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THEORISING THE EMBODIMENT OF MATERIALITY AND EXPERIENCE IN MAN-MADE OBJECTS FROM A DESIGN PERSPECTIVE

Hapiz, Hana

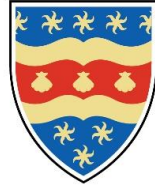
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UNIVERSITY OF PLYMOUTH

THEORISING THE EMBODIMENT OF MATERIALITY AND EXPERIENCE IN MAN-MADE OBJECTS FROM A DESIGN PERSPECTIVE

by

HANA YAZMEEN BINTI HAPIZ

A thesis submitted to Plymouth University
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AUTHOR'S DECLARATION

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award without prior agreement of the Graduate Sub-Committee.

Work submitted for this research degree at the Plymouth University has not formed part of any other degree either at Plymouth University or at another establishment.

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Publications:

Hapiz, Hana. (2016) . Mediating emotion through objects: the understanding of designed objects as an assistive tool for designers in the early stages of design activity. *DS 83: Proceedings of the 18th International Conference on Engineering and Product Design Education (E&PDE16), Design Education: Collaboration and Cross-Disciplinarity, Aalborg, Denmark, 8th-9th September 2016.*

Hapiz, Hana. (2016) .The understanding of emotion as an assistive tool for designers in the early stages of design activity. *Nord Design Conference: Highlighting the Nordic Approach, Trondheim, Norway, 10-12 August 2016,*

Exhibitions:

2015: Dutch Design Week, Eindhoven (Rocking Stool)

2014: Mobili Furniture Design Competition (Mermaid Stool)

Conferences and Exhibition Attended:

2013

Seventh International Conference on Design Principles and Practices, Chiba University, Japan.

Barbara Hepworth Sculpture Garden, TATE St. Ives

2014

DART Workshop, Coventry University

Sensing spaces, Architecture Re-imagined 2014, Royal Academy of Arts, London.

Wassily Kandisky, TATE Modern, London

Marina Abramovic, Serpentine Gallery, London

Smiljan Radic Pavillion, Serpentine Gallery, London

2015

What is Luxury, Victoria & Albert Museum, London

Charles Petillon's Clouds, Covent Garden, London

Presentations and Talks:

2013

Objects and Materiality, Design Lab, Plymouth University

2015

Design: Practice based approach Talk, International Islamic University Malaysia

2016

SEREKA Talk: Design branding, Malaysia

Design for behavioural change talk, Universiti Malaysia Kelantan, Malaysia

Bamboo: Sustainable material for children toys, Universiti Malaysia Kelantan, Malaysia

External Contacts:

Design Advanced Research Training, School of Art and Design, Coventry University, UK

Fine Grit Studio, Malaysia

Forest Research Institute Malaysia

School of Applied Arts and Design, International Islamic University Malaysia


Magno Design, Indonesia

Persatuan Pereka Alami Kelantan, Malaysia

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Theorising the embodiment of materiality and experience in man-made objects
from a design perspective.

ABSTRACT

This PhD dissertation begins with a gap prompted by design researcher, Boradkar (2010) that objects are under theorized in design research. Objects have become our entourage and companion since we are born. Man and object transaction has formed a salient and unobtrusive relationship and we have become oblivious of, which is the importance of the attachment that we have with objects. This dissertation aims to provide a new horizon in articulating our relationship with designed objects. The precedent literatures suggest that the components of materiality and experience are evident in man-object transaction, thus they act as theoretical background to support the formal findings.

In the dissertation, the researcher proposes a new taxonomy of materiality and experience, besides those that available existing literatures have postulated. The dissertation is divided into two parts;(i) theoretical analysis of the role the materiality plays in design and experience components in designed objects and (ii) practice works that embody the notion of materiality and experience in designed objects.

The theoretical analysis combines ethnomethodological approaches, autoethnography and interpretative phenomenological analysis (IPA) to unravel the components of materiality and experience and the findings postulates the

workable design framework that potentially will assist novice designers, especially to better articulate their design outcomes. The framework aims to provide an assistive method to frame design criterion at the earliest stage of design activity in alleviating the uncertainties faced by designers.

The creative practice elements comprise the understanding of objects (from the researcher's own personal resonance/understanding of her own objects) in the form of sculpture, stool series, eating implements and found objects that portray the embodiment of the new topology of materiality and experience. The practice elements are the researcher's (self) personal reflections, thus, the ideas and thoughts underpinning design thinking that are manifested in tangible form are critically articulated from a reflective practitioner standpoint. These objects are imbued with narrative, physicality of materiality and experience in the newly designed objects. The creative practice is a representation of the new locales of materiality and experience in the designer/researcher's relationship with the newly designed objects. Contextualisation of the practice, and a critical analysis of what is inherent in the practice of design help to frame the formal characters of the designed object. The knowledge in practice revealed in this research offers a new perspective to understanding the essence of designed objects, and encourage further exploration of the possibilities of design in creating a more engaging and meaningful user-object relationship.

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Preface

This doctoral thesis is written for design practitioners and researchers who are interested in the transaction between man and designed objects. The thesis introduces the notion of materiality and experience as components in understanding the essence of what makes an object, an object.

The knowledge contributed is beneficial for innovators and designers in order for them to see designed objects differently. This thesis offers new ways of seeing objects, not just the physicality and the embodiment of abstract meaning in the object, but the inherent components of the objects such as the mechanism of its presence.

The thesis consists of seven chapters.

- Chapter 1 introduces the topic of the research, the research objectives, questions and significance of the research, and provides an overview of the research trajectory.
- Chapter 2 describes about the objects, and the variations in their descriptions such as goods, things and commodities. It also discusses the theoretical background for the thesis, the research field of designed objects and the theories that have been developed in this field; and other related theoretical fields that have been drawn upon during the practice.
- Chapter 3 presents the research approach like the use of autoethnography method and phenomenological analysis. The chapter discusses the theoretical understanding that underpins the notion of materiality and experience. This includes the literatures on the analysis of materiality and the assessment of experience in using/owning objects. In short, the relationship between user and object.
- Chapter 4 presents the result of the first practice element undertaken in the research, which answers to the central question of the thesis, the potential of materiality and experience as tool to understand objects. This chapter describes the methods and instruments employed in the practice, and unravels the kind of relationship manifested as a result of the

interaction. It also describes the first contribution of the thesis, the essence (values) acts as a tool to alleviate uncertainties for novice designers.

- Chapter 5 discusses the results of the research project, which involves novice designers employing the tool in articulating their design brief. The tool then is further manifested in tangible objects and is further explored using different type of medium to extend its understanding of the components of the essence of objects. This is the starting journey of the making practice for the researcher (also, a reflective practitioner)
- Chapter 6 discusses the reflective ways of probing materiality and experience in objects. The notion of materiality is theorized in Driftwood object. Experience component is further investigated in the creation of the Summer stool series. This chapter describes a short documentation of researcher's short visit to Magno Design in Indonesia, that is known for its embodiment of the New Craft principle and sustainable design ethos in their creation of objects.
- Chapter 7 concludes the thesis with several case studies that project the new direction of the designed object and summarizes how the research questions have been answered by the thesis, the conclusions from the research and the contribution to knowledge.

Theorising the embodiment of materiality and experience in man-made objects from a design perspective.

Chapter 1: Research Overview

This PhD dissertation aimed to scrutinise objects from the perspective of design and to contribute to new ways of thinking about the relationship between people and the objects they own. Buchanan, Doordan and Margolin (2010)¹ state that there are currently two major strands of design research: the first is focused on product-making and the second on the design process and the significance and consequences of the designed product.

This second strand is frequently referred to as design studies and includes design history, criticism, and theoretical inquiries as well as research that focuses more on the philosophical, anthropological, psychological and social meanings and consequence of products.
(Buchanan, 2010, p.1)

The thinking underpinning this thesis falls somewhere between these two strands, the pragmatic and the philosophical.

1.1 Introduction

Because we (the designers) are competing with other agencies, manufacturers and companies in hyping the latest product, we tend to disregard the afterlife of the objects we have designed. Are we making the world habitable? In the 1950s, designers played a pivotal role in constructing the social image of society. For instance, with our flat pack and affordable furniture we gave hope

¹ (Buchanan, Doordan & Margolin, 2010) p. 1. Design research is split into two disciplines: (i) research that combines practice as part of the research and (ii) research that investigates the objects themselves (from the conceptual phases to the post-production phase)

to those who lost their homes during the war. However, in the current epoch, are we responding to the problems? Are we contributing to the community? How can we contribute? Are we creating more waste than useful objects? Kitschy or techy, how can we choose what to integrate into our latest series of objects?

This dissertation aimed to understand the essence of objects. It hypothesises that materiality and experience can play a critical role in enabling the designer to understand what makes an object an object.

Hebdige (1988) addresses this concern in his essay, *Object as Image*,

How then can we hope to provide a comprehensive and unified account of all the multiple values and meanings which accumulate around a single object over time, the different symbolic and instrumental functions it can serve for different groups of users separated by geographical, temporal and cultural location?

(as cited in Hebdige, 1988, pp. 123-124)

Hebdige's analysis reflects on the cultural significance of transportation vehicles, such as *Vespa* and *Lambretta*, and how these carry a unified representation of society, class and meanings. For a vehicle, it is feasible to present an image through the manufacturer's branding, given that the brand is already a label that society can relate to and identify with. For instance, in both India and America, the Range Rover is known for its luxury SUV look and its sturdy build. However, this common representation was not developed in a month; it took years. Colonialism is among the factors that contribute to this understanding and representation. However, in a consumerist society, image is manipulated through an ideological drive that encourages the acquisitions of goods that are clearly not necessary for survival. However, the trajectory of this type of consumerism has caused our ecosystem to suffer. Both humanity and

the planet have suffered greatly from human insensitivity to improper ways of discarding materials and the depletion of natural resources. At present, most designed objects adhere to the idea of planned obsolescence, as observed in all Apple iPhone or MacBook series. For obvious reasons, the newest product always overcomes the flaws of the previous versions. The mechanism of desirability plays a pivotal role in Apple's marketing strategy. For example, the crowd drooled when they introduced the iPhone 7 with its a ruby red phone casing. Apple is known for its monochromatic approach to colour preferences, but they made an exception for the iPhone 7. Such exclusivity is among the key design traits which every brand pursues. As a designer, it was not my aim in this research to extend arguments about the ethos and principles of designers, other than highlighting the social enigma most designers face in this millennium. Instead, this research aimed to highlight, in the vernacular of design, the typology of designed objects that have been considerably influenced by sociological and philosophical theories. This study also aimed to address the components/characters or qualities that underpin designed objects, aside from their apparent function and style. This dissertation raises concerns about the relationship we have with the objects we own and how we connect with our objects to allow them to remain in our dwelling for a certain time. This dissertation follows the trajectory of an innovation timeline, where designers are fully aware of the essence of objects, not just for monetary purposes but for the purpose of designing an object without which one cannot live. Objects are made to be replaced. The concept of planned obsolescence, however, engenders mixed responses; some reject the idea, while others benefit considerably from it. Planned obsolescence refers to the policy of

intentionally making a product short-lived. Vance Packard, a consumer culturist, published a book called *The Waste Makers* which specifically explores the issues surrounding planned obsolescence. In discussing these issues, he divides planned obsolescence into two categories: i) Obsolescence of desirability and ii) obsolescence of function (Packard, 1960). Desirability is the illusion created by the manufacturer to encourage consumers to believe the product is obsolete, regardless of whether it is still functioning properly. Hence, to comply with these false needs, designers create objects based on the class, affordance and status their clients wish to portray. Consumption has become the pivotal activity in our lives. Has there ever been a day when you have not spent money on anything? Brooks Stevens, an American industrial designer, contends that the importance of the culture of consumption is that

Our whole economy is based on planned obsolescence, and everybody who can read without moving his lips should know it by now. We make good products, we induce people to buy them, and then next year we deliberately introduce something that will make those products old fashioned, out of date, obsolete... It isn't organized waste. It's a sound contribution to the American economy.

(as cited in Packard, 1960, pp. 37- 38)

1960 was an outstanding year for the American economic system, when purchasing power was increasing and manufacturers were producing ever more products to satisfy customers' insatiable needs.

Packard outlined three ways in which products can become obsolete

- i. Obsolescence of function.

This occurs when a new product outperforms older ones.

ii. Obsolescence of quality.

The product has a shorter lifespan, and thus it breaks down or malfunctions after a given time.

iii. Obsolescence of desirability.

When new products have better styling and are more appealing, existing products no longer seem desirable.

In relation to Packard's notion, the waste makers are the manufacturers, supported by the designers. Despite the ethos and sustainability propagated by production industries and their consumers, this policy inherently makes it legitimate for manufacturers to thrive in the industry by producing waste (intentionally). It was not the intention of this research to discuss objects through the lens of consumerism; however, the dilemma experienced by the user and maker (researcher) is centred on this notion of 'obsolescence'. If we must choose objects that matter to us now, and then, after 10 years, choose again, would we choose the same objects? How do we justify our own selection? Do the chosen objects address our current needs? Do they reflect our identity? Have they been chosen for their function, meaning or aesthetic qualities?

In the following chapters, these questions are investigated through a variety of theoretical lenses. As a designer, how does the researcher respond to the object's obsolescence?

In short, materiality and experience are hypothesised to play a critical role in enabling designers to understand what makes an object an object. The

dissertation aimed to understand the essence of objects through the following three approaches:

- 1) In the vernacular of design, the dissertation will highlight the typology of designed objects that have been influenced strongly by sociological and philosophical theories.
- 2) It will explore the qualities that underpin the nature of designed objects, aside from their apparent function and style.
- 3) It will elucidate the relationship and connection we have with our own objects that allows us to have them in our home for certain periods of time.

The research has three objectives (**O1, O2, O3**), and answers three corresponding questions (**RQ1, RQ2, RQ3**).

O1: To analyse our relationship with designed objects.

RQ1: How do we understand objects?

Sub question RQ1: What are the formal characteristics of designed objects?

O2: To form a body of knowledge that can inform the development of a tool to facilitate the understanding of objects through materiality and experience.

RQ2: What approaches critically interrogate the relationship we have with a designed object?

Sub question RQ2: What tools do we use to understand a designed object?

O3: To investigate the essence of designed objects.

RQ3: Why do we need to understand objects?

Sub question RQ3: To make the world a habitable place and to innovate, what are the key characteristics designers need to understand in the objects they produce? What should be preserved and what should be changed in designed objects?

RQ1 unravels the definition of objects and identifies the components of owner's relationship with the designed objects. **RQ2** considers the potential use of materiality and experience as a tool in the process of designing objects. **RQ3** pursues a deeper level of understanding as to what constitutes an object.

Throughout the thesis, these three questions are utilised from the researcher's dual standpoint as both a maker and a user. The term "maker" is defined as a designer, sculptor and ceramicist, or, in a broader sense, the person who makes the objects. The researcher's role as a maker is evidenced throughout this dissertation, as examples of practice have been employed in the theorising of objects. The term "user" refers to the researcher's role as an owner and user of the specified objects.

RQ 1 was investigated using a literature search, the findings of which enabled the researcher to understand objects from multiple perspectives, either in the vernacular of design or philosophy. The aim of RQ 2 was to form a body of knowledge that emanates from the findings of RQ 1. This will help designers to probe potential problems and alleviate uncertainty at the beginning of the design process. It was investigated using a phenomenological approach where

various instruments were employed to validate, attain and gather sufficient data to support the development of the new tool. RQ 3 was investigated using the making process. The researcher chose to experiment with various materials and approaches to provoke and spark a new understanding regarding the essence of objects. Such understanding is pivotal in prioritising the important elements of the design outcome, making the researcher prioritise the design criteria they would wish to pursue in their object.

This PhD dissertation critically reflected on design research in order to probe the relationship between objects and the maker/user and unravel the potential materiality and experience offer as a tool with which to understand the designed object. Using the researcher's experiential knowledge as user and maker, this dissertation has explored the broader context of objects, thus adding extra layers of understanding in the realm of design. A critical philosophical reflection provides a strong base for this investigation; scholars such as Martin Heidegger (see Chapter 2) and other object theorists therefore play a significant role in forging a new understanding of objects in the context of design. Materiality and experience are the instruments of this investigation, and a review of relevant design research literature highlights the function in relation to objects, and their relationship with people. In this dissertation, these two notions were investigated from a design perspective.

1.2 Methodology

A qualitative research approach was chosen for this study as it reinforces an understanding and interpretation of meaning as well as the intentions underlying people's relationship with designed objects. To address the research questions, the in-depth method of interpretive phenomenological analysis was used to analyse the findings. The theories developed were then further investigated using elements of the researcher's practice. The findings were then evaluated using BA study.

At its very core, the research was driven by a keen interest in understanding our relationship with objects so that designers can consider new ways to innovate, appreciate and see objects. Practice outputs therefore constitute the findings for each research question. Figure 1 shows the trajectory of the research. The abbreviation '**Ch**' refers to a combination of theoretical understanding of the question and the translation of practice outputs into written format. The aim was to reflect the researcher's design ethos without compromising the theoretical findings.

L stands for literature search, a method that combines archival research and a primary search of current and relevant literature related to object theory.

Practice refers to the findings. These are in the form of knowledge that the researcher has applied in designing and making objects that address the questions. Videos, sculptures, sets of stools and cutlery, bowls, and found objects are among the outputs proposed by the researcher. Practice thus denotes the activity that constitutes the investigation, such as observation,

interviews, and the visualisation of findings that facilitate the making of objects.

A mixed media approach was chosen for the practice outputs.

P or practice is an extended explanation regarding tangible and intangible objects that correspond to a research question. It denotes an activity that has been conducted simultaneously by the researcher.

Buchanan (2001) defines design as ‘the human power of conceiving, planning, and making products that serve human beings in the accomplishment of their individual and collective purposes’ (p. 9). He asserts that “conceiving, planning, and making” is the final outcome, in the sense that the sequential stages of designing move towards materialisation of an object. In design activities, the process could be a derivative of a problem or issue raised by the designer; however, in this thesis, the making of objects occurred deductively after investigating the consequences of objects, exploring social meanings, and comparing existing objects. **Making** refers to the activity of synthesising information and translating this into the form of palpable objects. It is a vital activity in terms of the demonstrating new theories (hypotheses) that have been developed throughout this research. Additionally, sub-questions or **SQ** (refer to Figure 1) refer to the questions that might arise after the making process (reflection). This reflective study includes insights from the researcher, as a maker and user, and from other participants.

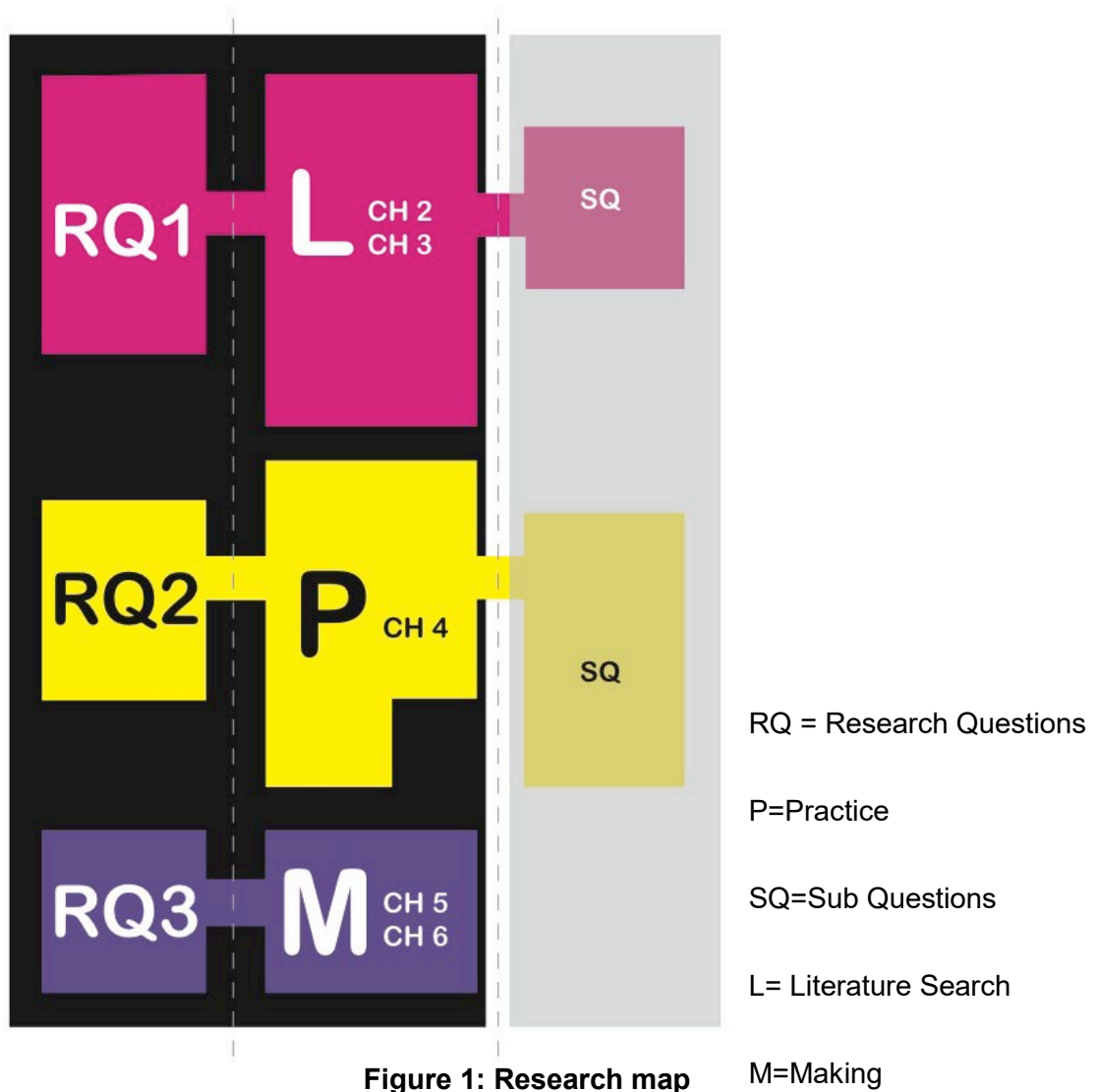


Figure 1: Research map

No	Research Questions	Sub-Question	Methods/ Instruments/ Output	Justification
1.	How do we understand objects?	What are the formal characters of designed objects? CH 2 & CH 3 : compile all objects and methods relating to this object investigation	Literature Search Output: Overview of objects, relevant terms and definition, and design research.	Object theorists have explained the formal characters of objects, dating from 1990 to the current day.

2.	What approaches critically inspect the relationship that we have with the designed object?	What are the tools we use to understand the designed object? CH 4 : methods and instruments used to investigate object-user-maker meaning/relationship/transaction.	Auto-Ethnography Output: photos/ journals and objects diary	Pilot studies such as photo journal and keyword coding to understand the essence of the relationship between objects and researcher.
			Reflective Method Output: Keywords	Reflection on each object, chosen from Auto-Ethnography method, to justify each selection and reflexively describe each object.
			Phenomenological Analysis Output: Set of general keywords and data that comprise experience/emotional responses	Immersive analysis of experience/personal attachment with the objects. Describing experience-using keywords to reflect on the meaning or abstract meaning of the objects.
			Mapping Complexity Output: Visual graphics regarding the resonance of keywords .	Illustration of the jumbled keywords in graphic format. Link relevant keywords using the visual medium to simplify the complex data (keywords and description). Create new taxonomy of the framework of the researcher's objects.
3.	Why do we need to understand objects?	In response to making the world a habitable place, to innovate, what are the key characters that	Before-After (BA) studies design Output: Comparison of responses (data set)	Approach whereby dependent variables are measured before and after an intervention has been delivered.

	<p>designers need to understand?</p> <p>CH 5: documentation of the studies undertaken to evaluate/test the newfound framework and analogous frameworks in different object case studies.</p>	<p>Questionnaires</p> <p>Output: Keywords and responses experienced by the participants while probing the given problem.</p>	<p>Elicit keywords based on participants' responses/experiences to questionnaires during the BA study.</p>
	<p>What should be preserved and changed in designed objects?</p> <p>CH 6: compilation of designed objects that echo an understanding of the experience and materiality of objects.</p>	<p>Making</p>	<p>Through immersion into the making process, the researcher is able to translate an understanding of what is important in object experience through the tangible designed objects. Making signifies the inherent values underpinning an understanding of the materiality and experience component in objects.</p>

Table 1: Research methodology

Table 1 shows the trajectory of the research, methods, and instruments employed in the study. To address the three research questions, different tools and instruments were employed and specific chapters written. In the following chapter, the researcher will elucidate the current understanding of objects with an explicit definition of the designed object that fits perfectly within this research framework

1.3 The significance of the object study

Since the 1900s, object-oriented ontology has intrigued numerous philosophers who have scrutinised the existence of objects. In that epoch, linguistics scholars were keen to investigate the meaning of an object and its relationship with its own name (noun), which then led on to semiological studies (Pierce, 1902; Saussure, 1916; Barthes, 1957; Eco, 1975). Debates about object ontology continued with a later generation of philosophers who considered it from a wide range of different perspectives.

In the 1960s, the study of objects attracted numerous interdisciplinary researchers (Baudrillard, 1968; Berger, 1972; Csikzentmihalyi and Rochberg-Halton, 1981) who expanded their critical insights to include input from design researchers. However, discourses on the study of objects primarily exist outside the field of design, embracing a broad range of disciplines that includes psychology (Norman, 1988), philosophy (Harman, 2005; Verbeek, 2005; Harman, 2011; Bryant, 2011); sociology and political science (Latour, 2005; Bennett, 2010); literature (Lamb, 2011); art history and social sciences (Sudjic, 2008; Daston, 2004; Turkle, 2007; Krippendorf, 2006); and anthropology (Clarke, 2010; Henare, Holbraad and Wastell, 2007; Miller, 2003; Ingold, 2012).² Boradkar (2010) thus claims that objects have been under-theorised in design research. Most scholars have revisited designed objects to understand

² In the *Oxford Handbook of Material Culture Studies*, Dan Hicks and Mary Beaudry offer a sweeping overview of this recent surge in writing about “material culture, objects, materiality, materials, things, stuff” (2010: 2) stating that “Today, things are everywhere in the social sciences and humanities: from history and geography to literature studies, philosophy and sociology” (2010: 2)

what they mean to their owners or users. However, few have paid attention to the original intention of the designer and the reason the objects were created in the first place, which can really only be examined from the maker or designer's point of view.

Currently, designers and design researchers opt for developing a design strategy, devising a more effective method for producing designed objects, and improvising design problem-solution scenarios. Design is not just about making sellable objects; it can also provide a 'life companion' for its users. Designers should therefore improvise their way of communicating with the user through the designed objects. Objects are made solely according to the designer's manifestation of a given situation. They are products that come straight out of the human mind, borne of real-life problems or situations that have been articulated by clients or directly observed by the designer. The designed object is currently considered a consumption product that is meant for the market or as a solution to a specific situation.

