastic</td>
</tr>
<tr>
<td>31:34</td>
<td>Mp4</td>
<td>But this is just plastic and copper, but there’s a lot of plastic</td>
</tr>
<tr>
<td>31:38</td>
<td>Fp4</td>
<td>What’s that metal in the phone, you find the infinitesimally small piece of metal that they use, it’s some kind of really rare metal they use in phones</td>
</tr>
<tr>
<td>31:49</td>
<td>Mp4</td>
<td>I don’t know</td>
</tr>
<tr>
<td>31:50</td>
<td>Fp4</td>
<td>It’s not worth harvesting</td>
</tr>
<tr>
<td>31:52</td>
<td>Mp4</td>
<td>I don’t know</td>
</tr>
<tr>
<td>31:52</td>
<td>Fp4</td>
<td>In our country, but China is buying everybody’s old phones and harvesting the metal back from them, it’s obviously not titanium, but it’s some really rare metal</td>
</tr>
<tr>
<td>32:05</td>
<td>Mp4</td>
<td>I don’t know what it would be</td>
</tr>
<tr>
<td>32:07</td>
<td>Fp4</td>
<td>(Name) was telling me</td>
</tr>
<tr>
<td>32:09</td>
<td>Mp4</td>
<td>(Laughing)…..what about ceramic, what is ceramic…it’s like clay?</td>
</tr>
<tr>
<td>32:16</td>
<td>Fp4</td>
<td>Ceramic is glazed... some sort of…</td>
</tr>
<tr>
<td>32:19</td>
<td>Mp4</td>
<td>Clay</td>
</tr>
<tr>
<td>32:50</td>
<td>Fp4</td>
<td>Yeah, glazed, baked clay with a glaze on it, some ceramics are beautifully, but again it depends on how much time is put on to it, like all the tiles in my house are ceramics, some of them glazed</td>
</tr>
<tr>
<td>32:42</td>
<td>Mp4</td>
<td>Wood, it depends on….see that’s the thing about wood, it’s nice because it hasn’t been altered by people, it’s been….you buy a good solid piece of timber furniture because it’s come from a good solid tree</td>
</tr>
<tr>
<td>32:57</td>
<td>Fp4</td>
<td>Yeah</td>
</tr>
</tbody>
</table>
It’s not like you can buy…it’s not like people can actually manufacture teak wood, it’s like they have to…it’s not like it can be replicated.

You can’t be, no, you can make stuff out of it but it’s not like we can go back to square one and

You can’t make musical instruments out of metal, or plastic or ceramic, glass or textile, you can only make string instruments out of wood.

Good string instruments.

You can make electric violins and electric cellos out of plastic, but they sound like crap because you just program them with chips.

Yeah.

And they are just generic, each wood instrument, each one is uniquely different, they all have their own sound.

What about texture and touch.

It’s sort of……….um…..I don’t know, metal and plastic are nothing

Metal is cold.

Some glass is nice to touch, very tactile, and we wear textile so that’s important isn’t it, the feel of the textile.

Soft.

Like you know that horrible fake satin that sticks to you in the heat, that’s horrible.

mmm

But cotton is good to wear in the summer, even when it’s hot, good cotton sheets.

I find that texture and touch combines with appearance in most things, ’cause I don’t know…if something looks…oh I don’t know, I’d be far less inclined to want to touch a plastic table than I would be to sit on a wooden table in a kitchen or something. I always remember the Flynn’s wooden table…they had a really nice solid; I don’t know what wood it was…

Yeah, it was a warm colour wasn’t it.

The dining table and the amount of times we just used to sit around that table and drop wax on it and just pick at it and get drunk, it was fun.

It gave it its character (name).

Yeah, it was a great table.

I wonder where it is now.

It’s over at (name)’s place.

Yeah what about…well I guess it doesn’t wear out does it.

Nope.

It just accumulates character.

It was a nice table.

Wood is nice and soft.