Designed objects will then be marketed to users and sent straight to the factory, outlets, hypermarket, Internet, or any other possible consumption channel. Objects will reside on shop shelves with printed labels that consist of basic but adequate information about their use and content. This direct relationship between the designer and the user is translated through the object. The product of the conversation between the designer and the user is the designed object itself. The client or the hypermarket (the investors) are the mediators of the object. The object is available to users after numerous discussions with clients

(investor/companies) and designers. But what if the outcome, the object, is malnourished?³ What if the designer-client collaboration is not fruitful? The market shelves will be filled with an abundance of superfluous objects that will fail to connect with users because of inadequate consideration and poor communication. A book by Csikszentmihalyi and Rochberg-Halton (1981) - 'The meaning of things' - has had an immense impact on this research. Their work investigated the meaning behind possessions, objects that have become a part of the owner's life and re-evaluated their roles. Meaning making is important because, by understanding and investigating what objects mean to us, designers can reduce the gaps in the designer-client conversation and sufficiently nourish the outcome. Relevant in this regard is a striking quote by a famous German poet Christian Morgenstern (1918): "Home is not where you live but wherever we are understood."

A house is merely a four-walled space that serves the occupants (us) with specific functions, which is to protect us from the harmful weather and dangerous threats, and to provide a space to rest, sleep and store our belongings safely. A house upgrades its level to become a home when meaning starts to coalesce with the space and we (the occupants) start to create memories, make conversations, and embed values within that four-walled space. That is when a house becomes a home. Watkins (2003) claims that the

³ Malnutrition is caused by an inadequate diet or a problem absorbing nutrients from food. There are numerous reasons why these might occur, including reduced mobility, a long-term health condition, or a low income (NHS). In this specific paragraph, malnourish refers to a condition whereby the object itself is lacking nutrients (main function), which will cause it to become malnourished and reduces its performance or function.

home should be seen as process rather than place.⁴ A place is contextualised with geographic importance, which is the location of our house, but the process is rather intrinsic; it represents the narrative and routine of its occupants. The same situation applies to the object-man transaction. The object is still a motionless thing, yet when values and meaning resonate with it, the object becomes the datum of our life. Heidegger (1962)⁵ discusses how function resonates with meaning, and how the continuum that lies between shape, form, and the sole function of the object creates the actual meaning of the designed object. According to Barthes (1985), there is always a meaning beyond an object; beside its evident function, it may also trigger information perceived by the user of the object. Barthes' notion suggests that the significance of meaning in an object is formed by connecting the user with the object when it is perceived.

⁴ A focus on material culture problematises the conflation of 'house' with 'home' and aids an understanding of home as 'process' rather than 'place'. The case studies show home to be a site of dynamism and change that is more related to mobility, tension, and engagement with the world than with stability, security, or separation. They illustrate how revealing mundane objects and domestic practices can go some way towards developing a multisensory understanding of home.

⁵ In *Thought*, Heidegger discusses this matter through the example of a handmade ceramic jug. What he wants to know is what this thing is? What is a jug? The jug, as we use it, is an object made of a specific material (ceramic material) and has a form and a function. But do these qualities define the jug as a thing? Heidegger argues that these are derived from a fundamental 'thingness', and that the jug's 'thingness' is in fact the void inside it. The jug shapes the void, which in turn shapes the jug. The jug as a vessel has a basic function; to hold. We become aware of that function when we fill the jug. It would appear that it is the bottom and sides that do the holding, they are the material that shapes the jug. Heidegger argues that this is in fact not the case: If you fill the jug with water, do you then pour it into the bottom and walls, the material? What we are doing is pour the water between the walls and over the bottom. It is the emptiness, the void, that is holding the water. "The empty space, this nothing of the jug, is what the jug is as a holding vessel." What about the potter? If the holding is done by the void, then the potter is in fact not making the jug. He shapes the clay, and this shapes the void, which is where the vessel's 'thingness' in fact lies.

Retrieved from <https://itherin.wordpress.com/2010/03/22/heidegger-the-thing/>

Another important aspect of this object conundrum is the meaning-making process itself. The man-object transaction, including the social aspect (such as meaning and symbols), will enrich the design outcome whilst bridging the gap between the user and the object. An object has significance as long as there is meaning attached to it, and it should perform eloquently, provided it has not been hindered by any malfunction mechanism. Meaning flows in both directions, to the user and the maker, although this does not occur simultaneously. Therefore, it is important for designers to view objects retrospectively, to scrutinise their importance and therefore improvise dialectical opinions about such objects. By examining existing objects, the designer can learn about their malfunctions, flaws and advantages.

1.4 Design Research

Responses from both users and stakeholders are an important part of the design process and their feedback needs to be considered and incorporated into the design of an object (Lee, 2017; Tao et al., 2017). Because the current economic structure predominantly favours the financial gains associated with mass-produced objects, researchers have begun to seek out the optimum method to measure responses to these objects. For instance, innovative design addresses these responses and then improvises, producing objects that not only captivate local clients but also interest buyers on a global scale. A fitting example of this type of innovation is the *iPhone*, which – when it first appeared on the market – far exceeded the expectations of consumers in terms of what a

mobile phone could offer. By completely redesigning the phone's interface and replacing the bulging QWERTY keypads with a simple touch screen, the *iPhone* challenged people's perceptions of mobile communication. Thousands of researchers⁶ have contributed to this marvel of design, including those researching the discipline of design itself (Heisler, 2012). Design research concerns not just the making of an object, but also other aspects of the design process such as the intention of design, the execution of the design, the marketing strategy, the methods used to present it to society, and the implications for the environment, society and the afterlife of the object.⁷

These complex aspects of the design process and object systems have encouraged design researchers to investigate and fill the current gaps in knowledge and understanding regarding this process. Researchers introduce new systems to replace obsolete approaches, and redefine the needs of society by conducting cross-disciplinary studies with psychologists to generate new outcomes, as described by Archer in his paper at the Portsmouth Design Research Society Conference in 1981,

Design research is systematic inquiry whose goal is knowledge of, or in, the embodiment of configuration, composition, structure, purpose, value, and meaning in man-made things and systems.⁸

(as cited in Bayazit, 2004, p. 16)

⁶ Heisler confirms that Apple has conducted a substantial amount of market research to make a great product. <http://www.networkworld.com/article/2222892/wireless/how-apple-conducts-market-research-and-keeps-ios-source-code-locked-down.html>

⁷ Object afterlife refers to the object's condition after it has been discarded. This refers to the material wastage, recyclability, and usage of the material.

⁸ Archer, L. B. "A View of the Nature of the Design Research" in *Design: Science: Method*, R. Jacques, J. A. Powell, eds. (Guilford, Surrey: IPC Business Press Ltd., 1981), 30–47. L. Bruce Archer gave this definition at the Portsmouth DRS conference.

Krippendorff (1995) claims that design is about making sense of objects and that modernity has influenced us to draw a clear distinction between crafted objects and industrially-produced objects. The distinction has changed our relationship with the object (De Lucchi, 2011). Whether an object is machined or handcrafted, it is favoured by certain target groups that embody a specific preference. A privileged minority in society has always served as a testing ground for successive styles whose solutions, methods, and artifices are then disseminated by craftsmen. To achieve more favourable design outcomes, numerous firms have undertaken studies on personal preferences that have resulted in the development of practical approaches such as HCD (human-centred design) or UX (user-experience design). The use of such creative approaches to problem solving and the vitality they bring to the design process cannot be understated. A deeper understanding of the target group means that the successful development of more specific products tailored to their needs is considerably more likely. However, whilst reviewing generic design processes and the making of a designed object, a lack of knowledge regarding a basic understanding of our own (maker) relationship with objects becomes evident. If objects were human, we would be fashion designers. We fashion them. We tailor them with perfect cutting, we channel meanings through the pattern of the fabric, and we style them with the perfect accessories. Latour (2000) evaluates the relationship between humans and objects as one of dynamic integration as their roles are interchangeable.

Consider things, and you will have humans. Consider humans, and you are by that very act interested in things. Bring your attention to bear on hard things, and see them become gentle, soft or human. Turn your attention to humans and see them become electric circuits, automatic gears or software. We cannot even define precisely what makes some human and others technical.

(cited in Knappett 2005, p.31)

This thesis aimed to provide a different understanding of objects by using a blend of historic, aesthetic, and philosophical perspectives to elucidate this complex transaction. In this sense the term transaction is defined as a relationship, which requires one to give (meaning, function, etc) and the other to receive (meaning, function, etc), and vice versa.

1.5 Design

The word design is in fact fairly new, and is typically associated with creativity, making, and mass-produced objects. This returns us to the root of the word design, as defined by Kozel,

Etymologically, design is derived from both the French *dessin* (drawing, pattern, plan, draft) and the Italian *designo* (sign, drawing, sketch). The word appears in the Oxford English Dictionary in 1885 and is now defined as “a plan or drawing produced to show the look and function of workings of a building, garment or other object before it is made.” It is used not only for the process of designing but also for the resulting product.

(Kozel, 2013, p.6)

Similarly, in French or Italian, the word design means to draw. The activity of drawing requires our hands to be coordinated without the use of psychomotor skills; thus, we can translate our visual experience into schematic drawing. The process itself is deep and intricate. Drawing symbolises a well-thought plan derived from our own imagination, and thus acts as a vehicle to deliver our brilliant ideas. To draw, we need to inspect the details of our unborn object by imagining and visualising. A creative mind is therefore required to enable us to

envisage an object that has not yet existed. This lengthy explanation describes the complex meaning behind the term design, which is multi-layered, comprehensive, and relative. Heskett (2002, p. 3) states that “design is to design a design to produce a design.” In this sense, design is seen as an outcome, a process, and a system. Design is not about making a one-off item; it exceeds this, given that it involves humans, users, animals, plants or even the environment; for example, design should be responsive.

1.6 Object overview

The word 'object'⁹ is derived from the Latin word *objectum* (noun form of *objectus*), which means to throw or put something before someone. In philosophy, the word object stands in opposition to subject, and is typically referenced as an inanimate entity distinct from people. Hoskins (2006) defines objects as follows:

It is perhaps more accurate to see these(objects) as two separate directions of interpretation, one stressing the ways in which things are commodified and lose personality, the other looking at the processes by which they are invested with personality and may have an impact. The malleability of objects, and the many different ways they may be perceived, are linked to what Gell might call their “instrumentality” or even – in his provocative new use of the term – agency, the ways in which they stimulate emotional responses and are invested with some of the intentionality of their creators.

(as cited in Tilley, Keane, Küchler, Rowlands & Spyer, 2006, p. 74)

⁹ Definition of object. As a noun, an object is defined as (i) anything that is visible or tangible and is relatively stable in form. (ii) A thing, person, or matter to which thought or action is directed. (iii) The end towards which effort or action is directed; goal; purpose. Retrieved from <http://dictionary.reference.com/browse/object>.

Congruent with Gell's notion of agency, Hoskins asserts that objects have agency because they produce effects; we will therefore experience all types of emotions when engaging with objects. Agency is relative as it depends on an individual's opinion about the notion of materiality in the world. For instance, designers create objects with certain purposes or, to quote Gell, agency. Objects and their actions (purpose) or functions rely on human interaction and societal intentions. An object testifies to the people who conceived it and how it connects to us when we hold it, move around it, or simply use it. Every object speaks to the people who put it there. At present, however, objects are mass-produced because of the escalation of manufacturing technology and so that designers can create standardised objects for millions of people. We are surrounded by the uniform and superfluous objects that have been present in our lives since we were born; therefore, we are unaware that these mundane objects are in fact our life companions, witnesses to our rise and fall, and silent recorders of the significant memories of our lifetime. Objects are a rich source of inquiry; they invite us to observe their details closely, to ask questions, create connections, and develop concrete ideas about their existence. We are used to seeing objects as useful tools and are on less familiar ground when we consider objects as companions to our emotional lives or as provocations to thought.

Antonelli states that:

A good object has to deliver not only its function but also emotion with some information about its meaning. However, not just that, but the way it was made, from selecting the materials, the technique and the way they complement each other, matter too.

(Antonelli, 2003, p.3).

The object should amount to more than its reliable functionality. In a time when consumption is perceived as an important determinant of the quality of life,

purchasing decisions are typically based not on need but on immediate emotional gratification. The 'fetishism of the world of commodities' described by Karl Marx is perhaps apparent in objects with a designer label (Baecker, Hartung, Lang, Schwartz-Clauss & Von Vegesack, 2010, p. 23). We can now buy things at a cheaper price, partly because we are able to outsource jobs and utilise cheaper labour in countries such as China and India. This also means that markets become saturated with the same typology of objects, as, for example, occurred with smartphones. The *iPhone* is known for the rounded corners of its handset and its new and colourful grid of icons, which other manufacturers have quickly adopted into their own design. Innovation is tied to creativity and the ability to transcend mediocrity. Timelessness is another concern. Consumers are pursuing utilities that are not just useful, trendy and advanced, but that are also cheaper. Trends catalyse device manufacturers to copy and imitate simply to keep up with front-line manufacturers so that they can sell their products. There is no more room for creativity and imagination. A new phone is just a variation of another existing phone, with additional finishes or perhaps a different positioning of buttons. Designers have become so tied to the needs of the market that they are no longer designing. They are copying popular designs and making it their own by fine-tuning a few details. Producing a novel and inspiring design has become a far-fetched dream.

In 1968, Wilco produced a record player, Pepito, which was emblematic of the 1960s, as evidenced by its stark turquoise plastic cover. It was made during a time when plastic was seen as a wondrous material because of its malleable properties and vast potential; its flexibility amazed designers at that time, all of

whom wanted to use plastics as their main material. Pepito is easy to operate and is extremely mobile; it also has a shoulder strap and is therefore easy to carry around. The speaker is attached to the recorder's body and the design is somewhat unified as all edges are chamfered and tapered. Every corner is round and curved. In 1970, Philips introduced its record player, Philips 133, with no shoulder strap, just a handle (making it easier to carry). This was also emblematic of the 1960s, as seen from its pop colour options. However, the edges were not chamfered but trimmed. Philips 133 was a boxy record player, and the speaker was separated from the main body. Thus, it amplifies sound more effectively, offering the listener the feel of surround sound. Pepito and Philips 133 therefore offer different types of experience and ambience. They both place an emphasis on the 1960s' style but ultimately for different purposes. Each encapsulates a different approach to listening, one for individual use and the other for a larger audience. Design in that era was freer in the sense that there was more room for designers to explore and set their own standards. They were more care-free and boundless. In a world where designers were celebrated for their creative ways of understanding users, there was no pressure to keep up with modern trends. However, we are now so tied to mass culture that designers have become too similar. We are terrified to be different. We want to be as good as others, but not different from them.



Figure 2: Pepito record player by Wilco, 1968¹⁰



Figure 3: 1970 Philips 133 record player¹¹

¹⁰ Figure 2: Pepito record player. Retrieved from <https://www.flickr.com/photos/137854286@N07/34602658655>

¹¹ Figure 3: 1970 Philips 133 record player. Retrieved from <http://www.modculture.co.uk/ebay-watch-philips-133-record-player/>

Designers are now tied to the task of imitating others' designs; thus, the fees for specifically designed items are lower than that for novel creations. Hence, designers become demotivated to imagine and dream about creating something new, novel and innovative. These imitations easily fade with time, are replaced by more advanced technology, and are thus short-lived. In the following quote, Dieter Rams, who for two decades was head of design at Braun, outlines some of the qualities that can make a good object great.

Braun's shavers and food mixers are English Butlers, discreetly invisible when not needed, but always ready to perform effortlessly when called upon. Such objects become more than that, as objects can be beautiful, witty, ingenious, sophisticated, but also crude, banal and malevolent.
(Dieter Rams, cited in Sudjic, 2008, p.10).

The objects here are seen as having the personified, humanistic traits of a very professional English Butler, who excels at his job and knows when he is wanted. Hence, the shaver has not simply been assigned a function, the user also engages with the shaver every morning; thus, the shaver has become an extension of our hands. Without it, the user's morning would be imperfect. The day would be lived differently.

According to Antonelli,

The best contemporary objects are those which through their presence express history and contemporaneity; those which manifest with their physical presence of the material culture that generated them, while at the same time communicating a universal language; those which carry a memory and project an intelligence of the future, these times of cultural and technical possibilities, while they also manage to carry us to places we have never visited.

(Antonelli, 2005, p. 4)

Objects can be seen as a way of measuring the passing of our lives. They are what we use to define ourselves, to signal who we are, and who we are not.

Objects that decorate us, such as jewellery and clothes, or even those that

decorate our homes, such as furniture, act as symbols of ourselves. Jewellery, for example, can be used to exemplify one's marital or wealth status, (Hesse et al., 2012, p. 23).

Csikszentmihalyi and Rochberg-Halton (1981) insightfully observe that objects make and use their makers and users. Owners keep certain possessions for different reasons, for example a passed down memento or a fridge magnet that reminds the owner of a place he or she had visited. Objects somehow use the owner to prolong their shelf-span. In *Quadruple Object*, Harman (2011), a notable object-oriented philosopher, defines the existence of objects as important only when they are manifested in the mind, or are part of some important event that also affects other objects. However, object empiricists view objects as artefacts of experience that come with a bundle of qualities. What we encounter in experience are unified objects, not isolated points of quality. Indeed, the relationship in fact works in reverse, as the individual qualities of things are already imbued with the style or feel of the thing as a whole. Although we claim objects can speak to us, they are in fact only palpable qualities, effects on other things, or images in the mind. However, there are problems with rationalising the world in this way. Harman, for instance, states that:

Objects need to fill our emotional needs as well as our physical or rational ones. Stories are one of the best ways to express this level of meaning and stories are a common and comfortable way for people to share such information.

(Harman, 2011, p.160)

Narrative is thus inherently embedded within an object and stories are the optimum way to justify the experiential qualities of an object. Man-made objects

play a crucial role in human affairs. Our interaction with particular objects can alter the patterns of life. For example, the microwave has revolutionised shopping and eating habits. The things that people use, own and surround themselves with might accurately reflect certain aspects of the owner's personality. Objects then serve to express dynamic processes within, among and between people and their surrounding environment. Indeed, one of the neglected aspects in the study of the meaning of things is the ability of an object to convey meaning through its own latent qualities. Objects speak more clearly than politicians, and more profoundly, regardless of scale. The humblest and often smallest objects, designed for the most trivial of pursuits, have ultimately changed the way we live. They show us how the world works.

As a maker, user and designer, it is important to understand what people are and what they might become and what occurs between people and objects. The designer designs objects for people (mostly), and therefore should unravel the dynamic interpretation of objects to design something that is meaningful and intentional. Harman (2011) provides an interesting example of how an object becomes an object. He cites the work of Husserl, a prominent object philosopher who discovered a fascinating rift within that realm, who defined an object as an intentional entity that has unified essential core (qualities) surrounded by accidental encounters. Heidegger, Husserl's protégé, proposed a different notion that lay in the idealism spectrum of an intentional sphere. In Heidegger's analysis of tools (which will be further elaborated in Chapter 3), we find real hammers and drills withdrawing from direct human access. Harman states that, "if Husserl openly gives us intentional objects polarized between

their accidents and their essential qualities, Heidegger tacitly gives us this same polarization for real objects" (*Ibid*, p.21). This polarity of accidental, intentional, and essential qualities makes objects distinct from each other, enabling us to be aware of their existence when they are located in a wider realm. For instance, a jungle without different species of flora and fauna would not be called a jungle; it might be perceived as a cash crop land, a plantation, or an agriculture farm. The jungle is the intentional object.

Chapter 2: The Terminology of Objects

2.1 Introduction

Numerous studies have been conducted to disentangle the conundrum of objects.¹² However, since the 1920s, there has been less focus on the designed object and its meaning from a designer's perspective. Therefore, this chapter will specifically examine designed objects to grasp the essence of these objects through a design lens. The term "objects" is defined in this research as a bricolage of meaning-making, materiality and experiential elements. Objects can be assessed from multiple perspectives; however, in this research, the researcher's investigation focuses on considering objects through a maker/designer's lens in order to understand the relationship between objects and people. This chapter will therefore discuss the taxonomy of objects based on existing literature concerning the study of objects. Objects are assumed to be in the form of a physical body, matter, and far more. This chapter will discuss objects and variations in their description, such as goods, commodities and things, and unravel the components that make one object distinct from another by viewing objects through the lenses of emotional response, meaning-making, and semiology.

¹² "Objects" in this study refer to designed objects. Something that is man-made and not created by nature.

2.2 Objects as tools

This dissertation discusses designed objects in several contexts: as goods, tools, and things. This chapter will illuminate our understanding of the differences and similarities of each context. The mind is the perceiver of the image, idea or object. The notion of perceiving things or ideas is entirely context-dependent. In this study, objects are argued to be in three-dimensional forms with their own palpable qualities and are thus able to perform functions to support their existence. The arboretum of objects that has become part of our entourage makes us oblivious to their existence, except when they do not perform their function. In order to understand an object's relationship to the viewer or owner, it is useful to refer to Heidegger's analysis of the role of tools in everyday life. Verbeek (2011) has used Heidegger's analysis of tools to understand technological mediation in objects. He points to an example of how the "readiness-to-hand" concept is present in our everyday routines by using tools to represent equipment or artefacts that are employed in everyday activity.

Tools that are used for doing something typically withdraw people's attention; for example, the attention of a person who hammers a nail into a wall is not directed at the hammer but at the nail. People's involvement with reality takes place through the ready-to-hand artifact. Only when it breaks down does it require attention for itself again. The artifact is then, in Heidegger's words, "present-at-hand" and is no longer able to facilitate a relationship between user and his or her world.

(Verbeek, 2011, p. 7)

According to this discursive analysis, tools or objects are used to mediate action to establish a relationship with our routine and environment. Objects facilitate our involvement with reality, and therefore they are understood as mediators of the human-world relationship (Verbeek, 2011). Tools, as defined by Heidegger, are designed objects that serve as mediators to connect us with the

environment. As mediators, objects act as connectors or links to this relationship. We shape the definition of the mediators based on our perception of the objects. The ready-to-hand artefact is a perfect way to describe how we realise or become aware of the existence of an object. Because a myriad of objects has surrounded us since we were infants, we know objects lose their importance when they are no longer “present-at-hand”, or they are no longer functional in helping us to complete a task.

What is thus lit up is not itself just one thing ready-to-hand among others; still less is it something present-at-hand upon which equipment ready-to-hand is somehow founded: it is in the 'there' before anyone has observed or ascertained it. It is itself inaccessible to circumspection, so far as circumspection is always directed towards entities; but in each case it has already been disclosed for circumspection.

(Heidegger, 1962, p. 105)

In *Being and Time* (1962), Heidegger uses the term “equipment” to question the being of an object. The object is seen as a tool or equipment because it is relational to the things around it. In the same way that a human is a relational being who does not exist in a vacuum, tools have a relational quality. Objects such as a hammer, screwdriver, and an espresso machine lose their function when their ecosystem is disturbed. They act as tools and mediators that have not just shaped a routine for doing something, but whose existence as equipment items is paramount.

2.2.1 Objects as goods

Designed objects are consumer products that are the fruits of a designer's mind dedicated to a targeted consumer. Domestic objects are widely consumed by people, as they have become part and parcel of our daily lives, enabling us to live comfortably. In *Consumer Engineering*, published in 1932, Earnest Elmo Calkins derived a new term for consumer objects; he classified domestic objects as goods that we use up or goods that we use (cited in Sudjic, 2008, p. 14).

Goods that we use up, such as skincare products, are often purchased to enhance our well-being and are bought repeatedly as their use is finite. They are therefore 'used up' in shorter time than goods that we simply use, such as cars, houses, and furniture. These larger items are among the goods that are bought as investments and, although they last longer, might possibly be purchased again once they are broken. In contrast to the economic definition of goods, designed objects fall easily within these two categories. However, from a strictly economic perspective, such as that of economist Tejvan Pettinger (2011) in his blog post for *Economics*, the taxonomy of goods is listed as follows:

- i. Inferior goods.

Inferior goods mean an increase in income causes a fall in demand. An example of an inferior good is Tesco value bread. When our income rises, we buy less Tesco value bread and more high quality, organic bread.

- ii. Normal goods.

Normal goods are those you consume or demand more of because your income has increased.

iii. Luxury goods.

Luxury goods mean an increase in income leads to an increase in demand. When income rises, people spend a higher percentage of their income on luxury goods.

iv. Complementary goods.

These are goods which are used in combination, such as a PlayStation and a television.

v. Substitute goods.

These are goods which have a substitute; for example Coca-Cola, which can be bought as a branded item but has several alternatives.

vi. Giffen goods.

A rare type of goods that exist when an increase in price causes a rise in demand. The reason for this is that the rise in price forces the consumer to buy more of these cheap goods because they can no longer afford more expensive goods. For example, if the price of wheat rises, a poor farmer may no longer be able to afford meat and therefore has to buy more wheat.

vii. Veblen goods.

Goods that exist when an increase in price encourages people to buy more because they think expensive goods are better.

viii. Public goods.

Goods with the characteristics of non-rivalry and non-excludability, such as national defence.

ix. Merit goods.

Goods which people may underestimate the benefit of, such as education.

x. Demerit goods.

Goods that people may underestimate the cost of consuming. These often have negative effects on the consumer, such as cigarettes or drugs.

xi. Private goods.

Goods that have rivals and exclude certain consumers such as private healthcare.

With Pettinger's (2011) categorisation of goods in mind, it could be concluded that goods are defined in relative terms by consumers themselves. "How much do they earn?" therefore has an impact on "how do they want to spend their luxuries?" Goods are entirely defined by how consumers perceive them; they are inseparable. Furthermore, objects arise from consumers insatiable demands and it is sufficient to contextualise objects as consumer goods; however, there are other branches of objects with different ontologies. A more in-depth definition of goods suggests that the unexplored phenomenon of goods as designed objects is worth highlighting. Goods are often only seen through the eyes of the consumer; therefore, it could only be ideal to analyse these through the lens of consumerism. In this context, the maker has no specific influence on how these goods are defined, as reiterated previously; goods are defined by consumers. However, the representation of goods will vary, for example from the domestic basic fan to the birth of the Dyson air multiplier, although ultimately the object in question is still a fan. Due to the escalation of income and the perceived need to keep up with current trends, consumers with high incomes may succumb to the promise of enhanced performance delivered by Dyson rather than purchase the £19.90 basic fan from Wilkinson. In charting the hierarchy of objects, goods come after the designed object.

Designers and makers create objects to satisfy multiple levels of need among stakeholders from the investors through to the consumers; however, it is often the consumers who determine the type of object that will be sustained in the market. Colin and Hecht (2010) offer another definition of 'consume', as meaning to devour and digest more than you need (p. 23). Marketing strategists are now looking for gaps to persuade consumers to spend more than they should and to upgrade goods to complement this current trend. In their collection for the Under a Fiver Exhibition, Colin and Hecht illustrate the optimum usage of small things that cost less than £5. The objects that they exhibit appear in increasing numbers at affordable prices because local manufacturers, using mass-produced methods, can target even the most primordial of human activities. Hecht (2010) explained that, 'each of the objects I found appealed to me for a specific reason: the ability to address and identify a small and localized need, even when some were hopelessly flawed in their execution' (p. 23). The objects that were collected embodied multifaceted cultural values whilst portraying the local society's routine and lifestyle. The idiosyncrasies of the simple objects were not only intriguing but also provided information about that particular geography, as shown in Figure 4.

object and another' (p. 112). Thus, consumers are willing to spend lavishly just to keep up with a current trend. This unwise way of spending money, however, illustrates the fact that only a small amount of inequality is sufficient to differentiate one's status (Molotch, 2011).

Case Study: Humanitarian Good

Macgregor (2011) compiled a list of 100 meaningful objects that help us to understand world history. He utilised objects as archival evidence that document the trajectory of civilisation. Macgregor concluded his list of remarkable objects with a final object that represents the current millennia, the Nova S200 (an all-purpose solar LED lantern). Redfield (2012) claimed that the 100th object is typical of a new category of 'humanitarian goods'. In his paper *Bioexpectations: Life technologies as humanitarian goods*, he describes Nova S200 as:

An object that has been built as a response to the failures of states, markets and civil society to care for or safeguard the health of their populations and which expresses a humanitarian sensibility or an ethic of 'concern for distant others.'

(Redfield, 2012, p. 180)

The Nova S200 holds different meanings for the owners, stakeholders, and manufacturers. From one perspective, the solar-powered object does not just provide electricity, it also makes electricity affordable for the poor. This object has offered a new definition of life to a community that faces global poverty and has had no access to electricity in the past. Electricity is one of the basic necessities in developed countries, as it produces light and warmth and supplies power to electronic devices without which many of our tools would be

rendered worthless, forcing us to conduct our lives quite differently. McCracken (2005), in his book *Culture and Consumption*, stated that, 'goods are instruments of innovation and conservation and in both capacities they serve us in our modern quest for order in a disorderly world' (McCracken, 2005, cited by Tsutsumi, 2007, p. 89). The purpose of the Nova S200 is transparent; it provides inexpensive electricity for those who would otherwise be deprived of it. In this way, the Nova S200 transcends other goods, as it not only offers the luxury of electricity to those in need, it also invites people with lavish technological facilities worldwide to reflect and ask the question: what if we were in their position? We would definitely lead quite a different life. According to Cross (2013), to fit in the humanitarian goods category, such goods must '... materialise a dual commitment to an ethic of care and to market exchange as a mechanism for achieving moral ends' (p. 384). Stakeholders and investors are not only acting out of economic interest, they are also motivated by the fact that an entire village might also benefit from the invention.

Humanitarian goods are significant; hence, an object such as the Nova S200 has the power to make new types of action possible. The particular qualities and effects of this specific object afford it the capacity for action and the power to offer meaning to action (Mackenzie, 2009). It is a particular combination of qualities that allies diverse people and institutions, forming a social standpoint (Cross, 2013).

Alternatively, it can be concluded that people have started to care and immerse themselves in finding solutions to combat others' hardship. Humanitarian goods

are a new horizon in this 21st century market. This shift has enabled designers and engineers to depart from designing objects that simplify chores for those in developed countries to inventing indispensable solutions that provide basic necessities to communities in developing countries. In this millennium, researchers, investors and inventors are seeking a niche market that can compensate humanity as we desperately pursue equality, inclusivity and universality. We believe that whatever we have today should be available to other people, whether this is in the form of energy sources, equal rights, or egalitarianism. These are the pervasive issues that have currently been spotlighted.

2.2.2 Objects as things

Several research studies use the terminology of 'things' interchangeably with 'objects'. For example, Verbeek (2011, p. 113) states: 'Things can be interpreted as objects that gather people and other things around them, uniting them and making them differ' (). Verbeek's definition infers things as social objects, where the participation of people or animals occupies a central role. Latour (2005) shares Verbeek's view and asserts that things do not exist without being full of people (cited in Brown, 2001, p. 12). By contrast, Boradkar (2010) defines a 'thing' as an entity, being, matter, or body. According to Boradkar, such definitions are derived from Old English, Old High German, Old Dutch, and Classic Latin. He suggests the presence-ness of the materiality of objects embodies the whole concept of 'things'. The mere physical and materiality of the object contrasts with Heidegger's (1962) perspective on

'things', which he describes as self-supporting and independent, while objects exist in opposition to subjects (cited in Boradkar, 2010, p. 25).

Magnusson (2013) disagrees with Heidegger, arguing that a hand-made jug can be a thing, while the industrially manufactured can of Coke remains an object. Magnusson's notion suggests that the distinction between a thing and an object depends on the production techniques applied. A thing is highly crafted by a maker, whilst an object is mass-produced. Stein (1927) argues that, 'Things are what we encounter, ideas are what we project' (cited in Brown, 2001, p. 3), in that things are bound by their physical embodiments. The physicality of things or "thingness" is found in the object when it loses its function, for example when a pen is out of ink. According to Brown (2001), 'The story of objects asserting themselves as things, then, is the story of how the thing really names less an object than a particular subject-object relation' (p. 4). Through this notion of subject-object relations, the object becomes more discrete when it is drenched with the subject¹⁴ and attention is now directed towards the embodied 'thingness' of the object. Things contribute to the cultivation of the self when they help create order in consciousness at the level of the person, community, and patterns of natural order. Csikszentmihalyi and Rochberg-Halton (1981) observe that 'an object that, when attended to, inhibits the pursuit of goals at any of these levels is a hindrance of the development of self' (p. 16). Scholars have debated the distinction between things and objects from within the fields of linguistics, philosophy, archaeology, and sociology. This study will therefore blend these perspectives by discussing and comparing

¹⁴ Subject refers to the content, meaning, intention, or purpose of the object.

definitions from various fields in order to explore the complex dimensions of the study of objects.

To summarise the varied nature of objects discussed above, a tool is an item of equipment (as coined Heidegger, 1962, p. 105) and it does not exist in a vacuum. The striking thing about using the hammer, in the ready-to-hand relation, is that when we are deploying it as a tool, it begins to disappear from view. It withdraws from our conscious perception as we concentrate on the task assigned. Our attention moves from the hammer towards the nails being driven into the wood. We become oblivious to the existence of the hammer, as we are concentrating on the nail. We become aware of the hammer (the tool) when the process of hammering the nails is interrupted; for instance when the nail refuses to be driven into the wood. In this case, according to Harman's reading, we immediately enter a state of 'breakdown'; the hammer re-appears in our conscious perception when it refuses to do its job.

However, goods are consumer objects. They are commodities. They are used and consumed by humans as they are bought using money. They are tied to demands, financial status, and the needs of certain group of people. From the Gucci shopper bag to the Tesco recycle jute bag, these bags are meant to be used. A wedding ring does not belong to the category of goods. It is not to be used as it symbolises status and embodies rich narratives.

However, humanitarian goods offer a new meaning to the category of goods as they are not simply to be consumed and used, they must also be affordable to the poor. This type of good compromises the needs of an unfortunate society and adds a new layer of meaning to consumer goods.

Conversely, things embody the tangible quality of a thing when an object loses its function, for example when a pen is out of ink. We then encounter the thingness of the pen, its components, and what makes a pen a pen.

Thing, in contrast, can hardly function as a window. We begin to confront the thingness of objects when they stop working for us: when the drill breaks, when the car stalls, when the windows get filthy, when their flow within the circuits of production and distribution, consumption and exhibition, has been arrested, however momentarily. The story of objects asserting themselves as things, then, is the story of a changed relation to the human subject and thus the story of how the thing really names less an object than a particular subject-object relation.

(Brown, 2001, p. 4)

Human beings and things together possess agency, and they act in conjunction with each other to form the world. According to Heidegger (1962), this characteristic of things, that they are always "this one" or "that one"(p. 258).), implies that things are co-existing against human. This encounter with externality is an arranging that makes and gets into the thing. There are no things except as received and thought through experience as they are perceived from a sense of concern for the world. Things are experienced, owned, tried, and used by humans.

Objects, by contrast, are presented to us. Using Heidegger's terminology, Latour characterizes objects as physical or virtual entities that present themselves through their functional features to potential users. They are typified according to their intended functions; for example, a pen belongs to the stationery group. An object therefore has a clear and precise role in human life and its potential for surprise is due only to its breakdowns. Objects and things are intrinsically related: according to De Michelis (2004, p.189),

a nuanced characterization of design objects can deepen our

understanding of the thing–object couple, grounding it in the realm of human practices. Using a design-centered approach, things and objects cease to be seen as opposing each other – things and objects appear intrinsically linked – and objectification, with its incompleteness and contradictions, appears to be the dominant means through which we access things.

(De Michelis, 2004, p. 189)

2.3 Everyday Objects

The investigation of everyday objects has become an area of interest to academics as it offers scope for various discursive inquiries, especially for those engaged in social research. According to Woodward (2001), the everyday object is rudimentary, although it serves shifting roles. Everyday objects need to be ubiquitous, unobtrusive, and functional to help us survive and cope with our lives. In this context, the notion of ‘domestic’ infers the notion of spatiality.

Objects that occupy our daily space are referred to as domestic objects. The home space is the most familiar space that contains our personal and everyday objects. Lawrence (1985) argues that, ‘At a deeper level, homes are seen as ‘warehouses of personal experience’ (cited in Woodward, 2001, p. 121).

Everyday objects are thickly imbued with information and symbolic status, as they represent the owner’s taste, lifestyle, and beliefs. Rowland (1993)

observes that objects are replete with the possession of the owner’s memories, such that:

They are there to be talked about and invested with the memories and striking events associated with their use. The link between past, present and future is made through their materiality. Objects of a durable kind assert their own memories, their own forms of commentary and therefore come to possess their own personal trajectories.

(Rowland, 1993, cited in Malafouris, 2008, p. 1999)

For designers to design an everyday object, a deep understanding of the demographic they are targeting is required. Norman (1988) claims that, 'An aesthetically pleasing appearance is only a part of a successful product. The other part is understandability and usability, which are more important than attractiveness' (cited in Xenakis & Arnellos, 2013, p. 59).

2.4 Objects and Meaning

Objects are designed for function, either serviceable function or aesthetic importance. It is apparent that they posit meaning either intentionally or non-intentionally. Meaning is a composition of the deep understanding of human nature, of the wants and needs inherent in any designed objects. The study of meaning-making has sparked the interest of numerous researchers and prompted them to investigate where the ignition point lies that triggers the object to become purposeful/important and the manner in which it can connect the individual (either consumers or users) to the designed object.. One of the profound features of marketing strategies is that they manipulate consumers' guilty pleasures and activate their urge to go on a spending spree as they then want the latest trends. Sociologists and anthropologists have pioneered the investigation into meaning-making since 1980 with great success, revealing many of the meanings and reasons why existing objects have certain pivotal roles in an individual's life. Objects are studied deductively¹⁵ as sociologists and

¹⁵ Deductive, in this context, refers to the way researchers scrutinise objects that have been completed or 'concluded' in a design sense. Sociologists and anthropologists investigate

anthropologists are more interested in examining their relationship with users and owners, and the associated implications, rather than scrutinising the objects' performance based on its intended function.¹⁶ Mihaly Csikszentmihalyi, Rochberg Halton, and Daniel Miller are among the enthusiasts who have studied the importance and implications of an object's relationship to its owner.

In 1977, Mihaly Csikszentmihalyi and Eugene Rochberg-Halton interviewed 315 people from 82 families in their homes in Chicago and Evanston, Illinois (Schudson, 1991); three generations of each family were available for interview. The participants were asked to name the type of household objects they cherished and were questioned in detail about these (Csikszentmihalyi, 1991). The results revealed that the notion of palpable objects that exhibited aesthetic qualities and memorable elements are what made them keep the objects. The cherished objects were typically household items or objects that were valued by the owners; they then narrated their chosen object's story accordingly. Owners provided their own justification for what kept them from discarding the object, explained its importance, and why it mattered to or was valued by them. The object contains significant components that speak to the owner specifically, and not necessarily to anyone else, and this creates a relationship (or bond) between the object and the owner. For these tasks and interviews, the respondents (owners) were asked to justify their choices in precise words and

existing objects deductively (the concluding state of an object is considered to be after the completion of the design process) rather than inductively, from the planning stage to the end of the design process when the object is on the market or delivered to the user. The deductive premise is related to the final outcome or conclusion. Therefore, social science researchers typically tend to see objects at the end of this phase and examine their ontology in reverse.

¹⁶ Due to subject specialty and language eloquence, scholars have tended to examine the object relationship from a perspective in their own area of expertise.

as descriptively as they could. The study of the object's meaning relies on the words and narrative provided by the respondents (Csikszentmihalyi, 1981). Therefore, as previously emphasised, the reliability of the findings is solely dependent upon the description provided by the respondents and the sentimental narrative of their fond memories.

Subsequently, it has become clear that there are similarities between Miller and Csikszentmihalyi's (1981) work as their respondents¹⁷ were attached to specific elements of the object, either its palpable qualities or its inherent underlying meanings. As the object rests motionless on the shelf, the owner would routinely revisit and re-evaluate the existence of the object. Whilst cleaning up the shelves and display cupboards, these objects were lined up to revive old stories and reminisce about the reasons why they were kept there and the meanings they had while the owners polished/dusted the displayed objects. Csikszentmihalyi and Rochberg-Halton's (1981) analysis implies that the objects were kept by the owners as reminders of who they are/were. They summed up the purpose of their study as follows:

We wanted to examine the role of objects in people's definition of who they are, of who they have been and who they wish to become. For despite the importance of objects, little is known about the reason for attachment to them, about the ways they become incorporated into the goals and actual experience of persons.
(Csikszentmihalyi & Rochberg-Halton, 1981, cited in Margolin, 1989, p. 9)

This anthology highlights – in the field of psychology and sociology – an understanding of the system of objects. The owners interpret the meaning of

¹⁷ Respondents in this context are the users and owners of the objects.

the object according to how or when they first acquired it. The meaning of the objects is relative and profoundly context-dependent. However, according to Csikszentmihalyi and Rochberg-Halton, meaning can be manifested to display the self-identity and aspirations one has always dreamed about. People judge or categorise others based on the physical things attributed to them. Whilst owning and wearing a gold ring, one can make an easy assumption that the owner/wearer could be married, engaged, or has an obsession with luxurious accessories.

Meaning also extends to the entourage that circles the individual (owner). Entourage in this context refers to the social surroundings of a person such as family, friends, colleagues and people. Meaning in an object can be a common symbol that a certain community holds. For instance, a vehicle plate number that can be customised. For example, in Malaysia, it is possible to choose the end four digits of a vehicle identification plate number, albeit at a certain price. Often, certain families will reserve a particular number as 'their' family number so that their vehicles are easily identifiable and anyone who has a similar end digit number can be associated with the heritage and status of the family. This symbolic number reflects a person's adherence to a culture that values these numbers as they reflect their ostensibly superior class and status. The fewer the digits on a vehicle's plate number the more the owners would be highly regarded as rich and eminent. In his social construction theory, George Herbert Mead (1913) claimed that the physical object becomes a sign with symbolic qualities that people can interpret and thereby retrieve information about both the personalities of the user and the qualities of the product itself (cited in

Opperud, 2004, p.137). Mead was interested in the unique role that symbols and common social meaning systems have in the development of an individual's identity. The theory is derived from an analysis of how people relate to the world and are involved in social activities, connecting to a continuous social structure and reconstructing a common cultural and social meaning system. In this context, his theory can be related to how people in fact respond to the signs and symbols that guide us to interpret objects. Mead theorised a meaning system as that which locates material objects as the communicators of values in social and cultural contexts. According to Opperud (2004), it is a designer's job to untangle the common opinions and values that exist in culture and reproduce them in a tangible form that embodies the appropriate symbolic meaning.

Furthermore, a social enigma surrounds the study of meaning-making, as people with different cultural backgrounds can interpret an object differently. For example, a dagger symbolises an act of heroism in Malay heritage, as well as a symbol of independence from colonialism. By contrast, a dagger represents a symbol of treachery and stealth for the Greeks. This dates back to the years of the late Roman Republic, when Julius Caesar was stabbed with daggers that were hidden by the conspirators beneath their togas. The shape and material with which the dagger was made allowed it to be discreetly hidden beneath the drapes and camouflaged within a Roman's attire, denoting a covert plan to assassinate Caesar when he was caught unawares. By comparison, a Malay dagger was proudly worn at the front side of the sarong to display one's bravery. Thus, cultural background appears to play a role in determining the

way in which people interpret and understand the meaning of objects. Whilst reviewing various perspectives on the taxonomy of objects of weaponry such as a dagger, semioticians have developed a formulaic analysis to accommodate different opinions and thoughts regarding this conundrum.

2.5 Objects and Semiotics

Semiotics is the study of signification and communication (Eco, 1976) and is also known as the study of signs. It entails a theory of codes and sign production. The primary contributors to this body of knowledge include Ferdinand de Saussure (1916), Charles Sanders Peirce (1931-58), Roman Jakobson (1960), Susanne Langer (1937), Umberto Eco (1975), Jacques Derrida (1976), and Roland Barthes (1985). Objects are the communication devices that fall within the realm of semiotics and they act as signs (Eco, 1975). There are numerous types of signs that are relevant to the study of semiotics;¹⁸ however, for the purpose of this research, the scope has been restricted to include signs with reference made only to man-made objects. The study of the relationship between objects and users is discussed by Charles Sanders Peirce (1931-58), an American philosopher, logician, mathematician, and scientist – who, in his semiotic theory, claimed anything can be a sign as long as someone interprets it as 'signifying' something - referring to or standing for something

¹⁸ Semiology aims to take in any system of signs, whatever their substance and limits; images, gestures, musical sounds, objects, and their complex associations, all of which form the content of ritual, convention, or public entertainment: these constitute, if not languages, at least systems of signification.

other than itself (Hartshorne, Weiss & Burks, 1997). Objects are interpreted as signs largely unconsciously by relating them to familiar systems of convention (Chandler, 2000).¹⁹ Semiotics began to develop into a major approach within cultural studies in the late 1960s, partly as a result of the work of Roland Barthes.²⁰ In one of his most popular pieces of writing, Barthes (1985) argued that there is always a meaning beyond an object, besides its evident functions, as it may also trigger information perceived by the user of the object (p. 339). For example, Barthes (1967) developed both paradigmatic and syntagmatic analysis to allow us to interpret signs individually. In terms of the 'garment system', for example, the paradigmatic elements are the items, which cannot be worn at the same time on the same part of the body (such as hats, trousers, shoes). Meanwhile, the syntagmatic dimension is a juxtaposition of different elements at the same time in a complete ensemble from hat to shoes (Chandler, 1994). Barthes' work is heavily inspired by the semiology theory developed by Ferdinand de Saussure, who developed the sign model. Saussure (1916) defines semiotics or, in his words, semiology as 'a science that studies the life of signs within society' (p. 16); a society is founded when a group of people share the same codes of practice, language, and are familiar with the unspoken entourage. Therefore, communication is the pivotal medium that enables people to express their preferences and thoughts. Language,

¹⁹ In this chapter, Chandler discusses the semiotics model developed by Charles Sanders Peirce and Ferdinand de Saussure.

²⁰ Barthes is one of the leading theorists of semiotics, the study of signs. He is often considered a structuralist, following the approach of Saussure, but is also sometimes referred to as a poststructuralist. A sign, in this context, refers to something which conveys meaning – for example, a written or spoken word, a symbol or a myth. As with numerous semioticians, one of Barthes's main themes is the importance of avoiding any confusion between culture and nature, or the naturalisation of social phenomena. Another important theme is the importance of being careful how we use words and other signs.

architecture, media, and utensils are among the codes that establish objects such as texts, houses, gadgets, and stationaries. Based on Saussure's work, these objects act as signs for society. The sign system forms the basis of his semiological analysis where a sign is explained as that which refers to the mental impressions made on our senses by certain elements of the pertinent object (Lanir, 2012). It constitutes two parts: the signifier and the signified (Snyder, 2000). How we view the object, together with the sound system used in our language, creates a two part-mental linguistic unit. The signifier is the sound-image. The signified is the concept, the meaning, and the thing indicated by the signifier. The object or, as coined by Saussure, the 'thing' is created by the perceiver and is therefore internal. Thus, when we share concepts, we do so by using signifiers. The signifier is more stable as the signified varies between people and contexts. The signified stabilises with pattern or habit, as the signifier cues thoughts and images.

For example, Pampers are globally known for their nappies. The impression comes to mind is of a baby with both feet up in the air giggling away. The concept or meaning associated with this 'sound impression' is that Pampers is one of the most popular brands of baby nappies. The connections between the two elements are made in the mind without writing the word 'Pampers', and the two parts formed are joined and united as a mental linguistic unit. The part of the sign Saussure describes as signified is the mental impressions of 'Pampers'; the concept of what 'Pampers' signifies. The signifier is the sound impression or the mental 'linguistic sign' given to the thing that formed the sound of 'Pampers'; hence, the image of baby nappies is created in our minds.

As Saussure explains, the connection between the two parts is arbitrary. There is not necessarily any logical connection between the two. There is nothing in the word 'Pampers' that suggests it is a baby nappy or in fact that is it associated with any baby products. However, now that the 'linguistic unit' is established, 'Pampers' (the sign) interconnects with its sound image, the signifier 'Pampers'; a linguistic sign that signifies baby products.

The contemporary semiotician, Sara Ilstedt Hjelm, in her Semiotics in Product Design report (2002), improvised and developed a new way of interpreting the sign. She argued that rewriting the Saussurean model for a design perspective would become:

S – signifier, the expression, The FORM, the aesthetics, Objective – outer world

s- Signified, the content, The CONCEPT, what it stands for, Subjective – innerworld

Hjelm sums up this approach as follows:

The signifier is the physical form of an object; what we see, touch and smell in the objective and shared reality. The signified is the content, the meaning of the object; what we experience, think and feel when we interact with the artefact.

(Hjelm, 2002, p. 4)

Charles William Morris (1971) devised a general theory of signs that covers the holistic ground of semiotics: semantics, syntactics, and pragmatics. Syntactics is the study of methods by which signs may be combined to form compound signs. Conversely, semantics is the study of the signification of signs, whilst pragmatics is the study of origins, uses, and effects of signs. Between these three branches, semantics has a common concern with the meaning of things

and, according to Krippendorf (1989), has contributed to economic success, the celebration of wholeness, the concern with how designed objects connect people to each other, the respect for mythology and archetypes rooted deep in the collective unconscious, and an interest in an ecology of symbols and mind that goes beyond industry's immediate concern with production and consumption (p. 157). Understanding semiotics allows the designer to understand that meaning is not inherent in the objects, but is transmitted to us as we actively create it based on codes we are normally not aware of (Hjelm, 2002).

The codes that surround us can be understood through a meticulous analysis of how daily routines are performed, such as how people walk, eat, sit and communicate with each other. By observing these codes, we in fact scrutinise how they become signs that are mutually agreed upon by a society, community, or maybe a universe. As observed by Mullet and Sano (1994), 'first and foremost, an understanding of how signs are formed, transmitted and interpreted can help the designer to systematically analyse a communication problem and provide the basis for the development of a coherent solution' (p. 175).

2.5.1 The Relationship, Meaning, and Semiotics

Professor Bernhard Burdek (2006), a German academic and author of several publications on product design, claims that designers must develop an extensive understanding of the symbolic worlds of both final users and symbol

producers, as links are established between both through the process of design (Figueiredo & Coelho, 2010). The relationship between man-made objects and humans has been discussed in numerous studies, one of which is a study by Herbert Blumer (1986) which reflects on the nature of the symbolic that Blumer argues has three premises:

- (i) Human beings act towards things on the basis of the meaning those things have for them;
- (ii) The meaning of things is derived from the social interaction one has with one's fellows;
- (iii) These meanings are handled in and modified through an interpretative process employed by the person in dealing with the things they encounter.

The study of the meaning of objects has always been related to semiotics or the study of signs, as meaning is a cognitively constructed relationship. It selectively connects features of an object and the features of its context into a coherent whole (Krippendorff, 1989, p. 157). The study of the relationship between objects and users was initiated by Peirce, whose semiotic theory claimed that anything can be a sign as long as someone interprets it as 'signifying' something that is referring to or standing for something other than itself (Peirce, 1998). Objects are interpreted as signs largely unconsciously by relating them to familiar systems of conventions (Chandler, 2000).²¹

²¹ In this chapter, Chandler discusses the semiotics model developed by Charles Sanders Peirce and Ferdinand de Saussure.

Semiotics suggests the meaning of an object relies on how we perceive things indirectly in conjunction with our own experience and the familiarity of an object. Contemporary semioticians have departed from the classification of sign systems to study how meanings are made; they are concerned not only with communication but also with the construction and maintenance of reality. Meaning is not transmitted to us as we actively create it, but according to a complex interplay of codes of which we are normally not aware (Hjelm, 2002).²² Individually, objects can record the maker's memory, deliver the function rhetorically, and are sometimes emotionally connected to the user (Figueiredo & Coelho, 2010).²³ The same object can also be defined differently by two different societies as an object holds significant individual meanings. Furthermore, meaning can be steered in multiple directions: functional, aesthetic, or cultural. Engaging with the objects demands more than critical reasoning; it requires new forms of understanding and the pragmatic dimension of materiality then emerges. In this respect, the meaningless does not exist for us. It is impossible for something to be meaningless unless it is temporarily out of our perceptual reach or is something we refuse to perceive to avoid bringing conflict into our understanding of reality (Lacruz-Rengel, 2008).²⁴ Therefore, there is no way to escape from meaning (Boulding 1956, cited in Lacruz-Rengel, 2008). To explicate meaning, this research proposed examining the

²² In her paper entitled 'Semiotics in Product Design', Hjelm (2002) discusses the importance of embedding semiotics in product design.

²³ Figueiredo and Coelho (2010), in their paper entitled 'Semiotic Analysis in Perspective: A Frame of Reference to Inform Industrial Design Practice', quote Barthes (1985) as saying that there is always a meaning beyond the use of an object, besides its evident functions. It may also trigger information perceived by the user of the object such as the narrative aspects of the object.

²⁴ In his PhD dissertation entitled 'A theory of reference for product design: The semantics of Product Ideation', Rafael Lacruz-Rengel (2008) expanded on the ideal construction of meaning, which is closely related to reference and product as a representation.

other dimension of this relationship through an evaluation of the experiential element of the object as well as its materiality.

2.6 Objects and Emotion

Meaning is evoked by the individual's memory of a certain specific event in which the emotion attached to the object rekindles that unforgettable episode. It could be a pinnacle moment such as receiving a special trophy for excellent service as a public servant; thus, the trophy symbolises the reward given for an individual's hard work or perhaps a token of appreciation for attending a wedding.

Emotion is connected to meaning as it binds the entire object experience, in that it nourishes the object's definition and influences people's perception.