Some wood is nice and soft, I find metal cold, for texture and touch
<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>35:59</td>
<td>Fp4</td>
<td>find metal smooth and cold, metal is modern, that’s what metal it is</td>
</tr>
<tr>
<td>36:01</td>
<td>Mp4</td>
<td>Not all of it though</td>
</tr>
<tr>
<td>36:05</td>
<td>Fp4</td>
<td>No not all of it, the things that you like, like cast iron stuff</td>
</tr>
<tr>
<td>36:06</td>
<td>Mp4</td>
<td>I like iron bath tubs</td>
</tr>
<tr>
<td>36:09</td>
<td>Fp4</td>
<td>Look at the legs of these chairs and they’re modern chairs</td>
</tr>
<tr>
<td>36:11</td>
<td>Mp4</td>
<td>Yeah, yeah, it’s functional isn’t it</td>
</tr>
<tr>
<td>36:13</td>
<td>Fp4</td>
<td>It’s metal and plastic</td>
</tr>
<tr>
<td>36:17</td>
<td>Mp4</td>
<td>At least I wouldn’t fall off these chairs like I would my wooden ones at home</td>
</tr>
<tr>
<td>36:19</td>
<td>Fp4</td>
<td>Cause someone won’t come and fix them up…did you see…..ah….what else could we say about it al.</td>
</tr>
<tr>
<td>36:32</td>
<td>Mp4</td>
<td>Um</td>
</tr>
<tr>
<td>36:33</td>
<td>Fp4</td>
<td>Wear, aging and disposal, how do you dispose of glass, you just break it all up, crunch it all up and ceramics, wood you can burn</td>
</tr>
<tr>
<td>36:40</td>
<td>Mp4</td>
<td>I don’t like to think of how you physically dispose of it I like to think of it as the rational of disposal</td>
</tr>
<tr>
<td>36:49</td>
<td>Fp4</td>
<td>I don’t like all that waste, I find it offensive that dell are guiding me to buy a new printer rather than using my old one which works perfectly well</td>
</tr>
<tr>
<td>37:02</td>
<td>Mp4</td>
<td>Yeah</td>
</tr>
<tr>
<td>37:03</td>
<td>Fp4</td>
<td>It’s meant to last more than two years</td>
</tr>
<tr>
<td>37:06</td>
<td>Mp4</td>
<td>Why are they so cheap, so available…?</td>
</tr>
<tr>
<td>37:09</td>
<td>Fp4</td>
<td>Well when I first got it (name) the ink cartridges when 30 dollars now they are 53 dollars and the same printer, the same, performs exactly the same functions cost 60 something dollars, so it would be stupid to keep buying refills, I’m not going to do either of those things, I’m going to take the cartridge down and get it repacked in west end</td>
</tr>
<tr>
<td>37:35</td>
<td>Mp4</td>
<td>Yup</td>
</tr>
<tr>
<td>37:37</td>
<td>Fp4</td>
<td>I find that really offensive, stuff that’s made to last for only a very brief time because our society’s so consumer driven</td>
</tr>
<tr>
<td>37:45</td>
<td>Mp4</td>
<td>Wear, aging and disposal</td>
</tr>
<tr>
<td>37:47</td>
<td>Fp4</td>
<td>It’s horrible</td>
</tr>
<tr>
<td>37:49</td>
<td>Mp4</td>
<td>Oh yeah</td>
</tr>
<tr>
<td>37:50</td>
<td>Fp4</td>
<td>It used to be that things were made to try and make them last as long as possible and now it’s make the to last for just the time that you need them, and I remember when I was in Japan and there was a big article in the English speaking newspaper over there, even then, and that was before mobile phones were all over the place, but the wealthy young Japanese, because it was a time of excess in Japan, everyone was wealthy, they would throw out razors and electronic gadgetry 3 monthly, nothing wrong with it, they chuck it out just to replace it to get the newest thing</td>
</tr>
<tr>
<td>38:30</td>
<td>Mp4</td>
<td>Yeah</td>
</tr>
<tr>
<td>38:31</td>
<td>Fp4</td>
<td>You know I hate that, and a lot of plastic stuff is designed, our phones and our…</td>
</tr>
<tr>
<td>38:38</td>
<td>Mp4</td>
<td>Plastic doesn’t wear</td>
</tr>
<tr>
<td>38:40</td>
<td>Fp4</td>
<td>Our mobile phones aren’t lasting as long</td>
</tr>
</tbody>
</table>
| 38:43 | Mp4 | Plastic just becomes cheap and crappy, were as wood if wood wears,
if you are talking about the wear…

38:51  Fp4  wood lasts, it accumulates character
38:54  Mp4  Yeah, what about glass, like we said glass doesn’t seem to wear
38:57  Fp4  Glass can be really nice
39:00  Mp4  Some textiles wear, I don’t know which textiles she’s talking about specifically, but they don’t become more valuable because you want something like wood and to a certain extent metal then become more valuable as they wear
39:16  Fp4  Not my carpet
39:20  Mp4  Not after Max has been in there (the dog)
39:22  Fp4  And (name), and me and all the tenants that came before us
39:28  Mp4  But you’ve got stuff from your parents place like wood
39:33  Fp4  I’ve got my rugs
39:35  Mp4  Yeah
39:36  Fp4  I love those rugs, (name) when you look at those rugs they are hand made
39:39  Mp4  Which one
39:41  Fp4  The Persian rugs
39:43  Mp4  Where are they?
39:45  Fp4  In the living room
39:47  Mp4  oh
39:47  Fp4  You know my ah
39:48  Mp4  Oh yeah
39:49  Fp4  The ones from Afghanistan and one from Iran. Beautiful, they’ve got organic vegetable dyes in them, that’s why they fad in the sun, but there’s some really nice about them, they’ve got faults and everything, and they’re a really nice fabric aren’t they?
40:07  Mp4  Yep
40:08  Fp4  Textile. And it’s kind of paradoxical that they increase in value
40:14  Mp4  They do?
40:16  Fp4  They do
40:18  Mp4  So does wood, plastic certainly doesn’t, neither does metal really, ceramic
40:22  Fp4  Unless they are metal art works
40:26  Mp4  What’s that thing you’ve got at your place, it’s got ceramic, that pole
40:29  Fp4  No that’s marble, that carrera marble, from where Michelangelo got his marble from
40:38  Mp4  That’s nice, you can tell that’s old because it’s got the browning through the cracks
40:43  Fp4  Yeah, that is old, I should sell it on eBay
40:46  Mp4  You should, see if that was metal you wouldn’t get shit for it
40:53  Fp4  No, yeah well you wouldn’t have it there if it was metal now would you?
40:58  Mp4  No you might, but I’ve got metal speaker stands
41:04  Fp4  I have metal speaker stands too, my bow has a metal stand
41:10  Mp4  I do like that thing
41:12  Fp4  It is nice isn’t it
41:14  Mp4  That’s funny ’cause I remember where they were when...
41:17  Fp4  At mum’s, I got the crappy….
They were upstairs
They had some upstairs and some downstairs
You know that big room that all the bedrooms opened up onto
They were in there, that was an odd house
It was planned in Scotland, it was an odd house
Yeah
It’s a shame they got rid of it
It was a little too big for two people
It was
It’s a shame they got rid of it
Yeah