Norman, for instance, asserts that:

Emotion is a necessary part of life, affecting how you feel, how you behave, and how you think. Indeed, emotion makes you smart... Emotion is always passing judgments, presenting you with immediate information about the world; here is potential danger, there is potential comfort; this is nice, that bad. One of the ways by which emotions work is through neurochemicals that bathe particular brain centers and modify perception, decision making and behaviour. These neurochemicals change the parameters of thoughts.

(Norman, 2004, p.10)

Emotions are inseparable from, and are a part, of cognition. Some objects evoke strong, positive emotions such as love and pleasure. Furthermore, the way users or consumers respond to an object varies from one to another as designed objects can be interpreted in numerous different ways. Additionally,

emotions elicited whilst viewing or using a particular object also vary in accordance with each person's cognition, which is deeply influenced by their own cultural values, beliefs, and memories. Emotions arise due to important events relating to an individual's well-being. Events are not pleasant/unpleasant as such; they are appraised and categorised that way and it is the relational meaning of the stimulus that counts, not the stimulus of the event as such. An object will elicit different emotions depending on the meaning a person attaches to an object or an event with which they are involved. Without emotion, an object could be meaningless as meaning is attached to the way people feel about an object; it is a tool for us to synthesise the meaning of an object in order to define what it means to us. An object that we are not attracted to, or have no feelings towards, makes us feel emotionless towards it, thus rendering it meaningless. It is blatantly functionless and there is no point for us to notice it, or even keep it. Norman (2004) observes that, beyond the design of the object, there is an underlying personal component that no designer can provide (p. 10).

2.7 Objects as Symbols

Emotion flows in both directions, from the object and from the individual. An object transmits its emotional values through its traits and functions. An individual then synthesises the importance or the presence of an object through the emotion the object evokes. Furthermore, the emotion that an object evokes is also an interpretation of inference, a sign or symbol of one's attitude.

Csikszentmihalyi and Rochberg-Halton define symbols as follows:

Symbols become able to convey feelings and attitudes that have an objective existence outside immediate situations and this development of self-consciousness is generally considered the greatest accomplishment of humankind.

(Csikszentmihalyi & Rochberg-Halton, 1981, p. 21)

Csikszentmihalyi and Rochberg-Halton (1981) argue that symbols refer only to things such as crucifixes, trophies, diplomas or rings whose main function is to represent something like a religion, achievement, or relationship (p. 20). These unique objects hold important signs that symbolise one's status, beliefs, and power. The objects create a relationship with its latent meaning and transfer this to the individual, and then to others (the audience), which is synonymous to sending a message about one's status, beliefs, and standards or power. An object that is dense with messages such as a headscarf, for example, symbolises the devout appearance of an individual and also marks one's religious beliefs. It is not merely a silky fabric as it represents an individual's firm stand on an ideology proudly displayed to the public, depicting an individual's confident attitude subtly mellowed by wearing a headscarf. For Peirce (1893-1913), the relationship between the object of a sign and the sign that represents it is one of determinism: the object determines the sign. It is argued that the sign, in this context, is associated with the symbol. In another definition, the sign arrives before the symbol, as the symbol is a significant sign that assembles similar thoughts. In one of his multiple definitions of a sign, Peirce (1893-1913) argues:

A sign as anything which is so determined by something else, called its Object, and so determines an effect upon a person, which effect I call its interpretant, that the latter is thereby immediately determined by the former.

(Peirce, 1906, cited in the Peirce Edition Project, 1998, p. 478)

Csikszentmihalyi and Rochberg-Halton (1981) state that the development of symbols is based on convention rather than the object's external physical resemblance. Symbols are able to convey feelings and attitudes that have an objective existence outside immediate situations and this development of self-consciousness is a significant accomplishment as one can start to mull self-control, master abstract experiences such as fear, love and hate, and communicate them in words, pictures or performances (Csikszentmihalyi & Rochberg-Halton, 1981, p. 21).

2.8 On Interpreting Objects as Symbols, Things, and Goods

Semiotics and the notion of the symbol, as discussed previously, are some of the relevant tools widely used to understand and interpret objects. The ubiquitous presence of objects in our everyday universe serve as the basic element of our cultural lives (Boradkar, 2010). Objects serve to express dynamic processes within people, among people and between people, and the total environment. One of the neglected aspects of the meaning of objects is their ability to convey meaning through their own inherent qualities (Csikszentmihalyi and Rochberg-Halton, 1981, p. 43). Such dynamic relationships with their meanings, which fluctuate from time to time, from place to place and from man to man, are founded on social and cultural consensus

and consequently never stand independently of each other. We now define ourselves through objects of consumption rather than production.²⁵

Dunne and Raby (2013) observe that a relevant reflection on the study of objects can be found in literature concerned with the poetry of everyday objects, such as in the works of Gaston Bachelard's "Poetics of space", Jun'ichiro Tanizaki's "In Praise of Shadows", and some of Nicholson Baker's novels. Such literature offers fresh insights into and a formal aesthetic criticism of objects. The objects are firmly grounded in everyday life (Dunne, 1999, p. 21). Furthermore, domestic objects are scarcely investigated in the field of design, as the process is more complex than simply scrutinising the production of objects. In the field of design, design scholars develop tools or methods to enhance ways of communicating and delivering design. Few are interested in the investigation of domestic objects as these are interlaced with other branches of study such as psychology, anthropology, and philosophy. Domestic objects, albeit somewhat complicated and dense, are unobtrusive and often considerably more discreet in comparison to other objects. The modest existence of pen and paper has witnessed the rise and fall of a civilisation. They have recorded many wars and even Shakespeare's love sonnets, and their elemental role is pivotal in not only recording the history of humankind but also in recording the grocery list for the next shopping day.

²⁵ This is what might be called the symbolism of the object, in the etymological sense (cf. Greek *sumballein*, to put together), with which a chain of signifiers may be summed up by just one of its terms. The object is the symbol not of some external agency or value but first and foremost of the whole series of objects of which it is the (final) term. (This is in addition to symbolising the person whose object it is.)

Memory and the association of that memory with an object is the strongest way to extend that object's lifespan. How people interpret the ubiquitous meaning of the object in their life does not rely wholly on the period of time in which it sits in the house. Interpretation depends on the personality of the owners, whether they are those who cherish old flames and reminisce about past love or are perhaps those who admire future accomplishments and all things modern, who think that antiquities are a thing of the past. Furthermore, an object does not exist in isolation; it has support to connect it to its meaning, hence the purpose of designing an object: to create a meaning. Meaning can be transferred to us through multiple channels and, therefore, the same series of objects are owned by a diverse demographic.

Because interpretation introduces the meaning of something understood by an individual, meaning cannot occur as one single truth. This suggests that a tangible thing can hold multiple meanings, depending on who produces the interpretation and this understanding is based on the previous experiences a person has had, as well as where and when the interpretation occurs (Nimkulrat, 2013, p. 10). Therefore, experience, location, and materiality are among the attested variables required to conduct an investigation into an object. According to Heidegger's (1962) phenomenological thinking, one interprets the meaning of a thing as it is "in the world", not by viewing it as a general thing but by referring it to his or her own contextual correlation (Heidegger, 1962). Design has become the vehicle through which to shape objects with tailored messages from designers to the users. Sudjic (2008) believes that the role of the designer is now evolving from inventor to storyteller,

which means making designs that can convey messages to resolve formal and functional problems. Objects have overshadowed the functional values the designer embedded in them, as they are no longer recognised as physical matters or material bodies. Objects are now bound to the subject, as Baudrillard asserts:

As they bind with subject (objects are no longer material bodies or physical material), they become mental precincts over which I hold sway, they become things of which I am the meaning, they become my property and my passion.”

(Baudrillard, 1994, p. 1)

On the other hand, design is a holistic experience; questions pose by designers are interpretational and orbiting around subject-dependent issues pertaining to the man-object relationship. By comparison, meaning flows in both directions, subject to object and from object to subject. The unique interpretation that one has for a designed object nourishes the whole experience of the object. Cultural objects such as ‘chopsticks’ have been redesigned many times not just by the Chinese or Japanese but also by Western designers. As a designer, the researcher interprets chopsticks as more than just eating utensils – the objects impel oneself to understand the whole conundrum of the eating ritual in that they dictate the ideal eating posture adopted, which involves the study of human factors. Moreover, there is the physics involved in heaping rice or noodles on to the chopsticks and then to the mouth. Finally, there is the timescale involved in scooping the food from the bowl to one’s mouth.

Historically, according to the California Academy of Sciences, which houses the Rietz Collection of Food Technology, chopsticks were developed about 5,000 years ago in China (Bramen, 2009). It is believed that twigs were originally used

as utensils to retrieve food from pots. However, when resources became scarce circa 400 BC because of the booming population, cooks inevitably had to develop a cost-effective method to conserve fuel. Foods were chopped into bite-size chunks for quicker cooking and for easy-grip of the tweezer-like chopsticks (Bramen, 2009; Butler, 2013). This meant that the use of knives at the dinner table was no longer necessary. This innovation also occurred in parallel with the teachings of Confucius who advocated, "The honourable and upright man keeps well away from both the slaughterhouse and the kitchen. And he allows no knives on his table," (Bramen, 2009). Confucius thought that knives with pointy, sharp edges evoke the feeling of danger, and angry and negative feelings, which are not appropriate when dining (Butler, 2013). Countries throughout Asia adopted different chopstick styles, in that the tip of the Chinese chopsticks is blunt, whilst the Japanese chopsticks are pointy. The shape designs are further influenced by the different types of food consumed. In addition, their functionalities prompted the Japanese to produce chopsticks out of different materials such as bamboo, ivory, jade, and lacquer. In 2013, Nendo (a renowned Japanese design agency) redesigned chopsticks and introduced *Rassen*, a chopstick design that was inspired by traditional chopstick manufacturing techniques (Francesco, 2013).

Nendo collaborated with Hashikura Matsukan, a traditional manufacturer of lacquered chopsticks from Obama in Fukui Prefecture, Japan, to produce new objects that interpreted the traditional manufacturing techniques into new contemporary ways through the intriguing manipulation of materiality, styles and functionality. According to the designers, although chopsticks normally come in

pairs, the Rassen is a single unit. They can be separated into two for eating purposes and then re-joined into one when they are not in use (Griffiths, 2013). In addition, the handcrafted objects utilised multi-axis CNC miller and skilled artisans to create the sleek groove. Nendo has again successfully interpreted the experience of traditional making techniques whilst envisaging a minimalist concept for the ubiquitous object. Rassen entices one's thoughts, yet evokes a sense of mystery and, as a designer, it is fascinating to see how the grooves in the chopsticks are made. This understanding could be achieved by a combination of empathic and material understanding whereby designers appreciate both the potential and limitations of the wood they are using and challenge the typical chopsticks look by presenting a unified form. The groove dictates the location of a user's fingers, which is ideal for a beginner. The narrow, pointed end suggests the timeless shape of chopsticks and preserves the essence of the object. This suggests an innovation, in that it allows one to understand which part should be discarded and which part should be preserved. Rassen is a self-explanatory object that, in terms of semiology, dictates which part is used for picking up food and which part of the chopsticks is for holding. Burdek (2009) refers to self-explanation as a sign that refers to the practical function of the object. Therefore, a designer must understand certain forms of product language in order to efficiently embody and convey the self-explanatory values of the product.

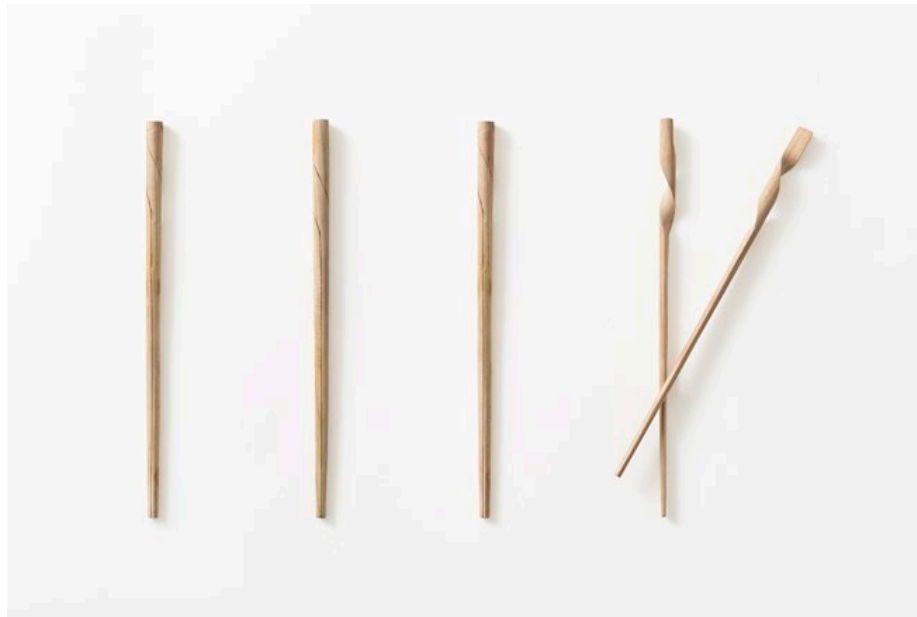


Figure 5: *Rassen* chopsticks²⁶

²⁶ Figure **Error! Main Document Only.**: *Rassen* Chopsticks. Source retrieved from <http://www.nendo.jp/en/works/chopsticks-collection-2/rassen/?egenre>

2.9 New direction for designed objects

In the 2000s, the band Stomp changed our perception of what constitutes music. They knocked, banged and stomped on everyday objects to produce sounds which, when combined, became a well-orchestrated musical performance that transcended the rigidity of any other musical performance audiences had hitherto witnessed. Stomp explored the potential of everyday objects as non-traditional musical instruments that when combined not only produce a mediocre sound but also an engaging performance (Figure 97). They made us all dance.



Figure 6: Shopping carts used as musical instruments²⁷

In 2013, Dentaku, a London based design studio, invented a PCB²⁸ based synthesiser called Ototo that married the complexity of electrical transistors to music. The invention kit comes with four sensory inputs to control pitch, volume and texture, and can be connected to everything. Dentaku is also producing

²⁷ Figure 6: Stomp's shopping cart as musical instruments. Retrieved from <https://www.door2tour.com/media/74484902/stomp-trolleys.jpg?bgcolor=f7f5f5s>

²⁸ A printed circuit board (PCB) is the board base used to physically support and wire the surface-mounted and socketed components in most electronics.

seven sensor cables that can alter sound according to various movements or conditions such as breath or rotation. With Ototo, our creativity is heightened to a hitherto unexplored level. Tapping, strumming, or any musical gesture is possible with Ototo, which retains the essence of playing music by using those gestures but frees us from the rigidity of conventional musical instruments such as using the right pickup when playing guitar. Initially, Dentaku's intention was to create a kit that makes physical computing and interactive projects accessible for everyone. Coding and understanding electronics can be a barrier to creativity; thus, Ototo enables anyone to build amazing electronic sound projects with minimal prior knowledge.²⁹



Figure 7: Ototo kit can be played as keyboard straight away³⁰

²⁹ Retrieved from <http://www.designboom.com/technology/create-diy-musical-instruments-with-ototo-by-dentaku-10-10-2013/>

³⁰ Figure 7: Ototo kit that can be played as keyboard straight away. Retrieved from <http://www.designboom.com/technology/create-diy-musical-instruments-with-ototo-by-dentaku-10-10-2013/>



Figure 8: Vegetable piano, parsnip percussion and leaves cymbals as musical instruments³¹

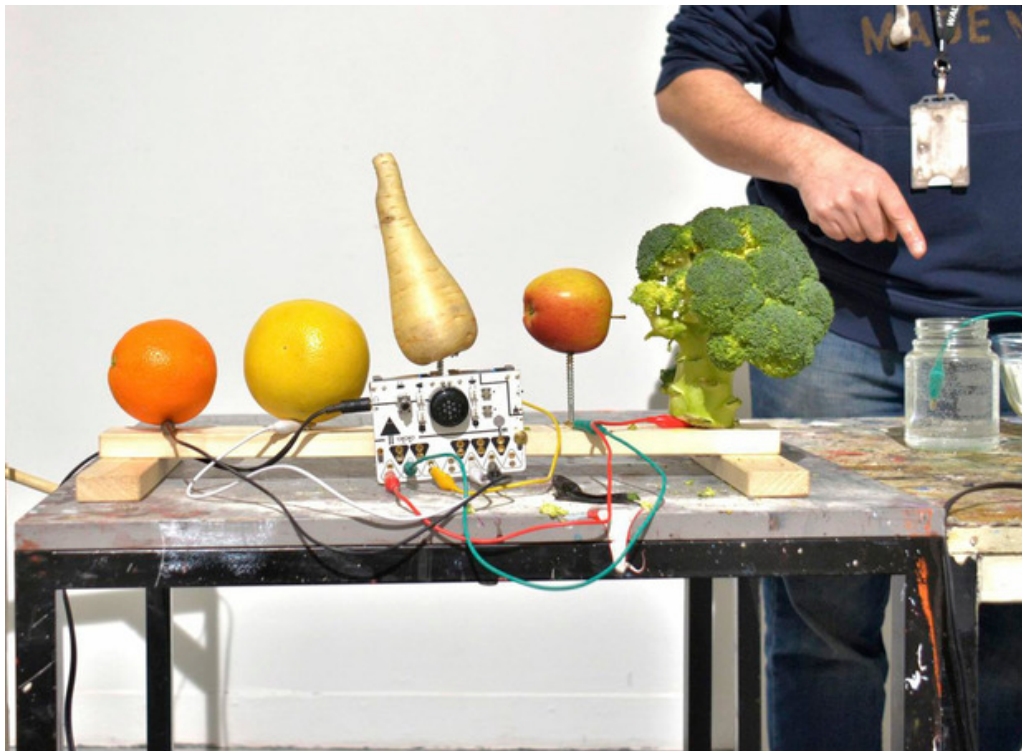


Figure 9: Using crocodile clips to connect Ototo to any objects³²

³¹ Figure 8: Vegetable piano, parsnip percussion and leaves cymbals as musical instruments
<http://www.designboom.com/technology/create-diy-musical-instruments-with-ototo-by-dentaku-10-10-2013/>

³² Figure 9: Using crocodile clips to connect Ototo to any objects. Retrieved from
<http://www.coolhunting.com/tech/ototo-by-dentaku>

Ototo proves that we no longer need to rely on forms to enable an object to function. Technology and the wonder of electronics allow us to ignore the form and appearance we used to adhere to during the design process. Using the camera as an example, we used to re-design an analogue camera to fit the flash, film rolls, aperture, and the bulky battery. At present, the wonders of electronic or PCB have freed us from the traditional materiality of cameras or musical instruments. Currently, anything is possible, although experiential qualities retain the essence of each activity, or its design intention. This acts as the anchor that holds everything together.

In 2017, Jia Wu, a designer from China whose design mentor was Max Lamb, designed a creative musician kit that enabled children to learn music more easily and positively. As one of the Lexus Design Award 2017 finalists, she translated the “yet” philosophy into her objects as “*Vegetable YET Musical Instruments*.”³³ Wu’s object the Player’s Pflute provides a fun learning experience. Intentionally designed for children, Player’s Pflute comes with a kit (Figure 12) that includes four mouthpieces, each of which produces different sounds such as a harmonica, whistle, horn, and clarinet. Pflute enables children to use their imagination to create endless types of sounds depending on the combinations of mouthpiece and objects. Everyday objects such as vegetables (Figure 9 and Figure 10), evoke the sensible experience of the player, allowing them to hold the object comfortably whilst creating wind instruments and making music. This fun approach enables children to play music anywhere and at any time. It therefore generates creativity and expands the imagination of young

³³ <https://www.lexus-int.com/press-room/lexus-design-award-2017-finalists-announced>

children. Vegetable has its own vibrant colour, is uniquely concave, and offers various tactile experiences that can connect children with wind instruments. For example, a parsnip or carrot can be played using the flute playing posture, whilst an aubergine can be blown like a trumpet. The materiality of the vegetables determines the user's posture and how they want to interact with the objects.

This modular music toy system connects everyday objects using imaginative invention alongside musical creativity, encouraging improvisation and giving children the chance to experience music as a familiar and enjoyable activity. The kit consists of different mouthpieces, hole punchers, and connectors, that when put together, allow children to assemble their very own instruments and explore different musical tones and create their own ensemble.



Figure 10: Bell pepper as melodeon³⁴

³⁴ Figure 10: Bell pepper as melodeon. Retrieved from <https://www.jia-wu.com/player-s-pflute>



Figure 11: Pepper played as recorder³⁵

This object's taxonomy has exceeded the designer's conventional grouping: thus, there are no more absolute categories for objects because we cannot keep up with the multiplying categories. Innovation has enabled designers to expand their creativity, addressing the needs of current and also future users. Wu's objects have changed the way we see things, in that vegetables are not just for eating but can be upcycled into something more. Wu has manipulated how we perceive the humble vegetable, yet the posture or the sensible experience remain connected to the way a wind instrument has traditionally been held. The essence of blowing remains an integral part of the experience. The materiality of the instrument is connected to the way it is held and the type of vegetables the user might then select. We unconsciously choose the

³⁵ Figure 11: Pepper played as recorder. Retrieved from <http://www.designboom.com/design/lexus-design-award-2017-pixel-hiroto-yoshizoe-grand-prix-04-25-2017/>

vegetables that suit the size and shape of each mouthpiece. In that sense, we acknowledge how we want our vegetable to sound.



Figure 12: The kit³⁶

2.10 Chapter Conclusion

This chapter has discussed objects as general entities that have become our companions over the decades, with references made to several perspectives

³⁶ Figure 12: The Kit. Retrieved from https://mulpix.com/instagram/2017_award_design_art.html

and theories that focus on objects from a range of academic disciplines. Dunne (2008) suggests that, 'the best writing in this area blends anthropology, sociology and semiology to explore the irrational dimensions of the material culture of everyday life' (p. 21). The chapter has analysed the ways in which objects are described in many terms, such as goods, things, and everyday objects. Objects, particularly designed objects, are thick with layers of meaning particular to the individual owner/user. The transaction between man and object is discrete yet enshrines manifold meanings, desires, aspirations, and self-representations. Furthermore, objects are theorised as goods that would become otherwise worthless had they not used or consumed. In addition, objects are inevitably linked to consumers, and the relationship is an interactive one. This type of relationship actively contributes towards the meaning-making process. Not only are they seen as goods, objects are also seen as things to design, defined by an array of scholars and based on the perspectives offered by sociology. It has been established that the common ground for 'things' is their co-existence with human participation. In other words, things become the central focus when they are in use and impart meaning to the people that surround them. Conversely, objects are also discussed as everyday objects. These objects quietly reside in our domestic space, such as a computer keyboard, which allows us to 'function' at a normal pace and to get the job done. It helps transfer the researcher's visualised thoughts on to paper, therefore exceeding its functionality as a typical typing device as it is now also a medium for synthesising words.

In addition, this chapter has also analysed insights into the field of sociology suggesting that objects and meaning are inseparable. Because meaning is contained in objects, and each object plays its role by transmitting the message to the user through its function, it transpires that the relationship between man and object is connected through an embedded meaning. However, the meaning-making process is active as the subtle change elicited by the object depends on the owner's perception, the stories that accompany the object, and the giver or the performance of the objects. Meaning fluctuates from time to time, from place to place, and from person to person as it is founded on social and cultural consensus; consequently, it never stands independently. To explicate the essence of an object, understanding emanates from the study of meaning-making as one of the elemental components of this research.

This chapter has also presented suggestions regarding the tools adopted to theorise objects, which are understood through the use of semiotics, emotion, and the study of symbols. Saussure's notion of semiotics has had an immense influence on the writing of this chapter. In addition, the theoretical foundation of the research is based on another branch of semiotics that also emanates from the linguistic field and is equally as important to the study of meaning-making. It should be emphasised that the study of the meaning of objects has always been related to semiotics or signs, as meaning is a cognitively constructed relationship. It connects features of an object and the features of its context into a coherent whole (Krippendorff, 1989, p. 157). Semiotics suggests that the meaning of an object relies on our perception of things indirectly converging with our own experience and with the familiarity an object may hold.

However, emotion is another tool that can be used to theorise designed objects in that the objects can evoke a range of emotions to include happiness, comfort, or anguish when they are in use. The unique responses elicited by the objects are thus relevant to the theorising of objects y. In the field of design, emotion is one of the integral design aspects that need to be considered, especially in user-experience oriented products, due to its synthesising function regarding the user's preference and the way feelings are communicated when interacting with the object. A symbiosis of emotions, semiotics, and meanings enables symbols to bind a full understanding in order to theorise objects. Therefore, symbols have accelerated to become a form of knowledge that should not be neglected as they represent one's ideology and beliefs. It is also worth noting the importance of Csikszentmihalyi's works to the discussion in this section.

This chapter concludes with a consensual view that objects are better understood through the use of various theories and perspectives emanating from a range of disciplines. A notable example is that of Nendo's object; the cleverly redesigned chopsticks echo the trajectory of this chapter. The innovative chopsticks perfectly represent an effective design process; an area that a designer has successfully tackled in response to integral questions regarding what needs to be changed and what elements should be kept.

Chapter 3: Understanding Objects

3.1 Understanding objects: Methodology

In 2007, Maiko Tsutsumi submitted her doctoral thesis entitled, “The Poetics of Everyday Objects: a theoretical and practical investigation into the materiality and embodiment of meaning in designed objects, with special reference to furniture and product design practice after 1988.” Her investigation scrutinised designed objects from the perspective of a reflective practitioner; for instance, Tsutsumi (2007) asserts that, ‘Applying a viewpoint based on knowledge that is experiential, and that is rarely verbalised or theorised, this research traces and discusses several themes which inform and inspire the practice of design, but that have not been fully investigated’ (p. 15). Tsutsumi emphasises that, apart from the semiotic lens, the analysis of ideas through object materiality is potentially relevant. The focus is therefore the object’s physical presence rather than the object as a representation of something else. Subsequent discussions will be based on how ‘materiality’ and ‘experience’ can shape our design thinking, enliven our ideas, inform users, and nourish our design outcome by revisiting designed objects. To understand objects better, the researcher embarked on a journey of discovery and reflection on the fundamental importance of everyday objects, such as personal possessions and admired objects. This chapter explains the methodologies adopted in unravelling the meaning and the relationships that were entailed.

3.2 Overview: Auto-Ethnography

Many of the most significant and exciting life events and extraordinary experiences - moments of clarity, illumination, and healing - have been systematically excluded from conventional research.

(Braud & Anderson, 1998, p.3)

Various research methods have been applied to the study of human creativity since the 1950s, with ethnomethodology as a stark example (Sternberg, 1999; Pace, 2012). According to David and Sutton (2004), ethnomethodology focuses on the actions of participants in an interaction which requires an empirical with the micro-processes of everyday life (p. 21). As a method that scrutinises the miniscule details of one's preferences, for instance, the attachment one has to certain everyday objects, ethnomethodology unravels the personal bond between the user and the object. This study therefore adopted the auto-ethnography method, an ethnographic inquiry that utilises autobiographical materials of the researcher as the primary data.

"The concept of autoethnography ... synthesizes both a postmodern ethnography in which the realist conventions and objective observer position of a standard ethnography have been called into question, and a postmodern autobiography in which the notion of the coherent, individual self has been similarly called into question"

(Reed-Danahay, 1997, p.2)

Reed-Danahay (1997) suggests that the term 'autoethnography' has a dual meaning – it refers to the ethnographer's own group or to an autobiographical interest in wider society. An auto-ethnographic study emphasises the interpretation of the researcher's behaviours, thoughts ,and experiences (Chang, 2007). Ellis et al. (2010) claim that such an approach is essential to describe and analyse personal experience in order to understand cultural

experience. It involves drawing meaningful connections between personal and cultural experience (Strong et al., 2008). Scholars have introduced new epistemologies that have reformed social science's conventional inquiries since the 'crisis of confidence' inspired by postmodernism in 1980's (Strong, et al., 2008). They have now begun to understand and recognise the limitations of the vocabularies that were used by researchers to represent facts. These scholars opted for auto-ethnography because they were looking for non-conventional answers that blend responses and critiques in a meaningful way. For instance, Ellis and Brochner observe that:

In particular, they wanted to concentrate on ways of producing meaningful, accessible, and evocative research grounded in personal experience, research that would sensitize readers to issues of identity politics, to experiences shrouded in silence, and to forms of representation that deepen our capacity to empathize with people who are different from us.

(Ellis & Brochner, 2000, cited in Ellis, et al., 2010)

This paradigm shifts scholars' attention to opening the research up to subjectivity, acknowledging emotional responses, and integrating the researcher's reasoning rather than concealing their own influence on the research or disregarding or ignoring unwanted responses. This particular method opens up new forms of data analysis, which recognises 'maybe' as a valid form of answer as opposed to a typical 'yes' or 'no' response. In certain forms of research, where personal experience is so intricate and subjective, auto-ethnography offers avenues to acknowledge this set of experiences as quantifiable and as constituting valid findings, especially in the area of anthropology and also design. Balaam (2011) notices that the increased use of auto-ethnography as a method to understand both the self and others has encouraged researchers to focus more extensively on emotion and expand their

inquiries to include generalisation and objectivity of knowledge. Denzin (2006) proposes that auto-ethnography can be approached from the following five angles (as cited in Anderson, 2006, p. 378):

- 1) Complete member status of a researcher
- 2) Analytic reflexivity
- 3) Narrative visibility
- 4) Dialogue with informants beyond the self
- 5) Commitment to theoretical analysis

Ellis (2010), however, introduced a slightly different approach to auto-ethnography known as evocative auto-ethnography (cited in Balaam, 2011).

Ellis' approach focuses on these three angles:

- 1) A narrative written in the first person
- 2) A generalization within a single case extended over time
- 3) Presented as a story with a narrative, characterisation and plot line

According to Anderson (2006), the difference between analytic auto-ethnography and evocative auto-ethnography is that the former entails a traditional scientific approach while the latter represents a more free-form style of approaching the subject (Ellis et al, 2010). The analytic approach emphasises objective writing and structured analysis while the evocative auto-ethnography approach permits empathy and resonance with the reader.

Different approaches in auto-ethnography can be characterised into the different types of relationships the writer seeks to enquire into between the personal and the wider social and cultural world (Denshire, 2013). Ellis and

Bochner (2000) outline how evocative auto-ethnography can take shape in research::

I start with my personal life. I pay attention to my physical feelings, thoughts, and emotions. I use what I call systematic, sociological introspection and emotional recall to try to understand an experience I've lived through. Then I write my experience as a story. By exploring a particular life, I hope to understand a way of life.

(Ellis & Bochner, 2000, p. 737)

In general, as a method, auto-ethnography combines the characteristics of autobiography and ethnography (Custer, 2014; Ellis et al., 2010; Pace, 2012).

In writing an autobiography, the writer will constantly refer to or retrospectively reflect on past experiences. Aids such as texts, notes, journals, photographs, and recordings are sources that help the writer reminisce on past experiences and evaluate their findings. In addition, epiphanies are also a useful research tool for analysing experience, especially those inextricably linked to personal experience and that fuse with cultural values. Combining and comparing similar epiphanies among participants thus helps to illustrate unfamiliar experiences. Custer (2014) described auto-ethnography as disclosing the complex feelings of the researcher, such as happy, painful, exciting and sad emotions, within their own self. This genre of research is often associated with the analysis of painful experiences such as research aiming to understand the experience of cancer patients undergoing chemotherapy treatments. Such research might evoke sadness and encounter difficult moments during the analysis of data. Through immersive writing and epiphanies, the auto-ethnographer has to embrace their own pain and analyse similar pain or sadness experienced by others. It is therefore sometimes challenging for the researcher to verbalise these experiences in the form of lengthy descriptions when they cannot afford to

synthesise complex feelings and, hence, more time is consumed producing an informative and descriptive body of work. Other obstacles that might materialise are difficulties in establishing the right vocabulary to represent the experience. According to Strong et al., (2008), words carry nuances of past experience that can never be fully articulated. Therefore, when writing an analysis, a researcher tends to produce a "thick description" of a culture (Ellis, 2011) or experience to facilitate the audience's understanding of the discerned layers of cultural experience. Auto-ethnography is a self-narrative study as it describes the researcher/self within a specific context (Strong, et al., 2008) and in specific cases where there is a need to assimilate cultural understanding into the analysis. Auto-ethnographers therefore deliver an evocative account of their lives that includes a range of emotional and sensory experiences that are also connected to cultural experience. They are entitled to manipulate and adopt these experiential responses into their own analyses as they are the ones engaged in a process that gives them the freedom to access deeper realms of personal meaning.

3.2.1 Auto-ethnography through the design lens

These emerging social science methods have intrigued design scholars, encouraging them to scrutinise design from multifaceted perspectives. Designers are now more flexible in choosing methods that could compromise science and technology tools, social sciences methods, or a combination of both. Research into the emotional value of objects has fascinated design scholars since the 1980s, sparking sufficient interest to incorporate this

unspoken element into their own research. It is an accepted fact that emotion is one of the personal values that is inherently important in any designed object, it is therefore integral to the proposed system of designer objects pertaining to this investigation. Although establishing a quantifiable data set of emotions is perhaps possible at a superficial level,³⁷ how can one possibly quantify emotions? Emotions are hard to measure and, verbally explaining the subjective feelings suffers from many underlying constraints such as language barriers and the difficulty of articulating feelings objectively (Custer, 2014). According to Mattelmaki, Vaajakallio and Koskinen (2014), designers began to face new types of challenges as they began to link the feelings and moods of users to the design solution. This has sparked new approaches to design, approaches that delve into subjective and ambiguous topics such as emotions and connect these to new, innovative solutions. An empathic design approach is a user-centred design approach that pays attention to user's emotional feelings a product. This approach is somewhat interpretive and focuses on everyday life experiences, individual desires, moods, and emotions in human activities, thus turning such experiences and emotions into inspiration. The emphatic approach enables designers to understand emotions better and articulate them effectively in their design, thus they live and experience users' emotions. Empathy is fundamentally concerned with emotions and is an approach used to understand emotions There are several methods used to

³⁷ There is currently research conducted in the form of business/psychological/user centred studies that collects people's responses to marketed objects, to gather quick/pilot responses for market research. However, the format of the data collection is typically a questionnaire, which is quite objectified and restricted.

empathise with users, one of which is the IDEO Design Kit that emphasises the empathic approach.

To master the auto-ethnography method, the researcher needs to know how to empathise. This is an approach that allows the ethnographer to understand and analyse their emotions, feelings and moods towards a situation and, in this context, designed objects. Thus, auto-ethnography is manipulated to fit this scenario as it is becoming widely recognised as a research method characterised by creative rigour, partly because of the opportunity it provides for writers, artists, performers, designers, and others to reflect critically upon their personal and professional creative experiences (Custer, 2014; Wasson, 2000; Salvador et al., 1999; Dyson, 2007; Salvador, et al., 1999). Auto-ethnographers explore their personal experiences and interactions with others as a way of achieving wider cultural, political or social understanding, with the output captured in the form of short stories or a novel in the style of the first-person. Because auto-ethnography facilitates empathy through narratives and storytelling, emotion can be verbalised in a narrative manner, accompanied by photographs or video recordings, and supported by the auto-ethnographer's understanding of the scenario.

McIlveen (2008) observes that the main element of auto-ethnography is that it involves the practitioner performing a narrative analysis on himself or herself as a person intimately related to a certain situation. Auto-ethnography involves writing about oneself as a researcher and also as a practitioner; however, the narrative is tied to a specific form of critical inquiry that is embedded in theory

and practice. Custer (2014) claims that auto-ethnography is a process that injects creativity by allowing readers to interpret and imagine and is innovative by design as it concentrates on the individual's unique experiences. The auto-ethnographer has the opportunity to communicate multiple world views without compromising the need to be scientific (Custer, 2014). Creativity and innovation that inspire change, transformation, and revolution offer multiple ways of seeing the world. Balaam (2011) argues that a particular artwork can be considered an approach to auto-ethnography as it invites inquiry, evokes responses from others, inspires imagination, and provides deeper possibilities. Pace (2012) provides case studies of auto-ethnographic practice used in the field of arts.

Furman (2004), for example, has used auto-ethnographic poetry to explore the impact of his father's cancer on his own life. His poems are presented as narrative reflections of his personal experiences. Järviö (2006) has explored her experiences as a singer, performing music of the Italian Early Baroque era. Her foray into auto-ethnography was prompted by a realisation of 'how little has been revealed by research of the facts of performing practice' compared with how much more she knew from her own experience as a singer and teacher. Anttila (2007) has reflected on her experience of participating in a dance education project at an elementary school in Helsinki, Finland. Anttila employed auto-ethnography for her study because of the opportunity it provided to understand the dynamics of teaching and learning dance from an experiential point of view. Tay and Leung (2011) have used auto-ethnography to document the creative writing scenes in Singapore and Hong Kong.

(Pace, 2012, p. 2)

According to the case studies above, auto-ethnographers mediate their own experiences through creative practices. Dyson (2007) elaborates that it is possible to reveal one's own/the researcher's struggle without feeling a sense of fear through personal engagement in a journey conveying one's own understanding of a reality lived and experienced, whilst constructing this as knowledge. For this reason, the researcher conducted this investigation through

the lens of an auto-ethnographer, as it allowed an appreciation of personal narratives and wove personal experience of the objects into the analysis. As experience becomes one of the pivotal point of views an auto-ethnographer utilises, the arbitrary nature of experience, on the other hand, allows it to be groundless and interpretational. Because the researcher's analysis of objects proposed 'experience' and 'materiality' as the tools used to construct a taxonomy that explicate the relationship with designed objects, the research uses analytical auto-ethnography as its theoretical framework to support the categorisation. The researcher will discuss how this was achieved in Chapter 4, outlining the Analysis of Objects

3.3 Limitation of Auto-Ethnography

One of the main limitations of auto-ethnography is that it involves certain ethical considerations (Ellis, 2007). Auto-ethnography has no specific rules as it has been adopted by various disciplines (Hayano, 1979). Another criticism which arises concerns the valid approach used to evaluate the findings. Because it involves personal narrative descriptions of one's own emotions and experience with objects, the process of filtering unnecessary thoughts and emotions can be confusing and tricky. Wyatt (2007) proposed two principles for analysing auto-ethnography findings, (i) how close we choose to position our readers and, (ii) self-consent regarding personal experiences.

Hayano (1979, p. 101) claims that the main dilemma raised by auto-ethnographers concerns the research bias involved in collecting, interpreting, and reporting information. There has been criticism about the depth of the insider's viewpoint in the report and how accurate it in fact is. However, engaging with everyday objects demands more than critical reasoning and scientific inquiry, it requires new forms of understanding and the emergence of the pragmatic dimension of materiality. The purpose of qualitative research is to examine any social phenomenon by enabling the researcher to enter the participants' naturalistic setting try and develop a comprehensive understanding of this (Bryman, 2008).

Auto-ethnography offers a new perspective that can be used to interpret and understand experience on a deeper level. This knowledge helps in understanding complex interpretations derived from a participant's account and the actual phenomenon/setting that surrounds the participant.

3.4 Phenomenological Research

Qualitative research consists of a set of interpretive information that locates the observer in the world (Creswell, 2012). Whilst material practices make the world visible, they transform the world into a series of representations such as notes, journals, and interviews – in this case, visualisations. At this level, qualitative research involves taking an interpretive and naturalistic approach to the world. This means that qualitative researchers study things in their natural settings

attempting to make sense of or interpret phenomena in terms of the meaning people bring to them (Denzin & Lincoln, 2005, p. 76). Phenomenology therefore furthers the understanding of experience, which is difficult to describe and objectify. It suspends the external world from consideration, refusing to accept any natural or causal theories about things. The essence of these objects will endure even after the death of all thinking creatures (Harman, 2011, p. 20). In addition, phenomenology also examines the structure of subjectivity, the ways that significant emotional episodes shape basic qualities of experience, space, time, materiality, causality, and pure sensation (Strauss, 1966), where feelings are a shadow of cognition and cognition serves as a context for emotions.

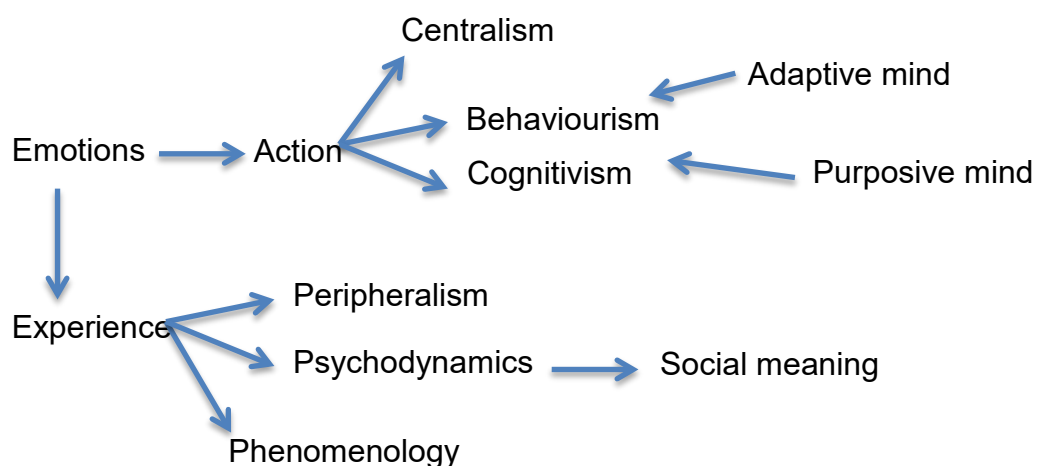


Figure 13: Branches of Phenomenology

There are two types of phenomenological research:

- (i) Hermeneutic phenomenology: research oriented towards lived experience and interpreting the texts of life;
- (ii) Transcendental phenomenology: bracketing the researchers' own experience and making a fresh start with the phenomenon under examination.

3.4.1 Phenomenology

Phenomenology is rooted in early 20th-century European philosophy (Starks and Trinidad, 2007). Its theoretical origins can be traced back to the devastating years of the First World War (1914-1918), when Europe was in ruins.

Philosophers of the time were torn between positivism and subjectivism. Artists who had previously pioneered avant-garde styles abandoned their ideologies and approaches and returned to more reassuring traditional approaches

(Merjian, 2014). The term “Return to order” introduced by Jean Cocteau in his book, *Le rappel a l'ordre* (1926), was aptly used to describe this phenomenon

(Tate, *n.d.*). In that epoch, a German philosopher, Edmund Husserl offered new hope as he aimed ‘to develop a new philosophical method which would lend absolute certainty to a disintegrating nation’ (cited in Groenewald, 2004: 3).

Husserl rejected the notion that an object in the external world exists independently from experience and information about the object is relevant.

People can only be certain about things by ignoring anything outside their immediate experience, thus the external world is reduced to the contents of personal consciousness. Husserl named his philosophical method,

‘phenomenology’, and saw it as the science of pure phenomena when realities treated as pure phenomena are the only reliable and relevant source of information (Groenewald, 2004).

3.4.1.1 Husserl's Investigation

In his book *Logical Investigations*³⁸ Husserl introduces the eidetic method which attends to the way things appear to individuals in their own experience. The eidetic method allows phenomenologists to identify the essential elements of a particular phenomenon that make it unique (Pietkiewicz and Smith, 2014).

Husserl started his investigation by distinguishing between simple objects and complex objects. Sokolowski (1968) observes that Husserl's simple objects are defined as simple objects because they have no parts whereas complex objects are dense with parts. There are two types of parts – moments and pieces, with the former permeating the latter, and they are inseparable from their whole.

Husserl (1900) describes moments as follows:

I may consider a material object as a whole, composed of the parts called "extension," "surface," "color," and "brightness." These parts permeate one another in such a way that one cannot be given unless the others are also present. I cannot disengage brightness from color, I cannot consider color without locating it within a certain surface, and I cannot consider surface without seeing it as a moment of an extended thing. The necessity of blending these different parts is not due to any psychological disposition in me or in my culture but is grounded in the sense of the parts. Each part, by virtue of what it is, contains within itself a rule dictating the necessary progression of supplements that it must possess, the necessary series of horizons within which it must rest brightness entails color, color entails surface, surface entails extension.

(Husserl, 1900, cited in Sokolowski, 1968, p. 544)

'Moments' possess these interlaced parts that ensure its wholeness, whereas 'pieces' are separable from their whole. Husserl provides an example of a branch as an entity in itself. He considered the tree as a whole that consists of a trunk, branches, leaves, roots, and bark. All are 'pieces' that can be separated

³⁸ *Logical Investigations* published by Husserl in 1900-1901 consists of two volumes. He claimed his works to be an attempt at epistemological clarification and critique of the basic concepts of logical knowledge. They entail analytical inquiries into fundamental issues in epistemology and the philosophy of logic, as well as extensive, intricate philosophical discussions of issues in semiotics, semantics, judgements, and presentations.

from the whole (Husserl, 1969) Husserl's meticulousness in distinguishing parts of the objects of everyday life encouraged the researcher to not just scrutinise the essence of objects based on their textural qualities but also on their inherent qualities. 'Profiles' is another significant concept that Husserl introduced in *Logical Investigations*. The notion of 'profiles' also had a great impact on the American Philosopher Graham Harman's work, *The Quadruple Object*, which was published in 2011. Husserl (2001) argues that an object that exists in our consciousness is formed by a synthesis of 'profiles'. We know what a chair is by its visual sequence, texture and tactile 'profiles' which coalesce to form an object called a chair. Husserl formulated his phenomenology rigorously and concretely with analyses addressing the '*a priori*' structures of consciousness such as: affective, practical, aesthetic, political, and other forms of conscious awareness of meaning making. Sokolowski (1968) observes that:

The doctrine of profiles and perception is important in Husserl since it later becomes the criterion for distinguishing between experience of worldly reality and transcendental experience of subjectivity. It is also one of Husserl's most important epistemological theories, since it strikes at the disjunction between appearances and things in themselves. Yet its force can easily be lost if the wrong logic of parts and wholes is applied to it.

(Sokolowski, 1968, p. 545)

For Husserl, the goal of phenomenology is a descriptive, detached analysis of consciousness, in which objects, as its correlates, are constituted.

Phenomenology should be referred to as "the epistemological reduction," which posits the investigation of essences in detail. Essences are thus investigated in a different fold of layers, referred to by Husserl as phenomenological reduction. This method allows the phenomenologist to return to the 'thing themselves', as

in the realm of phenomena. Husserl thus asserts that we will find undisputable answers for every scientific inquiry.

3.4.1.2 Heidegger's *Dasein*

Husserl's student, Martin Heidegger (1962) extended Husserl's phenomenological ethos by introducing "*Dasein*" (translated as "Being there") and the notion of a dialogue between a person with his or her world. Whereas Husserl relied on 'consciousness' as the instrument for his phenomenology, Heidegger introduced the notion of time space, or temporality, as the central point of his analysis. *Dasein*'s temporal character can be assessed from a consideration of its three-part structure, which is as follows:

- 1) *Dasein* denotes potentiality for being as it projects its being upon possibilities. Existence thus represents the phenomenon of the future;
- 2) *Dasein* always finds itself in certain spiritual and material, historically conditioned environments. This represents the phenomenon of the past as memories;
- 3) *Dasein* exists in the midst of beings, which are both in existence and not in existence.

Heidegger asserts that phenomenology is an enactment of lived experience itself rather than simply philosophy in the mind. He demystifies the standard philosophy of the mind³⁹ by distinguishing between theory and practice (Critchley, 2009). Heidegger introduces a distinction between two ways of

³⁹ As claimed by Critchley (2009), the standard philosophy of mind presupposes a dualistic distinction between mind and reality. He asserts that phenomenology should be perceived as our real lived experience of the world and not as a theoretical encounter.

approaching the world: present-at-hand and ready-to-hand. Present-at-hand refers to our common attitudes towards things and the way we normally know things within the world. We are accustomed to treating something present-at-hand as a conscious phenomenon. We do not realise that things in fact occur or happen whether we observe them or not. Therefore, it is built in to our understanding that any relation we have with things involves observing them, and therefore the most basic way of relating to things is by looking at them (Whitlock, 2011). Conversely, ready-to-hand refers to the practicality of things, which implies that things exist when we use them. Heidegger asserts that things that are ready-to-hand must ultimately be used in a way that means we no longer notice them. Heidegger states that tools are present to human beings when they are used as “readiness-to-hand”.

The ready-to-hand is not grasped theoretically at all, nor is it itself the sort of thing that circumspection takes proximally as a circumspective theme. The peculiarity of what is proximally ready-to-hand is that, in its readiness-to-hand, it must, as it were, withdraw [zuriickzuziehen] in order to be ready-to-hand quite authentically. That with which our everyday dealings proximally dwell is not the tools themselves [die Werkzeuge selbst]. On the contrary, that with which we concern ourselves primarily is the work that is to be produced at the time; and this is accordingly ready-to-hand too. The work bears with it that referential totality within which the equipment is encountered.

(Heidegger, 1962, p. 99)

As Heidegger (1962) argues, the readiness-to-hand concept is evident in our daily routines. We must use things in order to be able to understand them. For example, a pen is understood through writing rather than through scientific examination.

To use a simple analogy, the world is full of a plethora of designed objects that we have either encountered in our experience or we have not. They are naturally absorbed within our world. Heidegger describes the structure “ready-

to-hand” as a “tool”. The tool can be either a machine or a simple object such as the typewriter, which would aptly fit this analogy. The typewriter is appropriate to be used with other tools or materials for a specific task, in this case “to type”. A tool that is “appropriate for its task” is in fact a form of involvement in human practices, as the typewriter helps writers verbalise their thoughts and realise them on paper. Paper, another tool, is then needed to accomplish this function; therefore a tool requires a form of involvement with other tools or materials. These tools refer to each other. Ready-to-hand, by comparison, is articulated by these references or involvements with human practices . The typewriter is a tool with which to write or type a novel or produce papers for readers: the intention is to provide entertainment and/or the writer’s family with the proceeds obtained from the publication of his masterpiece. The whole set of references represent our world. We understand the whole world through these referential points. On the other hand, when an object, in this case the typewriter, loses its ready-at-hand or function, it becomes “unreadiness-to-hand” because it is not functioning properly. We become aware of the referential points, the existence of the typewriter, while unconsciously thinking about it. When the typewriter loses its useful function and its mode of being present-at-hand, it needs to be replaced or repaired. Our attitude and acknowledgement of this situation allows us to realise the notion of “present-at-hand”.

3.4.2 Merleau-Ponty’s Phenomenology of Perception

In 1945, Husserl’s successor, Maurice Merleau-Ponty published his work, *Phenomenology of Perception*, which encompasses an improvised version of

Husserl's thinking. As Husserl's strongest follower, Merleau-Ponty continues to advocate the study of essences that emanate from perception and consciousness. In the search for these essences, their qualities including those as part of the lived and experienced world, is a world of things that have not been reflected upon and on which sciences are constructed (Sadala & Adorno, 2002). Based on Husserl's phenomenology, Merleau-Ponty expands the new understanding of "thing themselves"⁴⁰ a term coined by Franz Brentano.⁴¹ This term implies a directedness of consciousness or "aboutness", which Merleau-Ponty named "intentionality" (Merleau-Ponty, 1945) – body responses and natural impulses in direct engagement with the world. Merleau-Ponty's notion of phenomenology addresses the significance of the self, which is the body and the "anchor of our world". It is thus perceived as a dialectic relationship between a body and the world where it is located. Carman, in his foreword for Merleau-Ponty's *Phenomenology of Perception*, explains Merleau-Ponty's stance on the subject of perception as follows:

To perceive is not to have inner mental states but to be familiar with, deal with, and find our way around in an environment. Perceiving means having a body, which in turn means inhabiting a world. Intentional attitudes are not merely bundles of sensorimotor capacities, but modes of existence, ways of what Merleau-Ponty, following Heidegger, calls being in the world.

(Carman, 2012, p. x)

Merleau-Ponty implies that perception is not limited to a mental state but is also a perception of past memories of something that may or may not be significant .

⁴⁰ The reduction, in part, enables the phenomenologist to go "back to the 'things themselves'"(Husserl 2001, 168), i.e., back to the ways things are actually given in experience.

⁴¹ Franz Clemens Brentano (1838–1917) is mainly known for his work on the philosophy of psychology, especially for having introduced the notion of intentionality to contemporary philosophy. However, the concept most associated with him is intentionality or immanent objectivity. His work has greatly influenced many philosophers including Edmund Husserl.

According to Sturgeon (2002), Merleau-Ponty defines perception as a system of meanings, which implies that the intentions of the person who perceives the object are reflected in where the phenomenal object belongs. Scientifically, every sensation belongs to a sensory field. Merleau-Ponty (1945) contends that the sensory field implies that sensory perception is spatial and has to be located. Therefore, every object perceived belongs to a certain category of objects that is not perceived, and the same goes for sensation. Every perceived sensation belongs to other categories of sensations that are not simultaneously perceived by the subject. As he explains:

This pure sensation would amount to no sensation, and thus to not feeling at all. The alleged self-evidence of sensation is not based on any testimony of consciousness, but on widely held prejudice. We think we know perfectly well what 'seeing', 'hearing', 'sensing' are, because perception has long provided us with objects which are coloured or which emit sounds. When we try to analyse it, we transpose these objects into consciousness. We commit what psychologists call 'the experience error', which means that what we know to be in things themselves we immediately take as being in our consciousness of them. We make perception out of things perceived.