They were in there, that was an odd house

Yeah full of dust, up in the ceilings there’s boxes and boxes of shit that goes right back to the end, ahh the beginning of the twentieth century, military uniforms and stuff like that, that’s disposal
But that stuff doesn’t really count
It doesn’t really have any intrinsic value it only has, you know, it only has emotional value and then the people that it’s relevant to have cared it anyway, so it doesn’t really have any value at all
Yeah
I would be interesting to have a look at it, um what else can we say Al?
I don’t know
Well if I had loads and loads of money I would always prefer to have organic material over any of those synthetic man made things, except perhaps glass
Yep, but that’s not true of everyone
No
Like dad, he’s got a bit and he only like metal, plastic and glass, and then to a certain degree ceramic
Did they build it
Na, but the house won house of the year in ’97, or like for its category
Do you like it?
Na, I hate it, like I said it’s cold
Appendix F. Data analysis sample

The following attachments show statements from the transcripts that have been coded in Atlas.ti.

The first attachment, Query Report 1, shows the statements made by female participant 4 that relate to the ‘status’ code. The second attachment, Query Report 2, shows statement made by male participant 3 relating to the material plastic. The other codes that relate to these statements are also shown.
Glass and ceramics have a status don’t they

Metal, but textile too, print

It’s very utilitarian, I suppose you can mould it, can’t you?

No, no

That’s beautiful, that came from ……..

A lot of fittings and the polished floor boards, a lot of people wouldn’t have it, I don’t know why people would choose not to have it

I see it as a sort of chemical concoction and it’s just utilitarian

I think that in terms of status wood would have to be the best for me… I think also in today, in this world now, when there’s no… there are very little natural resources left, in terms of like you status and society it gives you even more status to have timber
Like you can keep the colour and warmth, you can keep all of that in your old
structure but you can slide a bit of new technology in

Those, see, IKEA always used to um, promote themselves on their uber trendy
design so…and the fact that they have flat packs, and some of their design is good if
you choose carefully what you buy from them, but the bulk of their stuff is just
massed produced in Asia anyway

And it’s crap, there’s no, you know, there no kind of cache in owning IKEA
anymore is there?

I’d rather do that, I’d rather have six different chairs than a set of IKEA chairs

Functional crap, cheap functional crap

Yeah but it depends on the quality of it and what it’s purpose is, if it’s just the tile in
your kitchen, then when you next remodel the kitchen you just bash it down

Not all of it though

Yeah, yeah, it’s functional isn’t it

Not my carpet

I’ve got my rugs

I love those rugs, **** when y..]
I love those rugs, **** when you look at those rugs they are hand made

And it’s kind of paradoxical that they increase in value

Unless they are metal art works

---

**Codes:**
- [durability]
- [expense]
- [female:4]
- [memories and favourites]
- [product association]
- [status]
- [textile]
P 3: pilot 3.rtf - 3:40 [But then you’ve got your heavy..] (71:71) (Super)
Codes: [appearance] [male.3] [plastic] [product association] [properties]

But then you’ve got your heavy sort of, you know, like…like I suppose you are thinking about little plastic take away containers

P 3: pilot 3.rtf - 3:43 [It doesn’t make it look cheape..] (75:75) (Super)
Codes: [appearance] [male.3] [plastic] [positive descriptor] [product association]

It doesn’t make it look cheaper, it’s got like…look at this (the chair he’s sitting on)

P 3: pilot 3.rtf - 3:46 [Um there lots of things that y..] (81:81) (Super)
Codes: [male.3] [plastic] [positive descriptor] [product association] [properties]

Um there lots of things that you can make out of plastic, you can make bridges out of plastic these days

P 3: pilot 3.rtf - 3:50 [Yeah ok, I think that colour a..] (95:95) (Super)
Codes: [appearance] [male.3] [negative descriptor] [plastic] [properties] [status]

Yeah ok, I think that colour affects my perception of plastic, has a lot to do with it, I think if that chair had been…I think just because it’s a black plastic chair and not you know a white plastic chair

P 3: pilot 3.rtf - 3:52 [Very cheap, but when I see tha..] (97:97) (Super)
Codes: [appearance] [expense] [male.3] [negative descriptor] [plastic] [properties] [status] [texture and touch]

Very cheap, but when I see that I think the same sort of thing, not as cheap, for some reason, but yeah…um, mmm…I recon also that the weight of it changes a lot, like light plastic I take as being cheap you know, but like heavy sort of plastic and also something the feel of it, you know you get some which is….also the type of finish of it, that sort of……

P 3: pilot 3.rtf - 3:54 [Yeah, where it’s more textured..] (99:99) (Super)
Codes: [male.3] [plastic] [properties] [status] [texture and touch]

Yeah, where it’s more textured, were as if it’s that smooth
Yeah like it scratches easily and it’s normally has like little like marks…yeah I agree that makes me think cheap…but the, the weight of it and everything…it changes it a bit.

Warmer than steel though

Yeah and it can also be quite brittle like some plastics you know, sort of break and shatter a bit

Mmmm, I think disposal is very much associated with plastic, it’s a temporary thing, I feels, it’s just natural to throw it out. Like that chair, even though I say it feels heavy and solid, maybe if the whole chair was made of plastic that wouldn’t be the case, but yeah I feel a lot more, easy about disposing of something of plastic, even if it’s a nice plastic than say a metal

Mmmm. And not necessarily because it’s anything..maybe because it’s light, but maybe it’s also what, you know people’s… you know what we think about it, it’s the attitudes towards the materials themselves, um

So you might have a piece of plastic that no really any….oh like a piece of plastic is the same as like that chair in timber, it’s just part of, you know, what we think of material, that it is disposable

Yeah, it also feels like…even though it’s been shaped into the chair or whatever it still feels like it’s got some of its own, I don’t know if you think about this directly or not, but it’s still got some of its own character or personality or……..or like history to an extent, you know what I mean, or whereas like something like metal or plastic or something that’s been formed it that image and it’s just been created exactly that way, it’s got no past life or history

Were as you don’t really have the same thought for metal or plastic
Yeah I agree.

Even more so than the others, even maybe wood

That being said I like that you can form plastic into exactly what shape you like it, so if you want to find like a...I’m thinking like something for your cupboard or you desk or like if you want a pencil holder and you want exactly this many things you can get one in plastic, but it’s very functional

Plastic is made exactly, maybe because it’s made exactly the way people what it to be

But as far as materials go it’s yeah I agree with your...what you said

It’s because it’s metal that it does that, have you, like eating somewhere, like the races or I’m thinking of like at the EKKA or something like that right and you get this really nice meal and you get these little plastic...or on the plane, perfect example

And they give you this plastic knife and you’re sitting there and you’re trying to cut through, not sure, some mystery chicken thing that they’ve given you right

And the little fork’s flimsy and bending and it’s going all

The feel of plastic, maybe I’ve got a displeasure, but some sorts of plastic I have a real dislike

We used to have these, and mum used to put food into all these plastic containers and it would smell really bad in the end, like you’d have sugar in this plastic
container and after a few years or if it sat there for a few months and at the end of it, it smelt and tasted really bad

**P 3: pilot 3.rtf - 3:350 [status, I think there's a big ..] (643:643) (Super)**

Codes: [male.3] [plastic] [product association] [properties] [status]

status, I think there’s a big difference in the type of plastic that you are talking about, like the plastic that gets used in that chair that you are sitting on

**P 3: pilot 3.rtf - 3:353 [Mmm, maybe it's still cheap bu..] (645:645) (Super)**

Codes: [context] [expense] [male.3] [plastic] [product association] [properties] [status] [wood]

Mmm, maybe it’s still cheap but it wouldn’t have that negative connotation with me like um, I don’t think of it, like this might be cheaper that something made in timber but I don’t see it as any less, I just see it as if you want timber you might pay a bit more but, you know like some chairs you sit in them and you feel like this is a really cheap chair but I don’t like feel that plastic…

**P 3: pilot 3.rtf - 3:355 [That's completely different, y..] (647:647) (Super)**

Codes: [context] [male.3] [plastic] [product association] [status]

That’s completely different, yeah, if this was a dinner chair and not like an office chair then it may be different, in reaction, yeah I think I would feel the same about that

**P 3: pilot 3.rtf - 3:358 [I see for something like an of..] (661:661) (Super)**

Codes: [context] [male.3] [plastic] [status]

I see for something like an office it’s not meant to be valued

**P 3: pilot 3.rtf - 3:360 [I just like the fact that it's..] (663:663) (Super)**

Codes: [context] [male.3] [plastic] [pleasure] [properties] [status]

I just like the fact that it’s simple and…

**P 3: pilot 3.rtf - 3:361 [Like you see some expensive bo..] (665:665) (Super)**

Codes: [context] [displeasure] [expense] [glass] [male.3] [metal] [plastic] [properties] [status] [textile] [wood]

Like you see some expensive boardrooms or something and it’s sort of distasteful because there’s so much, like money or whatever that goes into it, but they would still be objects, where as for an office sort of context it’s just a setting

**P 3: pilot 3.rtf - 3:362 [Where as maybe for a home, lik..] (669:669) (Super)**

Codes: [context] [expense] [male.3] [plastic] [positive descriptor] [status] [wood]

Whereas maybe for a home, like a dinner table, yeah, I’m agreeing with you when you say that they should have something that is nice and expensive

**P 3: pilot 3.rtf - 3:365 [Like a table, or like, I've go..] (673:673) (Super)**

Codes: [male.3] [memories and favours] [negative descriptor] [plastic] [pleasure] [product association] [wood]

Like a table, or like, I’ve got a desk at home that I was given, I don’t know like ten years ago and I’ve worked for a long time at that desk and you know the story that you associate with it, it becomes a part of the story, where as plastic, there’s something about it that it can’t, do you know what I mean?
Like maybe I have trouble imagining, yeah, in the same way that you can have memories and strong feelings for plastic, maybe because it’s disposable or it seems cheap.

I could highly value design, yeah…but not so much the object itself.

Maybe because it seems like a temporary kind of thing and you don’t, you don’t give it that….ok well status, plastic, as you say fairly cheap, but I think different ones have different statuses, but yeah, maybe the best it can be is functional, is nice and pleasant and functional.

And the worst it can be is cheap and….yeah…cheap and nasty.

I’ve got plastic toys and…they always break plastic toys, but I don’t know if…maybe it depends on the toys that you have, but sort of like a little remote control car or something and it was always fun but then something would always break and they wouldn’t really last for long.

It can be really functional like a little plastic pacer.

No but you could make it really well and it’s only a dollar fifty or something like that.

But you can still use it and appreciate it.
I was thinking the really cheap looking one, you know how you get the really cheap set of drawers or something like that and the plastic is on the front and what’s underneath it is just…it just disintegrates

It’s funny though, this one doesn’t...