(Merleau-Ponty, 1962, p. 5)

Furthermore, perception is not a personal mental event but a shared component that works alongside others. Perception refers to the way we see the world through our bodies because we are the embodied subjects, involved in existence. We perceive phenomena first, then reflect on them. This mediation of perception, which is instantaneous and synonymous with our being in perception, is an outcome of our embodiment. The body stands between this fundamental distinction between subject and object, ambiguously existing as both. The body is entailed by perception rather than an object of it. Through this discovery, Merleau-Ponty breaks down the subject/object dichotomy and

concludes that the traditional notion of the Cartesian “cogito” must be replaced by what he refers to as the “body-subject”. For instance, he asserts that:

We are consequently in danger of losing sight of perception altogether when we place it on either side of the distinction between inner subjective experiences and external objective facts. Interior and exterior, mental and physical, subjective and objective – these notions are too crude and misleading to capture the phenomenon. Perception is both intentional and bodily, sensory and motor, and so neither merely subjective nor objective, inner nor outer, spiritual nor mechanical. The middle ground between such categories is thus not just their middle but indeed their ground, for it is what they depend on and presuppose.

(Merleau-Ponty, 2012, p. x)

This posits the two underlying aspects of perception as the sense of experience and the activity of bodily skills. Those two moments are not sharply distinct, self-sufficient states, but are interlaced and inseparable aspects of a single and unified phenomenon. According to Merleau-Ponty (1962), although the content of experience is not necessarily meaningful it denotes is the intuitive coherence things have for us when we find them and cope with them in our daily encounters. Things make sense for us perceptually as to how they appear to other beings like children or perhaps animals. Perception unifies stimuli in a meaningful structure. It is generated in our sight (eyes) and the subjects (intervening objects) and then structured for us consciously in our perception, thus it is not generated by conscious reason or by “intentionality”. In order to visualise and better understand perception, we must separate ourselves (bracket ourselves) from it so that we are no longer seeing through the objects but are making perception itself an object of reflective consciousness (McClamrock, 1990).

Perceiving the world is an inter-subjective phenomenon. Each body with its own structure chooses its own ways to adjust;, from this perspective, we are limited

to this condition and the restrictions we are subjected to, and we are the subject of our own experiences as we make the choices we think are the best for us (Sturgeon, 2002). Furthermore, a person is a being who perceives the world from a different point of view depending on his or her experience of time and space, and who perceives particular phenomena that adapt accordingly to the perceptual field, which is the place of perceptual experience. This can be explained through the example of perceiving a switched-on laptop computer; where only the lit-up screen can be seen from afar. However, a closer look reveals the keyboards with letter keys and, when the track pad is touched, the cursor on the screen responds accordingly. When analysed more closely using different angles/views of elevation, we can conclude that the laptop computer exists by itself, independent of any perspective. Thus, seeing the laptop implies that we are able to see it from several perspectives, which then allows various possibilities; this concept is known as the space-time⁴² structure, as introduced by Merleau-Ponty. Merleau-Ponty's subject-object relationship implies humans do not stand in relation to their world as a subject to an object. The relation consists in their action within it. They belong to their world as an active part of it. Merleau-Ponty identifies social, embodied action with the production of meaning. Meaning is produced by an engaged body-subject. The body's active relation to its environment creates a functional space around it. The active body positions its world around itself and constitutes the world as "ready-to-hand", congruent with Heidegger's (1962) notion.

When I look at the lamp on my table, I attribute to it not only the qualities visible from where I am, but also those which the chimney, the walls, the table can 'see'; but back of my lamp is

⁴² A phenomenologist's worldview is in line with the belief that all perceptions and constructions are ultimately grounded in a particular perspective in time and space.

nothing but the face which it 'shows' to the chimney. I can therefore see an object in so far as objects form a system or a world, and in so far as each one treats the others round it as spectators of its hidden aspects and as guarantee of the permanence of those aspects.

(Merleau-Ponty, 1962, p. 79)

For Merleau-Ponty, to look at an object is to inhabit it, to grasp all things in terms of the aspect which they present to it. Visually, what we see does appear as what we see, but what we perceive entails the context that we experience, which shapes our perception of a phenomenon. Phenomenology is thus an attempt to unravel the basic structures of human experience in descriptive form and scrutinise this from a first-person point of view rather than the conventional way of seeing things from a third person perspective. Phenomenology is thus a descriptive method and not explanatory, as its purpose is to reveal experience as such rather than to frame a hypothesis or to speculate and make inferences (Spurling, 1977). It does not begin with a theory but a phenomenon under consideration (Simon & Goes, 2011). Phenomenology is now considered not just the study of essences but the relation between essences and facts.

Merleau-Ponty rejected the notion that consciousness constitutes the world – consciousness is in essential dialogue in the world, and all meaning is the result of this dialogue (Spurling, 1977). Perception is again key to explicating the essences of the phenomenal object, and the world is full of meaningless objects except when we assign meaning to that particular object – then we become aware of and understand the object and thus recognise its existence in our life. Therefore, designers give meaning to the perceived object according to their knowledge about the object. The object resembles the past, future, and present that constitute our experiences of the object. It reflects our stance regarding that

particular phenomenal object. Phenomenology can be used as a form of analysis by reducing the information to significant statements and combining these into themes. Each theme will develop a textual description of experience (condition, situation) and a combination of the textual and structural descriptions is then used to convey the overall essence of the experience (Moustakas, 1994, p. 80).

3.4.3 Interpretative Phenomenological Analysis

Phenomenological research typically originates within lived experience and makes use of a natural response to everyday life that is original, pre-reflective, and pre-theoretical. Once a reflective approach to everyday experiences is brought into a natural, everyday environment the construction of meaning can occur. Van Manen (1990) regarded the meaning of lived experience as multi-dimensional and multi-layered, as meaning is dependent on the diverse context in which people are embedded (cited in Strong et al., 2008). Clark Moustakas, a leading expert in humanistic and clinical psychology, is one of the pioneers of phenomenological research. Moustakas argues that research should focus on the wholeness of experience and a search for the essences of experience. Moustakas (1994) views experience and behaviour as an inseparable relationship between a phenomenon and the person who is experiencing the phenomenon (Simon & Goes, 2011). The essence of experience in depth is ideally explored using interpretative phenomenological analysis, a specific

hermeneutic⁴³ version of phenomenology. The aim of interpretative phenomenological analysis (IPA) is to explore in detail how participants make sense of their personal and social world, and the main forms of currency for an IPA study are the meanings particular experiences, events or states hold for participants (Chapman & Smith, 2002; Simon & Goes, 2011; Smith, 2004). The approach is phenomenological in that it involves a detailed examination of the participant's life experience (Smith, 2004). It attempts to explore personal experience and is concerned with an individual's personal perception of an object or event, as opposed to an attempt to produce an objective statement (Smith & Osborn, 2003).⁴⁴ The primary goal of an IPA researcher is to investigate how individuals make sense of their experiences. It is assumed that people are 'self-interpreting beings', which means that they are actively engaged in interpreting the events, objects, and people in their lives (Pietkiewicz & Smith, 2014). Studying the object–person relationship requires a descriptive analysis of the field of consciousness that has led Husserl to define phenomenology as the descriptive science of the essences and actions of consciousness (Sadala & Adorno, 2002).

Phenomenology, as discussed by Husserl (1999) involves a “return to the lived world,” the world of experience which, as he sees it, is the starting point of all science. In addition, phenomenology proposes that a phenomenon can be

⁴³ Hermeneutic phenomenology aims to seek understanding. Its task is to collect the various shapes and textures of the life we are already living, a life that is not secured by the methods we can wield to render the life of our objects.

⁴⁴ IPA aims to ensure the researcher lives in (the participant) individual's experience and understand the whole context in which the questions are posed. In many cases, IPA restricts the sample to 5-10 participants as the analysis requires in-depth and critical reflection for each participant and it would be impossible to study 100 participants in a limited time. Quality over quantity does matter.

described instead of being explained or having its causal relations identified, and it focuses on certain things as they manifest themselves. At the core of the phenomenological approach is the intentionality of consciousness, which is understood as the direction consciousness takes towards understanding the world. Phenomenology is one of the approaches the researcher uses to understand and utilise materiality and experience as a tool with which to investigate the person-object relationship.

Sturgeon (2002), whose work is based on Merleau-Ponty's space-time structure, argues that we understand subjects and perceive certain phenomenon according to their standpoint, which means different people will have a different perception of that particular phenomenon depending on the place and time. This implies perception is ambiguous and subjective; however, perception can somehow be generalised and induce a meaning that is understood by all, thus leading us to see the phenomenological structure.

Phenomenological analysis is also rather heuristic and therefore demands great self-commitment, rigorous self-searching and self-reflection, and an ultimate surrender to the process. It is not suitable for fixed time frame research because it should not be attempted lightly. In essence, it is a research process designed for the exploration and interpretation of experience by the researcher themselves Moustakas (1994) describes the heuristic process in phenomenological analyses as including,

- 1) Immersion: the researcher is involved in the world of the experience;
- 2) Incubation: a space for awareness, intuitive or tacit insights, and understanding;

- 3) Illumination: an active knowing process to expand the understanding of the experience;
- 4) Explication: reflective actions;
- 5) Creative synthesis: a bringing together in order to show the patterns and relationships.

3.5 Interpreting the phenomenology

Interpretive phenomenological analysis (IPA) is one of the main instruments of analysis in phenomenological research. Smith (2011) developed guidelines for judging the quality of IPA studies. He noted that IPA studies should have a clear focus that provides details about a particular topic, the analysis should be descriptive and interpretative and include both convergence and divergence in its themes, and the research should be carefully written taking into account these guidelines. Although helpful, these guidelines specifically aid with assessing the outcomes of IPA research, and can only provide indirect judgement on the process of the research (Smith, 2011 cited in Callary, Rathwell & Young, 2015). The three distinctive features of IPA are that it is idiographic, inductive and interrogative (Smith, 2004),

1) Idiographic

IPA demands a detailed investigation of the particular object/subject until a conclusion or closure has been achieved. The investigation will then move to the next case/subject until a conclusion is drawn. Finally, the researcher conducts a cross-analysis of the emerging themes for each

individual, which are interrogated for convergence and divergence. Most IPA studies involve a small number of participants due to the detailed inspection involved. Quality is the main concern for IPA rather than quantity. Through an idiographic lens, the outcome unfolds with two specific advantages in terms of the findings, i) one learns about that particular person and their response to the specific inquiry and ii) it reveals connections between different aspects of the respondent's life.

2) Inductive

IPA researchers conduct the study by utilising techniques that are flexible enough to enable unanticipated topics or themes to emerge during the analysis. This allows IPA researchers to construct broader research questions, which will lead to expansive data collection.

3) Interrogative

IPA involves an in-depth analysis of a set of case studies and the results of the analysis are discussed in relation to the extant literature. IPA is interrogative in nature as it theorises the analysis based on the constructive dialogues between the researcher and subject, rather than by making assumptions in quantitative reviews.

According to Chapman and Smith (2002), the key aim of IPA is to thoroughly examine the perceptions and understandings of the participant rather than making general assumptions in order to make sense of the things that are happening to them. As such, Smith and Osborn (2007) observe that it is possible to obtain data suitable for IPA analysis in personal formats such as diaries and journals. One of the common approaches used to collect data for an

IPA study is through a semi-structured interview. This allows both the researcher and participant to immerse themselves in a dialogue where initial questions are adapted according to the participant's responses, giving the researcher the freedom to probe deeper into any unexpected or interesting issues that arise. The analysis and reflective stage will then commence following the transcription of the interviews. The researcher will first need to re-read and annotate the text with comments. Those comments will then be developed into clusters or themes that grasp the fundamental features of the feedback. At the same time, connections are made between themes until a systematic and thematic account of the case is produced. Finally, connections across cases can be made until a set of key themes for each participant is produced. Each key theme should connect to the overall underlying themes, which can then be traced back to the original annotations and extracts from the participant interviews. To conclude, the table of key themes is then translated into a narrative account, where the themes are outlined, exemplified, and illustrated with verbatim extracts from the participant (Chapman and Smith, 2002).

3.6 Conversation with objects

The lengthy explanation of methods and discussions surrounding the form of analysis used in this research all lead to this pivotal point; to converse with ubiquitous objects, a form of relationship that we have with the objects. Such methods and are utilised systematically to establish a lucid understanding of

what (and how) materiality and experience tells us about the objects. Figure 14 presents a Venn diagram illustrating the shared components between the materiality and experience of objects that represent the designed objects that surround us. The shared components that present the essential features of designed objects are called “units”. Each object is connected with one or all of these units. The visual diagram does not infer that these are the only units of materiality and experience, but from the literature search and presented case studies, the researcher opted to explore these units as shared components of experience and materiality.

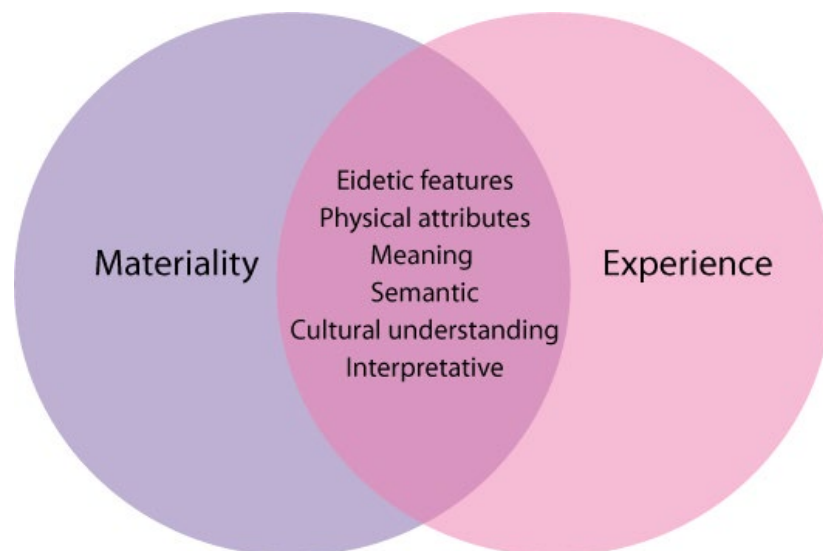


Figure 14: Materiality an experience's shared components

These units are collective attributes of materiality and experience that were gathered using archival research methods. These attributes can be traced back to literature in the 1900s and are significant units that conjure ‘materiality-ness’ and ‘experience-ness’ in objects. Throughout this dissertation, the intention of the research has been to probe the notions of materiality and experience that are contextually relevant to the research. As a tool for understanding the

complex transaction between objects and people, these two notions are seen as one unit or, in certain cases, two separate units. Bennet (2010, p. 75) in *Vibrant Matter* redefined Driesch's (1914) entelechy as forces of things as she believes that every human and nonhuman entity have the inert power to self-transform. Entelechy is defined here as the realisation of potential, like a caterpillar turning into a butterfly, or small, hard corn kernels suddenly exploding into their more recognisable and edible state. In short, it is what we are coded to be. However, for us to realise this true potential, we need to decipher the code. A pair of working jeans provides the perfect case study to illustrate the entelechy of materiality and experience. After hundreds of washes, the jeans of an artist are drenched with the evidence of paint, conversation with colleagues over the latest hyper-realism paintings, scraped and holed from falls, and ripped by climbing up a ladder. The jeans are proudly worn as evidence of the artist's connoisseurship, as the entelechy of the jeans is the bleached look that conveys this deluge of information.

Entelechy offers a new spectrum for understanding objects. Designers can therefore enhance their designs through meaning-making process and invoke a greater depth of narrative by deciphering the code of materiality and the experiential components of their objects. Knowing and acknowledging the cost, stability, durability, or tensile strength of the material is no longer sufficient for a designed object; however, by interjecting the notion of entelechy, the designed

object is now richer and informative. As the object gets older, rustier and more faded, it becomes more attractive as it ages beautifully.⁴⁵

3.6.1 Materiality as a tool to evaluate designed objects

Design and applied art practitioners habitually engage with materiality in the production and consumption of meanings and experiences embedded in the objects they create (De Lucchi, 2011).⁴⁶ Materiality has often complied with the study of material culture. This enables scholars to contextualise materiality to encompass philosophical perspectives, which, according to Hegel, meant that humanity is inseparable from materiality (Hegel, 1977). There are two ways to theorise materiality: (i) through artefacts and (ii) the theory that transcends the dualism of subjects and objects (Miller, 2005). According to Miller (2005), one way to hypothesise materiality is through the artefacts themselves, which can be summed up as the physical aspects, the material properties. Material properties are perceived as the physical aspect of an object, such as its tactility, colour, form, texture, surface and other tangible properties. However, understanding materiality can also be seen as a concern of meaning making and an assortment of the object's cultural and philosophical understanding. Unsworth (2012) states that materiality refers to the way the objects have been produced and valued either culturally or financially. New research has postulated that objects exist not just for a sole function but to serve and

⁴⁵ However, entelechy cannot be implemented into all objects. Goods that we use, domestic objects, are not applicable as they have an expiry date, such as toothpaste, milk or vitamins.

⁴⁶ De Lucchi concluded that objects hold stories. Objects hold knowledge. They enclose knowledge and history. Each has a story that in turn contains the story of those who made it and those who used it.

capture influences that have shaped its function and context. Each object is a representation of a collection of stories, timelines, and cultural and societal values that it is designed for or is borne out of. In Grassby's (2005)⁴⁷ analysis of material culture, he defines objects as giving material form to the rules and belief patterns of those who trade, purchase, or use them. Those with shared attributes can be grouped into a style or type of characteristic from a discrete period. Material studies argue that objects are depicted as symbols and tools of culture and artefacts are organised into meaningful relationships in structural patterns governed by the perspectives of material culturists. Miller (2005) states that the second way to theorise materiality is through the understanding of a theory that transcends the dualism of subjects and objects. In other words, the subject is perceived as user or human and the object is the product that designers create. The relationship between the dualism of the user and the object is transcendental when we assign meaning to the object and vice versa.

3.7 Experience

Objects are subjected to our own ideas; we classify them according to our own personal experiences with the objects. However, this is not restricted to our contact with objects, it also combines with what we have heard or have been told mattered to others regarding their experience with the objects (Ransdell,

⁴⁷ Richard Grassby. Material Culture and Cultural History. *The Journal of Interdisciplinary History*, Vol. 35, No. 4 (Spring, 2005), pp. 591-603. Grassby elaborated artefacts as evident form an anthropological point of view. He demarcated the physicality and meaning of objects in relation to their cultural context.

1998).⁴⁸ Experience is robust and depends on how we contextualise it. As there are various fields and perspectives that focus on understanding the meaning of objects, references from a diverse range of academic fields will be included in the main theoretical consideration of this body of knowledge.

In order to revive perceptual experience buried under its own results, it would not have been enough to present descriptions of them which might possibly not have been understood, we had to establish by philosophical references and anticipations the point of view from which they might appear true.

(Merleau-Ponty, 1962, p. 73)

To understand the notion of experience in an object, either while we use it, own it or even remember it, we should not isolate the object from its linkages or environment. Merleau-Ponty stated that we should try to step back and scrutinise the experience from the past, present and future of the object. As well as understanding experience from an object ontological perspective, experience has been discussed critically in relation to how people understand and utilise art. In 1934, John Dewey published a book entitled *Art as Experience* that is widely regarded by many as one of the most important contributions to thinking on aesthetics and the philosophy of art in the 20th century. In his writing, Dewey theorised that, 'An experience is a product, one might almost say bi-product, of continuous and cumulative interaction of an organic self with the world. There is no other foundation upon which aesthetic theory and criticism can build' (Dewey, 1934, p. 220). Interest in the study of experience has been sparked not only by psychologists but also by economists who have sought to understand the use of experience in the consumption of

⁴⁸ In his paper entitled 'On the Paradigm of Experience Appropriate for Semiotics', Ransdell (1982') discussed the three words used in defining semiotics, empirical, experience and experiment.

goods. Experience is seen as part of the act of consumption, often after purchasing goods and services people seemed to demand an experience (Sundbo, 2010; Pine & Gilmore, 1999). In short, the economists define experience as a memorable event that is generated intentionally by a company. Attempts to define experience are concentrated on understanding what happens when the recipient or the user is the recipient of an experience (Sundbo, 2010).

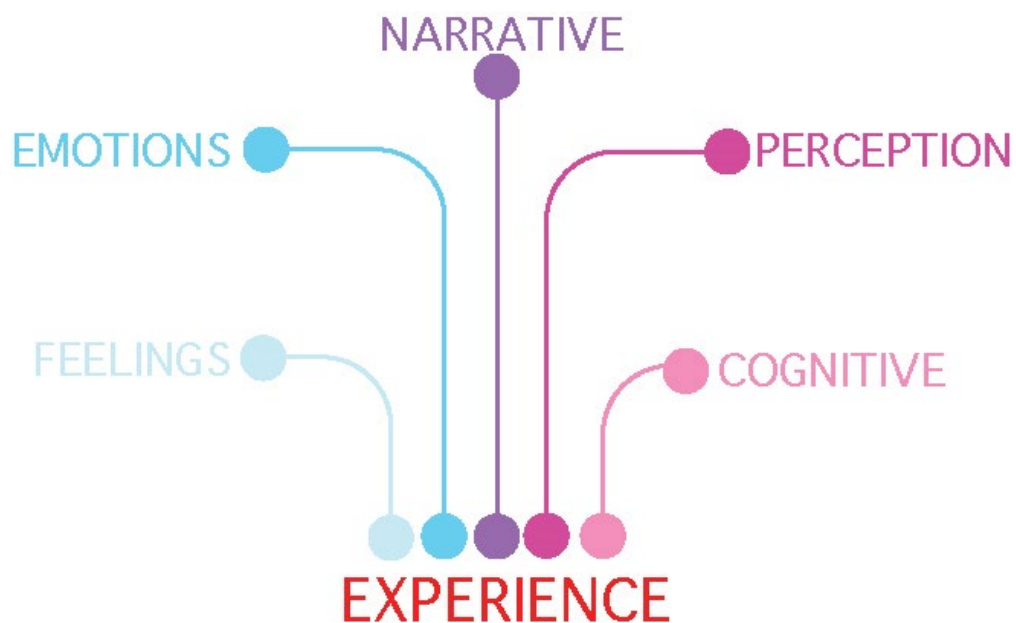


Figure 15: Elements of experience

This is captured in Figure 15, which illustrates the branches of the experience analysed from a range of diverse genres. The perspectives suggest the use of feelings, emotions, perceptions, cognition, and narratives as tools to explicate and understand experience. This will be analysed further in the next section.

3.7.1 Perception and Emotion

Desmet and Hekkert (2007) suggest that experience is inextricably linked with perception. In accordance with this notion they developed the Product Experience theory which utilises perception as the main instrument to evaluate experience in the field of design. Product experiences are the ways in which a person interacts with a product. Although phenomenologically experienced as a whole, at least three major components can be distinguished in the product experiences framework (Desmet & Hekkert, 2007; Hekkert, 2006). The aesthetic response is characterised by feelings of pleasure that are based on the sensory perception of the object; for instance, the object looks beautiful, feels pleasurable, or sounds nice. In addition, people try to understand how a product should be operated or which actions it affords and will attribute all types of expressive, semantic, symbolic, or other connotative meanings to the product. Interactions with a product can help a person to reach a goal or can obstruct him or her in attaining that goal, and thereby lead to various emotional responses. In combination, these components shape the overall product experience (Hekkert & Schifferstein, 2008). The traditional analysis of perception distinguishes within it sense-givens and the meaning they receive from an act of understanding (Merleau-Ponty, 1962).

3.7.2 Feelings

Csikszentmihalyi's (2002) proposes the concept of flow as the basis for defining an experience influenced by external stimuli such as events or actions that have

happened in the mind of the individual. The flow refers to a mental journey, which leaves behind something immaterial such as a memory or sensation. Thus, experience is relative as the process is influenced by the mind-set of that individual, based on how he or she perceives the stimuli, their earlier encounters, and their actual mood. Experience varies according to time and space. For Csikszentmihalyi, only remarkable experiences are worth defining as they hold something special for the individual in that particular situation. A trivial event such as a daily commute to work is not, for Csikszentmihalyi, an experience, as it will not be remembered. However, a memorable event such as receiving an award for excellence etches a significant experience in the mind of the receiver. Furthermore, experience can be manifested in tools to envisage user-product interaction, especially in the digital industries.

3.7.3 Cognitive and Narrative

Forlizzi and Ford (2000) propose the use of cognitive and sub-conscious experience as an initial framework for designers to craft experiences for users in the field of user-product interactions. Current literature suggests that there are three ways to scrutinise experience, which are as follows,

- (i) 'Experience' is the purest form of reference as it happens during moments of consciousness. Self-narration is a common way people acknowledge this kind of experience, as it is ephemeral.
- (ii) 'An experience' is a situation where we talk about having an experience. This type of experience has a timespan and exists as a certain event; the context of the experience is the result. For example,

the experience of watching a movie at the cinema allows us to feel powerful emotions; it influences our system of values and could possibly change our opinion about certain things.

- (iii) 'Experience as story' implies that stories are used as vehicles with which to condense and remember experiences in order to communicate them to certain audiences. This type of experience is especially crucial in fantasy gaming. Because experience as story is in essence communicative, it has relevance for sharing user findings with a design team from multidisciplinary backgrounds.

Gerhard Schulze, in his book *The Experience Society*, claims that, "experience" has become a focus of social, economic, and cultural activity (Schulze, 2005). He argues that people now shape their lives according to their needs and preferences, and money is spent in order to satisfy insatiable needs that are driven not just by necessity but also aesthetics. In addition, people are now becoming more concerned about how they look and are willing to pay for the desirable experiences promised by manufacturers. Desirable experiences take the shape of pleasant and mostly positive experiences that allow people to be inspired and inspire others to do the same. Furthermore, the lifestyle that we chose is defined by the desirable experience we are looking for or are prepared to buy. Many everyday experiences involve people who simply use and enjoy products or designed objects. For example, the amazement when seeing the latest Apple iPhone, the comfortable feel when resting our heads on goose down-filled pillows, the smell of freshly brewed coffee in the morning, or the relief of removing detritus in between teeth after enjoying a meal. These

experiences are rich with information; hence, understanding such experiences allows designers to design things better.

3.8 Breaking the Experience

From the literature reviewed, the researcher has derived several components that support the experience of the objects framework. This understanding is a blend of philosophical, design, psychological, and communication genres. In relation to the context of this research, the researcher has deduced that there are four types of experience: (i) sensible, (ii) product, (iii) tactual, and (iv) visual – all influence how we assess the experience of objects (Figure 16).