So that, so it might be personalised or maybe there’s only a few of a certain type will be made as opposed to like chairs that are made out of plastic or steel, just by the process that they are made, gives it its prestige, so that’s for status, I suppose it’s the cheap sort of timbers that are used that much anymore

And I can’t quite imagine the same thing for anything else, you know like you wouldn’t put something in a metal or a plastic box

So you think materials have something to do with how people buy them as well?
Appendix G. Specific context examples
<table>
<thead>
<tr>
<th>Context Category</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceramic</td>
<td></td>
</tr>
<tr>
<td>Clothing/Bedding</td>
<td>Nil responses</td>
</tr>
<tr>
<td>Industrial/Architectural</td>
<td>Roof tiles, mosaics on buildings, industrial heating applications</td>
</tr>
<tr>
<td>Interiors – Floor/Wall</td>
<td>Tiles – floor and wall in bathrooms and other areas of the house</td>
</tr>
<tr>
<td>Packaging</td>
<td>Nil responses</td>
</tr>
<tr>
<td>Products</td>
<td>Every day and special occasion crockery, bathroom fixtures, pot plants, doll faces, archaeological finds, heaters, ceramic hobs, vases, components in televisions, cars, light switches</td>
</tr>
<tr>
<td>Sculptural/Artistic</td>
<td>Mosaics, ornaments, sculptures/statues, souvenirs</td>
</tr>
<tr>
<td>Glass</td>
<td></td>
</tr>
<tr>
<td>Clothing/Bedding</td>
<td>Nil responses</td>
</tr>
<tr>
<td>Industrial/Architectural</td>
<td>Windows, glass bricks, bullet proof glass, insulation (glass fibres)</td>
</tr>
<tr>
<td>Interiors – Floor/Wall</td>
<td>Tiles</td>
</tr>
<tr>
<td>Packaging</td>
<td>Beer, wine and soft drink bottles, jars</td>
</tr>
<tr>
<td>Products</td>
<td>Drinking glasses, mirrors, crockery, camera lenses, boats (fibreglass), table tops, windows/screens (cars, aeroplanes, motorbikes)</td>
</tr>
<tr>
<td>Sculptural/Artistic</td>
<td>Mosaics, vases, ornaments and collectables</td>
</tr>
<tr>
<td>Metal</td>
<td></td>
</tr>
<tr>
<td>Clothing/Bedding</td>
<td>Nil responses</td>
</tr>
<tr>
<td>Industrial/Architectural</td>
<td>High rises and house construction, corrugated roofing, bridges, machinery, planes, cars, ships</td>
</tr>
<tr>
<td>Interiors – Floor/Wall</td>
<td>Railing, walls, floors</td>
</tr>
<tr>
<td>Packaging</td>
<td>Beer or soft drink cans, food tins</td>
</tr>
<tr>
<td>Products</td>
<td>Indoor and outdoor furniture, kitchen appliances, cutlery, cookware, jewellery, cars, boats, tools, reading glasses, work benches, razor, guns</td>
</tr>
<tr>
<td>Sculptural/Artistic</td>
<td>Artwork, sculpture</td>
</tr>
<tr>
<td>Plastic</td>
<td></td>
</tr>
<tr>
<td>Clothing/Bedding</td>
<td>Nil responses</td>
</tr>
<tr>
<td>Industrial/Architectural</td>
<td>Roofing, windows, aeroplanes</td>
</tr>
<tr>
<td>Interiors – Floor/Wall</td>
<td>Polypropylene carpeting, vinyl flooring</td>
</tr>
<tr>
<td>Packaging</td>
<td>Food containers, bottles, bags, cling wrap</td>
</tr>
<tr>
<td>Products</td>
<td>Crockery, containers, outdoor and indoor furniture, appliances, electronics, toys, contact lenses, wheelie bins, interiors and exteriors of cars, razors, toothbrushes, fake jewellery</td>
</tr>
<tr>
<td>Sculptural/Artistic</td>
<td>Sculpture</td>
</tr>
<tr>
<td>Textile</td>
<td></td>
</tr>
<tr>
<td>Clothing/Bedding</td>
<td>Clothes – formal and casual, uniforms, sheets, blackest, towels, rags</td>
</tr>
<tr>
<td>Industrial/Architectural</td>
<td>Nil responses</td>
</tr>
<tr>
<td>Interiors – Floor/Wall</td>
<td>Carpet, curtains, wall panels or paper</td>
</tr>
<tr>
<td>Packaging</td>
<td>Sacks</td>
</tr>
<tr>
<td>Products</td>
<td>Mats, carpeting and upholstery in cars and planes, couches and chairs, sails – boats and shading, paper, toys, tents</td>
</tr>
<tr>
<td>Sculptural/Artistic</td>
<td>Collage</td>
</tr>
<tr>
<td>Wood</td>
<td></td>
</tr>
<tr>
<td>Clothing/Bedding</td>
<td>Nil responses</td>
</tr>
<tr>
<td>Industrial/Architectural</td>
<td>Construction of houses, wood chips, weatherboard, gazebos</td>
</tr>
<tr>
<td>Interiors – Floor/Wall</td>
<td>Flooring, panelling, ceilings, timber Venetians or shutters, parquetry, stairs and hand railing</td>
</tr>
<tr>
<td>Packaging</td>
<td>Nil responses</td>
</tr>
<tr>
<td>Products</td>
<td>Fencing, tables, chairs, instruments, indoor and outdoor furniture, chopping boards, car interiors, bench tops, toys, box or jewellery box, boats, paper, wooden spoon or ruler, sleepers, bowls, jewellery, modelling, old transportation – carriages, planes, boats</td>
</tr>
<tr>
<td>Sculptural/Artistic</td>
<td>Statues, sculpture, ornaments, carvings</td>
</tr>
</tbody>
</table>
Appendix H. Expense findings
The ‘expense’ code was used to identify the statements that participants made regarding the cost of the material. Ceramic, glass and metal received the least frequency for this code. Responses regarding ceramic, glass and metal were varied with cost being said to range from cheap to very expensive. The cost of timber such as oak and cedar was said to be expensive to moderate depending on the finish, whilst chipboard was said to be at the cheaper end of the spectrum. Textile cost was said to be dependent on the place of purchase and whether the material was synthetic, being cheap, or natural, being expensive. It can be seen in Figure 36 that plastic (37%) received 20% or more responses than the other materials. Most of the responses regarding plastic referred to it as being cheap. Statements regarding plastics’ cheapness were either associated with ‘displeasurable’ connotations, that it was inferior, or with ‘pleasurable’ connotations, being that it was reasonably priced.

Figure 36. Occurrence of the ‘Expense’ concept code
Appendix I. Status findings
**High status**

‘High status’ (Figure 37) was a term that many of the participants used for something that they tended to think highly of, or if they thought that the material or object they were describing would be thought of highly by a particular group of people. The high status concept received the highest percentage of results amongst all of the status codes with 46%, over twice that of any other status comments.

![Figure 37](image)

**Figure 37. Occurrence of the ‘High status’ concept code**

**Textile**

Textile can be seen to have the highest frequency of ‘high status’ comments with 22% (Figure 37). The type and quality of the fabric, who designed it and where it was purchased were the biggest indicators of ‘high status’ for the participants. ‘High status’ fabrics were generally regarded as those that were made from natural fibres. This status was said to have changed with time, with Male participant 8 stating that as a child he remembers cotton being cheap, but that currently it is an expensive textile. The designer or style of the object influenced ‘high status’, but this opinion may vary greatly over time. The appropriateness of the textile and object was also said to vary with the context of use, with the definition of ‘high status’ being changeable accordingly. Texture played an important role in the participants’ judgement of the type and quality of the textile and thereby status.
Wood
Wood (22%, Figure 37) was the second highest ‘high status’ result. Wood was said to be high status due to it being thought of as having a unique and personalised appearance. “Everybody says it’s beautiful” claimed Female participant 2. The type of wood was also said to influence its monetary value and thereby its status. Wood such as cedar, walnut and mahogany were some of the mentioned types considered to be ‘high status’. Wood was also said to have a ‘high status’ or “ecological status” (Male participant 12) due to the diminishing availability of natural resources, and that this may continue to increase the financial and emotional value of particular types of wood. Wood was said to be pleasurable and durable thereby increasing its status.

Metal
Metal had a frequency of 19% (Figure 37) for the ‘high status’ concept. ‘High status’ was attributed to metals’ properties such as strength and durability. The type of metal also changed participants’ views of status with precious metals’ expense and appearance being thought of as ‘high status’. Stainless steel applications in kitchen appliances and cookware were also some of the metal products that were considered fashionable and ‘high status’ at present.

Glass
Glass and ceramic both received the same percentage of 16% (Figure 37). Glass was said to create an opinion of ‘high status’ when used in the construction of houses and high rises. In office buildings in particular it was said to have an “executive” appearance (Male participants 3 and 5). Antique and well-renowned crystal, and artistic or sculptural application of glass were some of the most mentioned ‘high status’ applications. Another two interesting glass applications that received a mention were the glass Coke bottle and tinted car windows. Fashion trends were said to influence the opinion of the ‘high status’ of glass.

Ceramic
Ceramic (16%, Figure 37) received ‘high status’ comments due to participants’ belief that depending on the type of ceramic, the style and the designer, ceramic can being incredibly beautiful and sought after. The culture of the user was said to influence the appreciation of ceramic, with the English class system of tea drinking being mentioned as placing a “prestige” (Male participant 3) upon the type, style and designer of the ceramic tea set used. Ceramic was thought of as being a natural material and thereby incurred the belief that it was “earthy” (Male participant 12) and “unique” (Female participant 3). Male participant 5 believed that the art of handmade ceramic is dying out making antique ceramic all the more valuable and thereby ‘high status’.

**Plastic**

Plastic only received 5% of the ‘high status’ responses, 11% or more less than the other materials. ‘High status’ was attributed to plastic objects that had heavy, coloured and textured properties. All other responses were related to the fashionability of the plastic object at the time of manufacture such as the plastic furniture made in the ’50s and the toys based on a recently released movie. Female participant 7 recounted a story from her school days wherein she was the only girl at school with her lunch in cling film (Glad Wrap) and that it had a high status amongst the other students. Female participant 8 had a similar opinion that packing could be ‘high status’ initially, specifically the first “nice plastic bags” from stores such as Harrods.

**Neutral status**

‘Neutral status’ is used to describe the opinion by the participants that the material or object that they are describing has neither low nor high status that it is in the middle of these two extremes. ‘Neutral status’ received 22% of the total ‘status’ concept responses.
Plastic
Plastic received the highest response for ‘neutral status’ with 26% due the participants’ belief that it is functional, versatile and practical. It was said that it can be used in almost anything from the smallest to the largest of objects that are used in the household. There was very little pleasurable emotion attached to the responses relating to plastic, for example Female participant 10 stated that “it’s functional, but it’s not nice”.

Metal
Metal (22%) was said to be useful, functional and utilitarian. These qualities, along with its durability and reliability, were the reason participants linked metal to the construction industry. Female participant 7 stated that metal is “classier than plastic but not as classy as wood”.