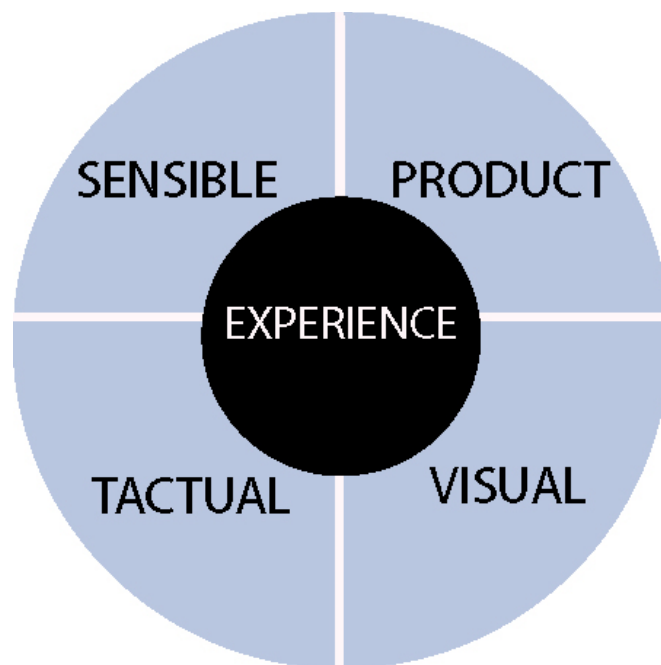


Figure 16: Components of experience⁴⁹

⁴⁹ Figure 16: Components of experience (Researcher's collection, 2015)

3.8.1 Tactual Experience

Sonneveld (2007) developed the Tactual Experience guide to help people describe their tactual experiences with objects. He identifies five domains of tactual experience: (i) moving with the object, (ii) perceiving tactual properties of the object, (iii) awareness of physical sensations, (iv) experiencing the affective behaviour of the object, and (v) experiencing the gut feelings involved. Dewey (1934) further adds that 'physical interaction puts the body, and thereby the tactual senses, back into experience as the foundation of knowledge' (cited in Sonneveld & Schifferstein, 2008, p. 44). It is a common understanding that we recognise objects because of their colour and form, and only through touch do we know about its materiality and, in this context, its tactual properties.

(i) Moving with the object

Sonneveld and Schifferstein (2008) assert that, by touching, humans learn about emotions and feelings. Touch generates affection and emotional aspects, and, by so doing, transitional objects such as blankets or soft toys allow children to own a sense of security by cuddling them. In other words, the blankets or soft toys allow children to mediate any insecurities and compensate this emotion by "make-believing" that it is the mother who is in fact cuddling them. There are also two types of touch: active and passive. Active touch refers to an object that is being touched while passive touch means being touched by the object. Touch implies contact or bodily involvement and, either through active or passive touch, we perceive and recognise or make an assumption about an object. Tactual perception of an object and its properties rely on movement. Klatzky,

Lederman and Metzger (1985) distinguish exploratory strategies for the act of touching, as illustrated in Figure 17 (cited in Sonnerveld & Schifferstein, 2008).

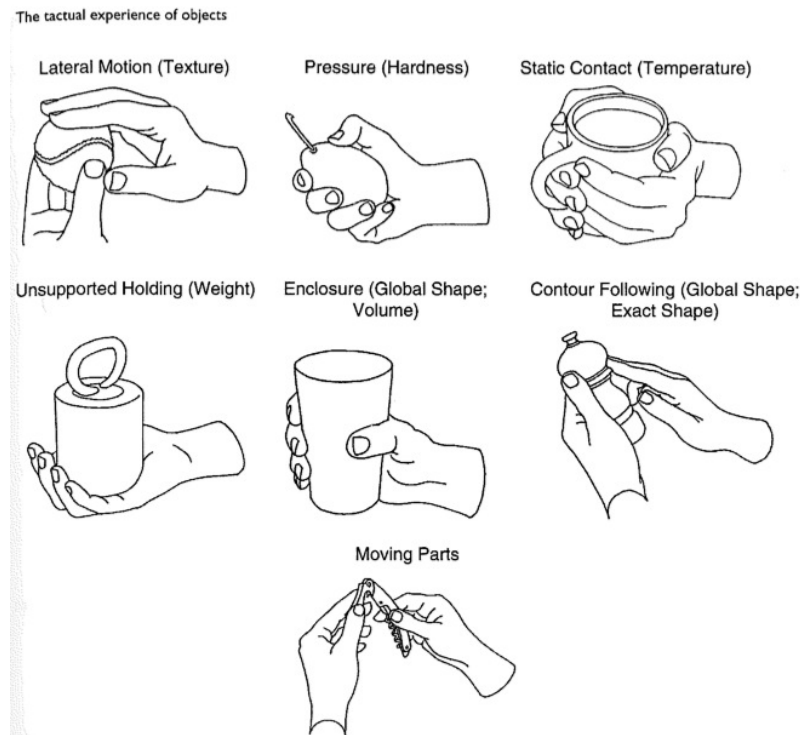


Figure 17: Exploratory procedures for specific tactual properties (Klatzky, et. al., 1985)⁵⁰

(ii) Perceiving tactual properties

Figure 17 illustrates the different scenarios in which people perceive an object by touching. Through touching the object, people recognise the shape, create expectations, and anticipate the sensation through four different tactual properties (Sonnerveld & Schifferstein, 2008, p. 49):

a) Substance

The substance refers to the materials the object is made of; its hardness, elasticity, plasticity, temperature, and weight. The hardness, stiffness, and

⁵⁰ Figure 17: Exploratory procedures for specific tactual properties (Klatzky et al., 1985)

elasticity of an object's materials are perceived when one applies pressure to the object. For example, a ceramic mug encapsulates an amazing morning coffee experience, it provides information about the temperature of the coffee and whether it is hot or warm.

b) Surface

The surface refers to the texture and patterns of the object. By stroking the surface of an object, the texture is explored. Skin is pivotal in exploring the nuances of texture and pattern properties. Depending on the moisture, it mediates different types of tactual experience. For example, if the skin is dry, , the friction caused by the texture can be clearly felt. However, if the skin is damp, the object could easily slip from the hands.

c) Structure

The structure refers to the geometric aspects of the object; its shape and size are explored when manipulated with the hands. Grasping allows us to feel the contours of the object. Through dynamic forms of touch such as swinging, lifting or wielding the objects, we learn about the elements of the object. Shape properties are among the vital components of tactual experience as they differentiate the experience while perceiving the object. By simply holding the object, we understand its construction and mechanisms. For example, with a white coloured ceramic knife, which is tremendously sharp, we can speculate that it is a plastic knife by looking at it, but by touching or grasping the handle, we immediately learn that it is ceramic and therefore possesses the function of a knife.

d) Moving parts

By moving the object, we explore its weight and balance properties. Weight distribution is explored through dynamic touch, for example by swinging and wielding the object. Weight perception is influenced by other tactual properties of the object. For example, the smoother the texture, the heavier the object appears: this is due to the need to prevent the object from slipping (Flanagan et. al., 1995).

(iii) Awareness of physical sensations

Tactual sensations depend on the movement when we touch an object and are perceived when the object touches us. The tactual property of an object evokes various sensations that depend on how we interact with the object. Interactions with the object imply the 'skin' ship that we have with the object. The skin is our largest organ and touching allows us to feel and experience the object as it is equipped with a variety of sensors; touch, temperature, and pain. The types of sensations felt or perceived depend on the location, quality, intensity, and duration of the stimulation.

(iv) Experiencing affective behaviour

The body language of an object represents the affective aspects of tactual experience. Interactions with objects are felt when the object expresses its affective behaviour through physical transactions. The object expresses its personality in the same way humans do. We are described as weak, funny or brave, and an object also possesses human traits like these. The object transfers its tactual properties directly onto its personality; for example, a spherical object expresses a fun personality. Intentionality implies there are

specific motivations for interacting with objects. Objects demonstrate this behaviour when, for example, the elasticity of a rubber band evokes the intention of “wanting to be stretched or played with” continuously as its properties allow it to be stretched repetitively. Another example is an old leather sofa that shows the intention of “wanting to be taken care of” due to the ageing and timeless look of the leather.

Through interaction, an object provides information about itself, such as the materials it is made from, its function, and how to care for the object. As such, tactual feedback relates to the integral behaviour of the object. However, this information sometimes misleads the user: for example, a polystyrene cup with hot coffee inside could project the wrong idea about the temperature of the liquid compared to the information provided by a paper cup or porcelain mug. Another affective behaviour of objects that influences the tactual experience is the personal suitability of the object or, in other words, “the perfect match” (Sonneveld & Schifferstein, 2008). Often, when touching an object, we tend to make judgements regarding the way it suits us. A perfect match is experienced during the first encounter with an object, such as when we try out new shoes. We know within the first few steps whether they fit us. Over time, we become so accustomed and adapted to the objects that it becomes impossible to transfer them to others. For example, physiological factors do influence “perfect match” behaviour, given that sizing or fitting is often highly influential in this category of affective behaviour.

Familiarity is also considered an affective behaviour. Familiarity grows over time, as memories contribute to the current experience. It enhances the object

because it etches unique traits and records personal knowledge about the object, for an example, a digital calculator that is owned by all high school students is recognised by the owner when they have become familiar with all its deformities, dents, or any form of personalisation made to the object. A physical struggle, such as when attempting to open a tight-lidded jar, is the perfect example of being-in-control behaviour. This behaviour challenges one's strength to complete the task given (opening the jam jar), and it addresses who controls the interaction (the object or the user)? Because tactual experience is mainly about physical interaction; developing physical skills is another aspect of affective behaviour. By interacting with the object, we learn and develop our skills in order to master the knowledge. A good example of this is learning to play the guitar, which requires specific skills and muscle memory. If someone has mastered the skill of playing a guitar, they now have power over the object and are in total control of the interaction.

(v) Experiencing gut feelings

Feelings are the product of affective behaviour elicited by a person-object interaction. This is captured by the gut feelings map, a basic concept describing the emotion and feelings experienced in tactual interaction. The map characterises these as gut feelings that emerge from direct interaction with objects that are related to the visceral level of interaction, as theorised by Norman (2002). The map acts as a communicative tool, an intuitive mode of non-verbal interaction that verbalises the tactual experience.

Tactual Experience Guide: Summary

This guide has been developed with the intention of catering for the aesthetic sensitivity of product design students. It introduces a hands-on form of exploration while asserting the significance of having tactual senses in product design. It has been purposefully put together to support designers in describing their tactual experiences with objects. Articulating experiences, or describing a tactual experience in words, can be quite challenging for designers. Thus, the purpose of this guide is to help designers systematically verbalise the tactual experience of interaction. Although the guide's emphasis is on affective behaviour and the study of kinaesthesia, which stems from a branch of psychology within cross-disciplinary research, the guide proposes effective ways to communicate our tactual experience.

3.8.2 Sensible Experience

Sensible experience is one of the components introduced into the experience of object framework. The word sensible, an adjective, means "able to make good judgements based on reason and experience rather than emotion (Oxford Learners Dictionary). In philosophy, sensible experience is described as:

Mature sensible experience presents itself as, in Kantian phrase, an immediate consciousness of the existence of things outside us...the human commitment to a conceptual scheme of a realist character is not properly described, even in a stretched sense of the worlds, as a theoretical commitment.

(Strawson, 1974, p. 47)

Strawson (1992) further elaborates this point about sensible experience in a chapter in *Introduction to Philosophy* entitled "Sensible experience and material

bodies". He claims sensible experience is related to the sense of perception – boldly claiming that it often yields true judgement. This is because, in a world equipped with the two qualities of space and time, also known as the spatio-temporal world, there should be a regular relationship of dependence between the experiences perceived by the senses and the way things objectively are. In summary, our perception of our own sense experience is dictated by our judgements about the world. Strawson elucidates this point further:

For example, veridical description of your current visual experience of the visual experience which you, my reader are having at the moment – is to describe what you take yourselves to be seeing out there is the world in front of you. You can always take precautions against the remote possibility of error by employing a formula such as, "my visual experience is as of seeing..." and then carrying on the description in the same terms as before. The point is that the concepts which are necessarily of the experience description are precisely those which are necessary for the world description. Similarly as regards your current auditory experience, your present sensible experience is of hearing these words being pronounced in such tone of voice.

(Strawson, 1992, p. 6)

Perception is mediated by the sensible qualities of perceived objects. However, although objects can be conceived and thought of as they are, they cannot become the object of perception as they really are, because they appear to beings physiologically constituted. "Objects as they really are", is one of those ascriptions (assessed by their sensible qualities) that are generally made through observation that are taken as the standard by which others are corrected.

Objects must be perceived as bearers of sensible qualities, visual and tactile, if they are to be perceived as space-occupiers at all. And this is why the ascriptions to them of sensible qualities, the standard of correctness of such ascription being intersubjective agreement, is something quite seemly rooted in our conceptual scheme.

(Strawson, 1992, p. 9)

Objects are perceived as objects; however, their identities or traits are changeable. For instance, when we perceive different aspects of them from different point of view or at a different time, they no longer remain the same objects. Hegel (1977) asserts that sensible experience is infused with multicultural interpretations of that perceived object but the underlying and basic mode of awareness which all subjects share remains (cited in Stone, 2012, p. 118). Hegel (1977) categorises the sense into three groups (cited in Stone, 2012, p.119), as follows:

(i) Sight and hearing

Through sight and hearing, we find objects fully and transparently available or accessible. Through our visual and hearing ability, we become fully aware of the objects and we recognise their visual or auditory presence.

(ii) Taste and smell

The second category suggests that by embracing the taste and smell, the senses will relate to reality, and thus enter into the process. Broadly speaking, the smell and taste of the objects become available to the subjects through a process by which they give up their previous self-containment. To rephrase Hegel, touch and smell allow us to venture into an unknown experience that explores new venues for the object. While forming ideas about the objects, we need to leave our complacent (previous) zone in order to move into a new one. That is the process.

(iii) Touch

This is the absolute and most concrete sense. Touch is the sense of solid reality. Through touch, we encounter objects as resistant entities with an

independent existence. Objects can never become fully accessible but they retain some residual self-containment.

Sensible Experience summary

Although this discussion is a nuanced consideration of the philosophical encompassment of experience, it is important to consider how we articulate our experiences. For example, we perceive a watch as a watch just because we know that it is a watch. But how do we know that it is? This discussion explicates the process of how judgements are made and how we make sense of objects. Strawson asserts the importance of the spatio-temporal world in making judgements. Because they are relative, what we perceive now will be perceived differently tomorrow or to how we perceived it yesterday. In essence, Hegel objectifies the three categories of sensible experience with touch as the most concrete sense. These two works provide the basis for the researcher's developing understanding of experience. From this understanding, experiential elements can be assessed by time, space, and senses.

3.8.3 Visual Experience

Visual and perceptual experiences are notions that are heavily discussed in this chapter. Siegel (2011) defines perception as a form of input to a belief that allows us to compare hypotheses with the world, so that we may assess whether those hypotheses are true or false. Perception involves states that are importantly similar to beliefs; visual experience also includes the visual hallucination of objects or events. Siegel introduces The Content View (CV)

framework to further elucidate our understanding of visual experience. CV emphasises the accuracy of the experience as Siegel (2011) believes that, 'visual experiences have contents, thus the contents of beliefs are conditions under which the belief state is true, so the contents of experience are conditions under which the experience is accurate' (p. 12). Scott Sturgeon, a psychologist, identifies three types of visual experience (Sturgeon, 1998). These are as follows:

(i) Veridical perception

In a scenario where people perceive an object, a cloud (an example used by Sturgeon), is a publicly available object of perception (POP) because everyone can see it; it is legible and obvious. In this example, my visual experience tells me that the cloud looks white and it looks white because it is white. The cloud looks white to me because a white POP looks white to me. If something is white it looks white to you because a white POP looks white to you. My visual experience thus signals the visual experience.

(ii) Illusion perception

An illusion is an image that is not quite what it seems. For example, a mirage is a natural optical phenomenon that occurs when light rays are bent to produce a displaced image of distant objects, in this case the sky. The lake is not really there because, through the study of science, we know that the lake is a mirage. Thus, the visual experience is not fully trustworthy or accurate and therefore, is just an illusion.

(iii) Hallucination

In a hallucination, we see things that are not really there. Through the use of drugs or sometimes due to a very high body temperature as a result of

illness we might see images that are not visible to anyone else. Although this visual image might appear real to the person seeing it, it is not really there and therefore is not visible to anyone else.

Furthermore, these three types of visual experience: Veridical Perception, Illusion. and Hallucination (referred to as VPIH) share the following five remarkable features (Sturgeon, 1998, p. 181):

1) Behaviourally equivalent: action and belief are coordinated together.

When a ball is thrown to me, I believe that the ball is going in my direction. My reaction would be to catch the ball. The belief (of catching the ball) is synchronised with my action (catching the ball) regardless of whether the visual experience is veridical, illusionary, or hallucinatory.

2) Rationally equivalent: belief and action are rational.

As I see the ball getting nearer, I believe that it is coming towards me, I know that the action of catching the ball is rational. VPIH rationalises belief and action in parallel.

3) Subjective: to know an experience one must know what it is like, one must have experienced this before.

My visual experience might be subjective, because I might think that,

i) I might not be able to reach the ball

ii) To know where I should stand to catch the ball, I must have experienced the same or similar experience before

iii) To understand this visual state, I must have known what it felt like.

4) Scene: immediate before mind

VPIH place objects and their features directly before the mind

I might have experienced the ball scenario before it happens in reality.

5) Indistinguishable

If I am merely relying on the phenomenological experience to distinguish these experiences,, I cannot distinguish (from within) whether the visual experience is veridical, illusory, or hallucinatory.

Summary of Visual Experience

Siegel introduced the Content View (CV) framework to enable us to acknowledge the true belief that relies on the accurate contents of our visual experience. Sturgeon's notion of Veridical Perception, Illusion, and Hallucination (VPIH) extends our understanding of the types of visual experience one may have when one perceives an object or an event visually. Sturgeon asserts that VPIH share five remarkable features; all affect our perception, which stems from visual experience. They shape our judgement about events or objects and rationalise our behaviour, beliefs, and action.

3.8.4 Product Experience

In this chapter, product experience will be referred to as object experience, pursuant to the researcher's definition of 'objects' clarified earlier in the dissertation; objects are those designed objects that have targeted end clients or users, which is similar to products or "consumers objects". Designers have scrutinised the implications of objects in terms of the user experience as there has been increased awareness of the need to understand the importance of the user experience and the designed object. Product experience is a concept that

develops an understanding of subjective experiences that arise from using products or interacting with products. Product experience allows us to explicate the responses elicited by the object through various stimuli. Previously, the researcher discussed the product experience framework as a tool with which to understand and analyse experience. Iteratively, in breaking experience components, the product experience framework (shown in Figure 18) is elemental in enabling us to look into experience from the object's point of view.

Desmet and Hekkert (2007) outlined a framework of product experience that distinguishes the affective product experience from the processes that underlie these experiences. Their analysis is based on users' behaviour and the cognition involved in the users' affective experience of human-product interaction. Emotional responses are relative to the affective experience. Furthermore, experience depends on the way users interact with products. The affective state is generally used to refer to all types of subjective experience that involve a perceived goodness or badness, pleasantness or unpleasantness (Desmet & Hekkert, 2007). Objects inexplicably affect the user in many ways and vice versa. The user elicits emotional responses that involve multifaceted phenomenon such as subjective feelings, behavioural reactions, expressive reactions, and physiological reactions. A performative object refers to the goods that we use that elicit certain levels of product experience. Hekkert (2006) distinguished three levels at which an object can be experienced, which are as follows:

We thus define product experience as “the entire set of affects that is elicited by the interaction between a user and a product, including the degree to which all our senses are gratified (aesthetic experience), the

meanings we attach to the product (experience of meaning) and the feelings and emotions that are elicited (emotional experience).
(Hekkert, 2006, p. 160)

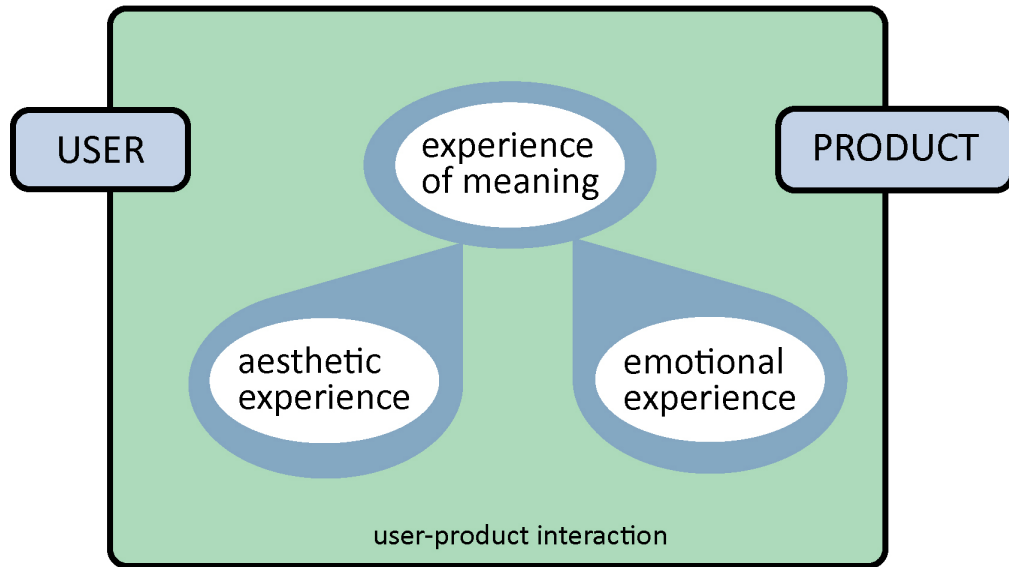


Figure 18: Product experience framework (Desmet & Hekkert, 2007)

3.8.4.1 Aesthetic experience

When we first acknowledge something or perceive an object, we are attracted to something that is beautiful to look at or grabs our attention either because of its shape, colour, or smell. Aesthetics refers to understanding through sensory perception (Hekkert & Leder, 2008). The notion of aesthetics is complex, but to present a clear picture based on the research conducted by Hekkert and Leder (2008), the researcher will now contextualise the notion of aesthetics used in the research as follows:

- i) Aesthetics is not restricted to artistic expressions. Everyday phenomenon such as looking at the moon at night can also be an aesthetic experience in the same way that we express our amazement at artistic expression such as that found in a painting.

- ii) Aesthetics is not limited to the visual domain. Aesthetics can also refer to our sensorial capacity; touching, smelling, listening, or tasting something pleasant is also considered an aesthetic experience. Although aesthetics is commonly dominated by visual beauty, these sensorial modalities also allow us to indulge in other types of aesthetic experience.
- iii) Aesthetics is not a matter of styling. In product design especially, we always refer to aesthetics as a way of enhancing the surface or stylisation of the design. Aesthetics consists of other attributes/properties that can contribute to our sensorial pleasure.
- iv) Aesthetic pleasure is not an emotion. Emotion is a result of the underlying cognitive structure and is either a conscious or unconscious process. In contrast, aesthetic pleasure involves our sensory perception, thus this rejects the notion of emotion as an aesthetic pleasure.

On an aesthetic level, our perception of objects is dominated by our sensorial experience. Norman (2004) asserts that there are no emotions or cognitive processes involved at this level. While interacting with the objects, we might experience the beauty of using them, which includes our tactual experience of the objects; for instance, the experience of squeezing a stress ball.

3.8.4.2 Experience of Meaning

For aesthetic experience, we reach deeper into the experience of meaning allowing us to recognise elements of the object as well as its function. We

become aware of its representation, symbolic meaning, and the implications for our life. Cognitive processes start to influence our judgement. This component of experience evokes the notion of semantic interpretation or symbolic association introduced by Crilly et al. (2004). Product attachment is another concept that corresponds with this level of experience. It enhances our attachment to objects, especially luxurious objects. Jewellery typically elicits this type of product attachment. Rings, for example, are symbols of marriage or a special relationship, and often hold an immensely strong resonance for the users. They mediate messages that are inherently embedded in the objects: for example, if one wears a ring on a particular finger, it is very possible that this person is married. This allows the possibility of conversation about marital status. In the field of marketing, luxury products are typically made with higher standards of materials, processes, packaging, distribution, and promotion to allow and create a pleasurable experience (Reinmoeller, 2002 cited in Desmet & Hekkert, 2007, p. 5).

3.8.4.3 Emotional Experience

Emotion is a powerful and functional component that impels us to love or hate an object. Positive emotion provokes us to use and appreciate the object whilst negative emotions ensure we avoid it. This affective state influences the use of the object, which is typically determined by its performance and function. A person-object transaction is evident at this level of experience as we elicit emotions after or during our interactions with the objects. Emotion is a result of cognitive processes, although often it is an automatic and unconscious process. Emotion is inherently relational or interactional (Smith & Pope, 1992). It is

evaluative as it is the result of an analysis of the meaning of the person and his/her circumstances. The emotion itself is hypothesised to include a state of distinctive subjective feeling, a pattern of physiological activity, and an action tendency. Appraisal (Frijda et.al., 1989; Smith & Pope, 1992) is linked to the personal meanings associated with emotions. Appraisal theory advances the hypothesis that the different emotions of an individual are fixed and universal in accordance with particular appraised meanings. Smith and Pope (1992) explain that:

According to appraisal theory, individual differences in emotion are directly caused by individual differences in appraisal. If two individuals appraise the same circumstances differently, they will experience different emotions. Thus the key to understanding individual differences in emotion should lie in identifying the factors that lead some individuals to appraise their circumstances one way and others to appraise the same circumstances another way.

(Smith & Pope, 1992, p. 45)

Emotion elicited from the appraisal of a stimulus is indicative of an individual's personal wellbeing. Appraisal allows us to evaluate an object's significance to the individual and the emotions elicited in that individual could be different from others even though they are perceiving the same object, as the emotions elicited are situational.

3.9 Manifestations of Product Experience

The Product Experience framework combines complex layers of experience, aesthetics, meanings, and emotions. Desmet and Hekkert (2007) refer to these layers as components or levels: in this context, both definitions are

interchangeably used in this chapter. This framework provides a basis through which to understand the interaction between the user and the product through the experiences associated with the object. Experience is shaped by the demographics of the user and the characteristics of the object. The complex processes that are involved in perceiving an object such as touching, holding, exploring, using, or remembering will contribute to the nature of the experience. The framework refers not only to direct instrumental interaction such as using or operating the object, it also looks at non-instrumental interaction (unintended functional values) such as the texture of a mobile phone casing that gives us pleasant emotions while caressing it, and non-physical interaction (anticipation) such as our expectation that, when wearing perfume, people will feel more comfortable when they are around us. In the next section, the researcher will discuss product experience in relation to an object that has meaning within her own life and experiences.



Figure 19: Making Turkish coffee using cezve⁵¹ (Researcher's collection, 2013)]

⁵¹ Figure 19: Making Turkish coffee using cezve (Researcher's collection, 2013)

Coffee defeats boredom, kickstarts our day, and provides the comfort and warmth we need, especially during cold days. It is thought that drinking coffee may have started in the early years of Yemen's reign. However, since then there have been increasing demands for coffee and it is now part of a global lifestyle that shapes our seemingly insatiable need for coffee. During a visit to Istanbul the researcher came across a unique coffee pot called the *cezve* (Figure 19). There are many types and sizes of *cezve*, and she opted for a copper medium-sized *cezve* that can brew up to three cups of Turkish coffee. Now, whenever she makes Turkish coffee or brews everyday coffee using that *cezve*, the shining copper works exceptionally well in transmitting the heat evenly through the water and also holds the heat longer. Although copper is highly reactive with food, the *cezve* is lined with tin, and the more expensive *cezves* are typically lined with stainless tin. The layer of tin not only prevents the oxidation of copper, it also provides durability and is easy to clean. Making coffee using the *cezve* has become a meaningful experience for the researcher. She does not often make coffee using *cezve* as Turkish coffee is very strong but, once in a blue moon, when she sees *cezve* resting passively on the shelf, it invites her to spend the time brewing and smelling its fragrant perfume. It is relaxing. The researcher learnt to brew Turkish coffee from a colleague who is of Arab descent, and now, whenever she makes the Turkish coffee, she is reminded of coffee-talks with her friend.