Ceramic
Ceramic (21%) was thought of as functional, ordinary and “everyday” (Female participant 5). Some products such as ceramic crockery were said to be simple, plain and have a “down home feel” (Male participant 6) about them.
Glass
Glass (18%) received many responses describing it as functional. These responses were mostly directed towards windows in houses and cars. A number of the participants however did on second thoughts state that it is possible that “we sort of take it for granted” (Female participant 11). Male participant 15 stated that he “can’t understand the fuss” that people make about glass.

Textile
Textile had the second least response rate with 7% of the total ‘neutral status’ responses. There were a number of different types of materials that were mentioned as being common (and thereby considered neutral) such as hemp and calico. Textile was said to be very practical. Clothes that are worn every day were considered to have neutral status when compared to the clothes that one might wear for a formal or important event.

Wood
Wood received the least responses with 6%. Female participant 6 stated that she did not really think of wood as being high or low status. Others thought that it was functional in specific environments such as the construction of a house frame and was therefore neither high nor low status. Male participant 5 stated that in the case of an office environment wood furniture would be considered neutral when compared to glass which he thought would be more “executive” in aesthetic.

Low status
Low status had the second least responses relating to status with 20%. The results shown by Figure 39 are very telling as the percentage difference between plastic and the other materials is so extreme.
Plastic
Plastic received two thirds of the responses for ‘low status’ (66%). The weight, texture, appearance and the wear were associated with displeasure. Plastic was thought to be cheap and disposable. Female participant 3 stated that the negative associations with plastic may be due to the “association with where it’s used and how often it is used”. Male participant 13 stated that he would rather tin over plastic for packaged goods in the supermarket, expressing his displeasure that tomato puree now comes in a plastic container. Many participants stated that there is “no status with plastic”.

Textile
Textile received the second highest response rate of 12% resulting predominantly from comments about the displeasure and ‘low status’ of synthetic textiles. Synthetic textile was said to be cheap, nasty and uncomfortable. ‘Low status’ was also associated with the place in which the object was purchased and the length of time the object had been owned and the resulting wear.
Metal
Metal had a response of 8%, with ‘low status’ responses resulting from opinions that metal was a manufactured or synthetic material and that some types of metal such as aluminium and ‘ordinary steel’ were cheap. Metal was also said to be cold in appearance and feel perhaps resulting in a cold emotional response to the material. Corroded metal was also said to be ‘low status’. An interesting point that Female participant 12 made was that some products such as corrugated iron in the past have been seen as low status but that currently it has been used for “making high impact on buildings”.

Wood
Wood received the fourth highest response rate with 6%. Responses stating that the status was low tended to be when participants were talking about chipboard, fibreboard and in one case pine. Female and Male participant 10 were the only couple that thought that wood could not be considered to be high status and that the word ‘status’ was not a word that they would think of in relation to wood or wood products.

Ceramic
Ceramic had the second lowest response rate with 4%. Female participant 9 thought that “the material itself doesn’t have a very prestigious name”. Others thought that some ceramic objects could tend to be small and sometimes tacky or ugly. Female participant 12 stated that she thought that Australia does not place much value in ceramics, unlike other countries like England.

Glass
Glass (3%) was said to be a cheap material and that products such as stamped out glasses could be produced and purchased for very little. It was also said that glass objects tend to be small and could have the tendency to be cheap and nasty. A glass diamond ring was one of the examples of ‘low status’ given.
Variable status

The concept ‘variable status’ was used to code statements that covered the range of high to low status which were dependent on variables described by the participants (Figure 40). These variables were slightly different for each of the materials, the details of which are described below. ‘Variable status’ received the lowest rate of response of all of the status concept codes with 12%.

![Bar chart showing the occurrence of 'Variable status' concept code across different materials and genders](image)

Figure 40. Occurrence of the ‘Variable status’ concept code

Textile

Textile was the most commonly mentioned material for the ‘variable status’ concept with 25%. Status was said to vary depending on the textile that was used, the fashion of the time, the designer and where the textile was applied or worn. Opinions and thereby allocated status were said to be easily formed about a person depending on the textile and the design of their clothes. Culture was mentioned as having some influence over the status of the type of textile used for varying contexts.

Ceramic

Ceramic has the second highest response rate for the ‘variable status’ concept. This was due to the fact that the majority of participants felt that ceramic could vary between being expensive and sought after and cheap and somewhat tacky depending
on the application. The status was also said to change with the fashions and that there were a number of ceramic objects that may decrease or increase in monetary value as well as favourability over time.

**Wood**
Wood (20%) had variable status due to the different types of wood, the level to which they had been finished and how much it had been processed. Materials such as chipboard were stated as being low status while oak was said to be high status. The status was also dependent on how the object had been made and when. Older furniture, for example, was said to be classic in appearance and higher in status due to the technique by which it had been made. This older furniture was, however, said to be ‘old fashioned’ in some instances. As wood seemed to be regarded by most as high status the application of it in particular environments, such as offices, was said to be ostentatious and was therefore frowned upon. This indicates that the status of the material is also dependent on the context in which it has been used.

**Glass**
Glass and metal shared fourth highest position with 13%. Glass status was said to depend on the application, with many objects being thought to change status depending on the fashion of the time. It was also said that the place from which the object is bought significantly changes the value, with a number of high profile glass manufacturers or retailers being considerably more expensive than purchasing a similar object elsewhere.

**Metal**
Metal (13%) was said to have variable status depending on the price that one would pay for it. Metals were said to have a hierarchy of status, mostly dependent on the type that was under consideration. Culture was discussed by one participant group as being influential on the attributed status on the metal.

**Plastic**
Plastic was the least mentioned and only received 8%. The type of plastic was said to dramatically change the perception of status. It was not, however, specified exactly
what type of plastic was considered to be high or low plastic, rather judgement seemed to be attached to the properties of the plastic such as weight, texture and where or by whom it was designed. Plastic was also said to be varying appropriate depending on the location that it was to be used in. Female participant 3 stated that plastic should be the material of choice for furniture in a university for example, as using another material such as wood would be considered as being a waste of natural resources as well as monetary resources.
Appendix J. Summary of analysis findings
## Concepts

<table>
<thead>
<tr>
<th>Material Name</th>
<th>Summary of code analysis findings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Similar frequency of male and female knowledge contribution</td>
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<table>
<thead>
<tr>
<th>Pleasure and Displeasure</th>
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<tbody>
<tr>
<td></td>
<td>• Pleasure more frequent than displeasure</td>
</tr>
<tr>
<td></td>
<td>• Females had slightly more pleasurable association than males</td>
</tr>
<tr>
<td></td>
<td>• Linked to many of the other concept codes</td>
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<table>
<thead>
<tr>
<th>Properties</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>• Frequency difference between male and female participant statements minimal</td>
</tr>
<tr>
<td></td>
<td>• Linked to other concepts such as pleasure, displeasure, context, appearance, texture and durability for example</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Specific Context</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>• Used to explain/justify the materials’ physical and emotions attributes</td>
</tr>
<tr>
<td></td>
<td>• Products the most mentioned ‘specific context’</td>
</tr>
<tr>
<td></td>
<td>• Females more emotional when describing ‘specific contexts’</td>
</tr>
<tr>
<td></td>
<td>• Males preferred listing and did not elaborate as much as the female participants</td>
</tr>
<tr>
<td></td>
<td>• Linked to many of the other concepts such as pleasure, displeasure, appearance, memories and favourites for example</td>
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<table>
<thead>
<tr>
<th>Durability</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>• Pleasure/displeasure linked to the appropriateness of the materials’ durability for context and the specific context</td>
</tr>
<tr>
<td></td>
<td>• Gap between actual and ‘usable life’ of materials displeasurable</td>
</tr>
<tr>
<td></td>
<td>• Durability of appearance heavily effects emotion</td>
</tr>
<tr>
<td></td>
<td>• Accumulation of wear can tell story of ownership</td>
</tr>
<tr>
<td></td>
<td>• Restoration or repair considered pleasurable in most instances</td>
</tr>
<tr>
<td></td>
<td>• Manufacturing and technology play a role in durability</td>
</tr>
<tr>
<td></td>
<td>• Linked to many other concepts such as status and expense, properties, disposal, texture and touch for example</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Appearance</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>• Natural materials considered more unique and pleasurable in appearance</td>
</tr>
<tr>
<td></td>
<td>• Production method, time and effort affect appearance pleasure</td>
</tr>
<tr>
<td></td>
<td>• Surface finish (texture), properties and colour affect pleasure</td>
</tr>
<tr>
<td></td>
<td>• Durability of appearance affects emotion</td>
</tr>
<tr>
<td></td>
<td>• Displeasure with fake/imitation appearances</td>
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<table>
<thead>
<tr>
<th>Material Names</th>
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<tbody>
<tr>
<td></td>
<td>• Participants clearly more knowledgeable about metal, textile and wood names than ceramic, glass and plastic</td>
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<table>
<thead>
<tr>
<th>Context</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>• Suitability for context judged emotionally depending on the extent of use, the properties, appearance, durability, status, expense and origin</td>
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<tr>
<td></td>
<td>• Method, skill, time and company of production important</td>
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<tr>
<th>Expense and Status</th>
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<tbody>
<tr>
<td></td>
<td>• Expense and status concepts very closely linked</td>
</tr>
<tr>
<td></td>
<td>• Concepts of the expense and status of a material are closely linked to the context, specific context and use of object, the material type, quality, origin (natural or synthetic), the designer, style, fashion, place of manufacture, production method, time and effort, appearance, texture, properties, reliability, durability, disposal, pleasure and displeasure</td>
</tr>
<tr>
<td></td>
<td>• Closely linked to perceived duration of product-user relationship</td>
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<tr>
<th>Texture and touch</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>• Context climate/temperature and properties linked to emotions</td>
</tr>
<tr>
<td></td>
<td>• Natural materials more pleasurable in texture</td>
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<thead>
<tr>
<th>Memories and Favourites</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>• Mostly pleasurable</td>
</tr>
<tr>
<td></td>
<td>• Memories dictate tolerance of wear and aging</td>
</tr>
<tr>
<td></td>
<td>• Linked more to natural materials such as wood and textile</td>
</tr>
<tr>
<td></td>
<td>• Linked to where, how or by whom the item was made/received</td>
</tr>
<tr>
<td></td>
<td>• Linked to the maintenance, restoration or making of an object</td>
</tr>
<tr>
<td></td>
<td>• Linked to other concepts such as specific context, context, appearance, texture and properties</td>
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<tr>
<th>Disposal</th>
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<tbody>
<tr>
<td></td>
<td>• Link between attitude towards the material and their disposal</td>
</tr>
<tr>
<td></td>
<td>• Biodegrading, recycling and reuse pleasurable</td>
</tr>
<tr>
<td></td>
<td>• Landfill/waste a burden on environment and displeasurable</td>
</tr>
<tr>
<td></td>
<td>• Unsure about what to recycle</td>
</tr>
</tbody>
</table>