The *cezve* is reminiscent of her time at the Spice Bazaar in Istanbul where she selected the *cezve* and reminds her of the bargaining that took place with the seller: she therefore recollects the nice time she had there. To frame the object

experience of the *cezve*, visually, the copper coffee pot is very beautiful to look at. The shininess and the reddish metal hue are intriguing and invite the beholder to know more about the *cezve*. The seller convinced the researcher that the *cezve* would be an amazing souvenir for a friend or even for herself. The researcher is an avid coffee enthusiast and a collector of coffee-making paraphernalia. The angle of the handle, with its intricate ornamentation, captures the Turkish nuance of traditional motifs, which further convinced the researcher to purchase the *cezve*. The angled handle is part of the functionality of the coffee pot and the copper postulates the ideal usability and the visual appeal of the pot (aesthetic experience). The sound of the spoon while stirring the coffee in the *cezve* is a delight to hear and thus elicits an enjoyable experience for the researcher whilst she is brewing the coffee.

It has been two years since the researcher's trip to Istanbul, yet the *cezve* still evokes happy memories from Istanbul. It also forms part of a display on her cookware shelf and often sparks conversation with guests, who ask about her great adventures in Istanbul. The *cezve* not only symbolises her profile as a coffee lover but it also informs her guests about her favourite pastime, which is travelling and appreciate local handicrafts (experience of meaning). For her, making coffee using the *cezve* elicits pleasant emotions that are exclusive and intimate. The smell of the coffee acts as a stimulus for a fresh morning start and the spout of the pot that allows the coffee to pour nicely into the cup elicits an emotion of satisfaction (emotional experience). The *cezve* combines the three level of experiencing an object discussed previously and also combines the notion of unconscious tactual, sensible, and visual experience components.

3.10 Conclusion

One of the aims of the dissertation was “to form a body of knowledge that can inform the tool of materiality and experience in order to understand an object. This chapter has rigorously compiled the relevant methods to scrutinise objects. Materiality in this chapter is discussed as the physical components of the object (See subsection-Conversation with objects, p. 92), but it is again rigorously explored in relation to tactual experience. Here, experience shares a common value with material properties. Experience is not limited to the subjective narration of objects, feeling, and emotion, it rests on sensory judgments. at the beginning of the chapter, methods such as auto-ethnography and phenomenology were discussed at length. These provided a basis the object analysis, which will be further elaborated in Chapter 4. These methods were conducted chronologically in order for the researcher to unravel the essence of an object.

The objective of phenomenology is the direct investigation and description of phenomena as it is consciously experienced, without causal explanations or theories as to their objective reality. It therefore seeks to understand how people construct meaning. Moreover, meaning is achieved through interactions that utilise our own understanding of materiality and how we locate the experience while evaluating the interaction. We basically rely on both types of interaction to measure and articulate this complex relationship. Clearly, an object should have meaning to us and, even though it is often a very subjective and situational meaning, it embodies meaning and messages that relate

specifically to the individual. Phenomenology provides a basis for this research to understand objects from an experiential perspective and bind the systemic elements of tactual, sensible, visual and product. To do this, the researcher has embarked on an ethno-methodological journey that required her to compromise her personal possessions. Objects are often scrutinised for what they are and how they are made. In so doing this chapter shows the potential for the narration of an object when seen through the framework of phenomenology..In the next chapter, the researcher will further elucidate everyday objects and people (researcher) transactions and analyse these objects using both the newly found elements of experience, and the existing material components discussed in this chapter.

Chapter Four: Analysis of Objects

Chapter Purpose

In the previous chapter, the researcher discussed the methodology for the research (in the form of a literature review), covering both historical aspects and a more general overview. In this chapter, the researcher will explain in detail the case studies that she has undertaken in order to verify the research hypothesis and locate the methodology within the overall context of the research. Armed with the knowledge from the literature review, this chapter aims to provide an unequivocal basis for the methods employed in the case studies and their subsequent analysis using IPA. Central questions posed by the research regarding materiality and experience as tools with which to understand objects are answered. This chapter will address what kind of understanding will be achieved through the analysis and unravels the kind of relationship manifested as a result of the interaction.

4.1 Introduction

As claimed by Boradkar (2010), objects have been under-theorised in design research. Discourses around the study of objects do exist within the design field but are often peripheral; however, other disciplines such as psychology (Norman, 2013), philosophy (Harman, 2011; Verbeek, 2011; Bryant, 2013), sociology and political science (Latour, 2005; Bennett, 2010); literature (Lamb, 2011); art history and social sciences (Sudjic, 2008; Daston, 2004; Turkle,

2007; Krippendorf, 2006); and anthropology (Clarke, 2010; Henare, Holbraad and Wastell, 2007; Miller, 2003; Ingold, 2012) have all embraced the discussion. Most of the scholars referred to above have revisited designed objects in order to understand the meaning objects have for their owners or users. However, less attention has been to the original intention of the objects, which can only really be examined from the makers' and designers' point of view. Csikszentmihalyi and Rochberg-Halton (1981) state that: 'Objects that the owner keeps are reminders both of who he is and who he was' (cited by Margolin, 1989, p. 9). Objects are thus constant reminders of the past and also signify where the future might take us. For example, they can take us to places we have never been before, such as a travel magnet or a memento from a traveller friend. However, objects can also represent the status that we hold, such as wearing a gold ring which may symbolise our marital status or represent a sacred belief.

According to Calkins (1932) there are two types of goods (objects); the goods that we use and the goods that we use up (cited in Sudjic, 2008, p. 14). Goods, or the term used more regularly in this research, 'objects', are referred to as man-made and designed objects. Domestic objects like a kettle, a coffee mug, or a duvet elicit certain emotional responses from the user that could be either comforting (pleasure) or simplify our daily chores as the kettle does for making tea (usability). Norman (2004) stipulates that it is the designer's job to communicate what an object can do and how a user can go about using these features. Objects invite inquiry, affect our emotions, satisfactorily serve functional purposes, and many of them have greatly influenced our lifestyle.

Everyday objects are attached to the user because they posit emotional values that respond discreetly to the user. We become oblivious to the significance of the ubiquitous objects that surround us but analytically they are kept for certain reasons. These objects elicit an unobtrusive element that represents an extension of ourselves or is a recollection of our past that we wish to remember. Spillers (2004) notes that conventional cognitive approaches to product usability have tended to fragment emotion from an understanding of the user experience.

4.2 The Investigation: Man-Object Transaction

In the preliminary phase of this research, the researcher adopted an auto-ethnographic approach for the pilot study to grasp the initial ideas relevant to an object's ontology. The researcher investigated the closest objects around her, asked questions regarding their importance, and reflected on their meanings in relation to their presence in her life. To document the findings of this study, the researcher adopted a photo journal style to record the whole process. Keyword coding and interpretative analysis were then utilised to analyse the findings.

This reflective⁵² method was later expanded to include the exploration of data visualisation in order to elucidate the data findings more clearly. The researcher

⁵² The researcher adopted a reflective method to analyse the pilot study undertaken earlier. Reflexivity is defined as the interpretation of interpretation. It is important in helping the researcher establish a dialogue between objects and users, which is very discreet and subjective. The concept of reflexivity acknowledges that the orientations of researchers will be shaped by their socio-historical locations, including the values and interests these locations confer upon them (Hammersley & Atkinson, 2007).

then contextualised the findings based on established theoretical frameworks.

After developing a hypothesis, , she demonstrated it through the making of objects into which the hypothesis is translated.

No	Methods	Instruments	Justification
1.	Auto-Ethnography	Observation Photo Journal	Preliminary pilot study: to search for gaps/findings that help to direct the research.
2.	Reflective Method : Phenomenological Reflection method	Reflection of each object in a justified manner towards the objects and self by using and analysing the photos and the object itself.	Reflect on each object selected and relate the dialectic between the function and desire of the objects. Explicate the meaning each object holds; reflection comes from the pre-reflective ground that serves as the foundation for reflecting on objects.
3.	Phenomenological Analysis	Typological Approach Keyword Coding	Getting others to participate when giving keywords to ensure the researcher is bracketing herself from becoming too immersed in the research.

4.	Mapping complexity :Visual Analysis	Adobe Illustrator Gephi Interpretative Phenomenological Analysis Product Experience Framework Three Levels of Processing Framework	Illustrate the complexity of each keyword (theme) of the objects by connecting the lines in Adobe. Nodes of connection will be apparent and thus help the researcher to visualise her understanding of each object's taxonomy (which is not limited to type/shape but rather the emotion and attachment the user felt towards it).
5.	Making		Theories and hypothesis developed after the analysis were translated into tangible objects. The researcher thus demonstrated how the theoretical framework worked in practice.

Table 2: Methods and instruments employed in the study⁵³

4.2.1 Auto-Ethnography

Auto-ethnography is a form of ethnographic inquiry that utilises the autobiographic materials of the researcher as the primary data. Unlike other self-narrative writings such as autobiography and memoir, auto-ethnography

⁵³ Table 2: Methods and instruments employed in the study (Researcher's collection, 2013)

emphasises cultural analysis and interpretation of the researcher's behaviours, thoughts, and experiences in relation to others in society. Auto-ethnography must be ethnographical in its methodological orientation, cultural in its interpretive orientation, and autobiographical in its content orientation (Chang, 2007). Therefore, the researcher (as maker and user) opted to study her own objects so that she could identify types and definitions of the object-person relationship between both household objects and objects that she admires. Studying her own objects allowed the researcher to understand what each object means to her, which she believes was easier to grasp than studying the relationship other people have with their objects, as they are interlaced with manifold layers of interpretation. Grouping the objects into categories explicates the layers of meaning and the type of relationship the researcher might have with each object. This was an intimate journey to discover how each different object might affect our lives and vice versa.

The chosen objects have quietly inhabited the researchers' home in order to be used up and be used (terms borrowed from Calkins, 1932). In 2012, the researcher began to collect images of objects she admired and identified various possessions she could not live or do without. It quickly became clear that most of the objects are from the same category; household objects. Armed with her background as a trained industrial designer, the choices of objects were thus limited to domestic objects. The research had two key aims: (i) to identify domestic objects that matter to the researcher, and (ii) to choose objects that the researcher really admires or wishes to own. For both tasks, the researcher has given a reason for the selection (justification) and reflected

(synthesise) on this by providing supporting written information on why these objects matter. There are two types of justification this exercise aimed to establish: (i) explicit justification and (ii) implicit justification. Explicit justification is a direct reflection the researcher can make without having to think about the ideas behind the objects, allowing them, to justify the whole selection based on their impression of the object. Conversely, implicit justification refers to the values that have been embedded in the objects. For this the researcher needed to reflect on the indirect implication of her own selection and synthesise it with previous knowledge about the object that she could then articulate in the form of an implicit justification. In order to construct the findings in a clear visual form, (i) explicit justification will be simplified to 'justification; and (ii) implicit justification will termed 'reflection'. Table 2 depicts the trajectory the study.

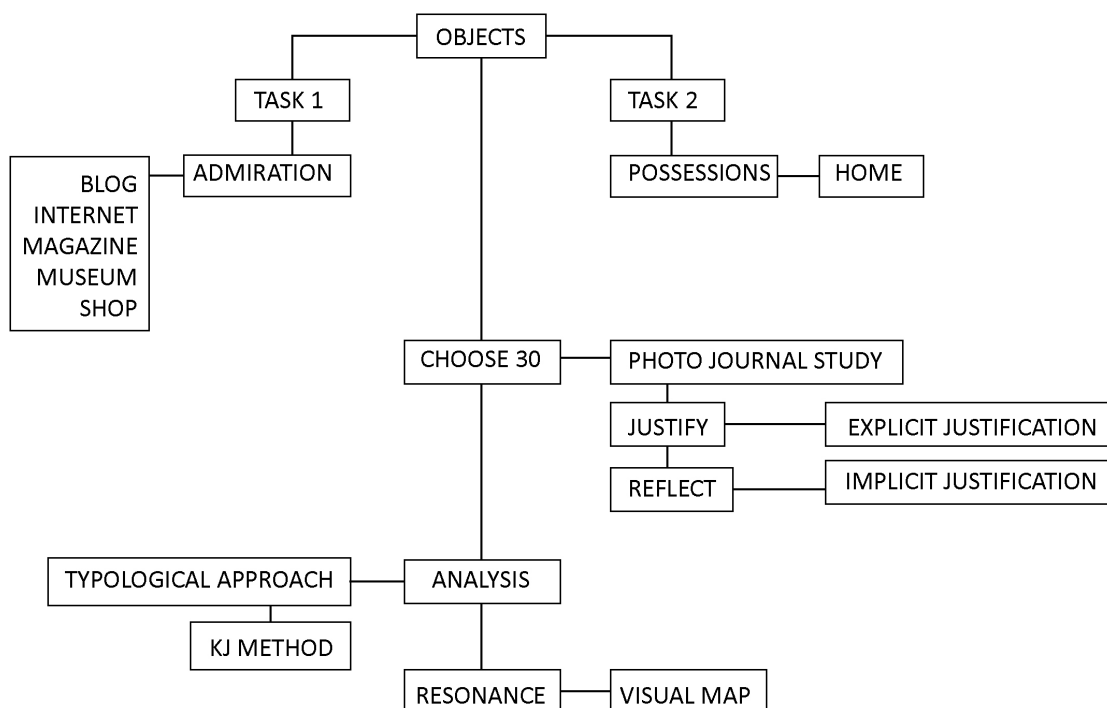


Table 3: Research methodology⁵⁴

⁵⁴ Table 3: Task trajectory (Researcher's collection, 2013)

4.2.2 Instruments

To capture the visual elements of all the objects/possessions, a photo journal method was used in addition to images of the 'admirable' objects. This also enabled a clear and concise analysis of these objects to take place.

4.2.2.1 Photo Journal Study

A Photo Journal Study was the preliminary method used to frame the essence of the objects (possessions) that were important to the researcher and the objects that she admires. According to Walker (1989), participants who undertook a similar type of study using a photo journal method, were instructed to take pictures of a product they have used in their daily life that elicited a certain type of emotion. In a notebook, they then explained why these products elicited this type of emotion. Within this study, Walker (1989) discussed the conditions that underlie inspiration and desire, and cited examples of cases drawn from the photo study to reflect the diversity of participants' narrative descriptions. In general discussions, the researcher reflected on the value of focusing on one's distinct emotions rather than generalised pleasant responses. Based Walker's photo journal's method, photos of the possessions were captured and the researcher's emotions whilst using or owning them were documented in written form. Figure 13 presents images of the possessions into which the researcher has interjected many motions and experience-based knowledge when considering which objects need to be captured and why. Figure 14 shows images of the objects that are based on her existing knowledge about their function. In addition, the materiality of the objects such as

shape, form, colour, patterns, and function may also have influenced the researcher's appreciation. For each object that has been selected, the researcher has provided an implicit justification of the reason why the object is chosen and an explicit justification through her the reflective opinion about the object, such as the feelings she had while admiring or owning them, the implication of the objects, i and their significance.

Task 1: Admiration

Karl Raimund Popper (1979), in one of his designed object lectures, proclaimed that, "We are attracted to the object of our search by our curiosity, knowledge inherit by the previous investigator" (cited in Baecker et al., 2010). An emotional connection with an object is described by the Japanese term *aichaku*, which means symbiotic love for an object that deserves affection. not for what it does but for what it is (Baecker et al., 2010)⁵⁵. "Admirable" or admiration refers to the understanding of amazement, love, like, desire, attraction and all the good feelings that drive us to buy things. There should be some similarities between the objects we own and the objects t we are attracted to, but what type of relationship bridges the resonance between the "admiration" and "possession" of objects? The researcher therefore explored the resonance between these two types of objects to further her understanding of the fundamental feasible relationship that exists between these objects and herself. Table 3 shows the trajectory the investigation; which began the 30 important admirable objects and another 30 everyday objects the researcher could not live without. Every

⁵⁵ Baecker, D., Hartung, M., Wiebke, L., & Schwartz-Clauss, M. (2010). *The essence of things*. Vitra.

artefact is the product of human intentionality, but that intentionality is conditioned by the existence of precious objects. Baudrillard (1968), in the *System of Objects* pointed out that, 'Everything that cannot be invested in human relationship is invested in objects' (p. 4).

We admire objects to exhibit our keen interest in a specific style, message and movement, or simply to make a fashion statement. Admiration is heavily related to emotion and, according to Norman (2007)", there are three levels of the brain processing mechanism that relate to why we hate or love our objects. These are (i) the visceral level; the automatic and prewired layer, (ii) the behavioural level; the part that contains the brain processes that control everyday behaviour, and (iii) the reflective level; the contemplative part of the brain. These three levels can be represented by product characteristics as follows:

- i. Visceral design: Appearance
- ii. Behavioural design: The pleasure and effectiveness of use
- iii. Reflective design: Self-image, personal satisfaction, and memories

Norman (2004) concludes that a single product cannot hope to satisfy everyone. Makers interpret each level differently and users might misunderstand the makers' intention, and vice versa. Hence, this does not necessarily translate into preferences. These levels of description were sufficient to guide the researcher in choosing objects that elicit admirable components. However, admiration, in this context, relates to the objects one

admires and wishes to have; they do not necessarily function systematically⁵⁶ and they can also be quirky and kitsch.⁵⁷ Task 1 involved objects selected from an online design blog that had been seen in either a museum or a shop. The objects selected were compliant with Norman's visceral and reflective design rather than his behavioural design, but still relate to behavioural design through an understanding of the use of the objects and an association with existing objects the researcher already owns. The next task required the researcher to synthesise and stipulate the reasons for choosing each object. To recap, two types of justification have been established: (i) explicit justification and (ii) implicit justification.⁵⁸

⁵⁶ In this context, the researcher defined functional systematic objects as those that serve the apparent and intended purpose, for example; television, which is a medium to transmit information visually. Non-systematically functional objects, however, refer to objects that display many other admirable elements that invite audience/user/people to consume or purchase them. For instance, the same television could affect people differently as some may purchase it because colour with vintage inspires stylisation.

⁵⁷ A kitsch object is defined as one that holds a certain level of sentimentality for the owner even though it looks garish and gaudy. Kitsch is typically associated with collectible items or heritage objects that have been passed down through generations, as they often communicate our roots and thus this object becomes a precious object that one might admire.

⁵⁸ Explicit justification is a direct reflection that, without having to think about the ideas behind the objects the researcher can establish, to justify the whole selection based on the peripheral relationship between person-object transactions. Conversely, implicit justification suggests the values that have been embedded in the objects; the researcher needs to reflect on the indirect implication of own selection, synthesise it according to their tacit knowledge, and articulate it in the form of an implicit justification.

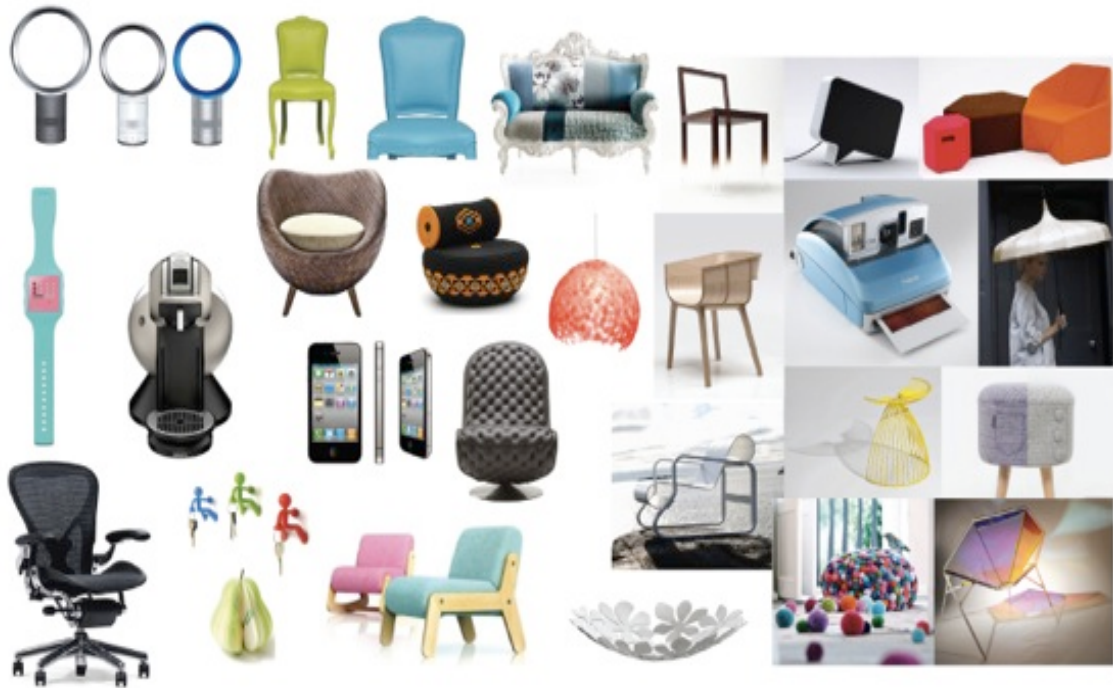


Figure 20: 30 admirable objects ⁵⁹(Researcher's collection, 2012)

Task 2: Possessions

“Looking around objects in your house, and deciding what are real things that have value to you, and that are holding some meanings implied in your life. Those are the true objects that reflect the true story of who you are and your narrative of story that you have been telling yourself because the feeling alone is what matters.”

(Walker, interviewed in 2009 by Gary Hustwit)⁶⁰

Baudrillard (1994) also states that:

It ought to be obvious that the objects that occupy our daily lives are in fact the objects of a passion, that of personal possession, whose quotient of invested affect is in no way inferior to that of human passion....In this respect, the objects in our lives, as distinct from the way we make use of them at a given moment, represent something much more, something profoundly related to subjectivity: for while the object is a resistant material body, it is also simultaneously, a mental realm over which I hold sway, a

⁵⁹ Figure 20: 30 admirable objects (Researcher's collection, 2012)

⁶⁰ Rob Walker interview in *Objectified: A Documentary* by Gary Hustwit. 2009. Things that really matter to us, will not easily be forgotten and in a time when we are required to pick out a few essential things that represent us, those things are resemblances of ourselves. They are important because they are a part of ourselves that we do not want to let go.

thing whose meaning is governed by myself alone. It is all my own, the object of my passion.

(Baudrillard, 1994, p. 7)

This task required the researcher to choose 30 possessions she could not live without. As a noun, possessions refer to the everyday objects the researcher has at home, which are bought and kept for several reasons, either because of their useful function or their aesthetically pleasurable qualities. This step was crucial in postulating the researcher's implicit justification. Embodying Merleau-Ponty's phenomenological understanding, the researcher needed to see each object, not as alone entity, but as a part of the total environment. She needed to understand the role of each possession she chose.

To see is to enter a universe of beings which display themselves, and they would not do this if they could not be hidden behind each other or behind me. In other words: to look at an object is to inhabit it, and from this habitation to grasp all things in terms of the aspect which they present to it.

(Merleau-Ponty, 1962, p. 79)

Task 2 was more complex than Task 1 as it involved objects that were present at home. These possessed the elemental values and idiosyncrasies that enabled them to dwell in the interior of the researcher's space; however, to select only 30 objects was a challenging task to undertake. The objects were then synthesised and justified (in the same way as for Task 1) but with more enriched details of the experience while using or owning them (Norman's behavioural level). Experience is one of the important elements of the researcher's justification for this task, echoed in Desmet and Hekkert's (2007) product experience framework, as it concerns the experiential component of the object. In Desmet and Hekkert's) framework, they focus on the affective product

experience and the processes that underlie these experiences. Their analysis is based on users' behaviour and the cognition involved in the users' affective experience of the human-product interaction (See Chapter 3)



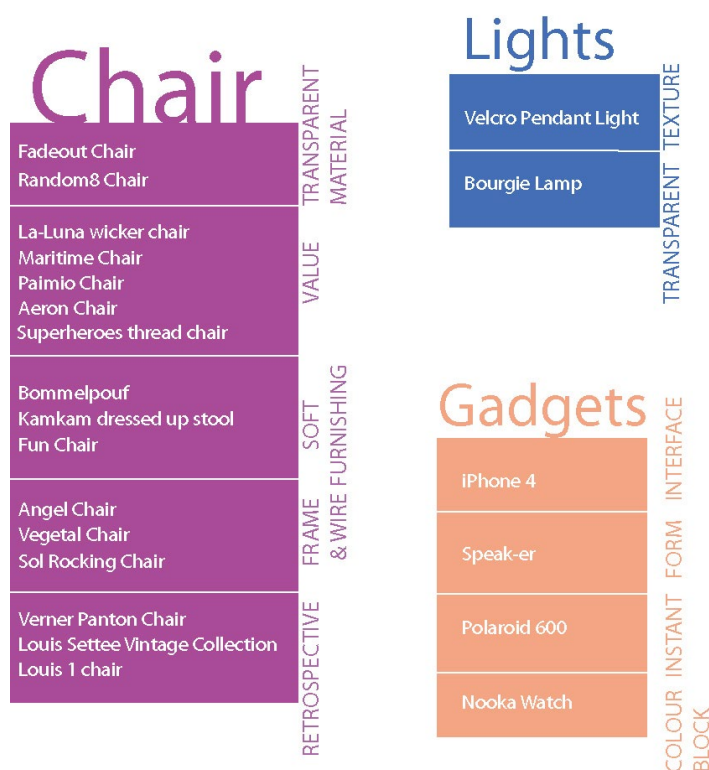
Figure 21: Image of possessions ⁶¹(Researcher's collection, 2012)

4.2.2.2 Typological Approach

Typology is the study of types and is used to classify products according to their characteristics. This type of study is applied when manufacturing designed goods in batches, resulting in various sets of identical objects and a series of objects with minor variations. The body of material is identified and coded and set categories are then used to examine them. The analysis presupposes that a theoretical question has been addressed concerning the material. After coding

⁶¹ Figure 21: Images of possessions (Sources: Researcher's collection, 2013)

the material inferences, interpretations and generalisations can be made. Such generalisation might not be new information but can be evidence adjacent to the existing impression (Walker, 1989). Edward Tiryakian (1968) defines type as its etymology, suggesting that it has resurrected general distinctive features that are not properties of the individual as such. Therefore, typology is close to morphology and the study of forms, and when we consider the totality of artefacts they appear to fall naturally into types: they are inductively arrived at rather than formally deduced a priori. After the completion of both Task 1 and 2, each object was sorted according to its general category. Task 1 was generalised to the Admiration type whilst Task 2 comprised two sets of types, Fundamental and Supplemental. Each generalisation was characterised within its own subset based on its obvious function and material qualities, for instance seating, gadgets, kitchen, and other relevant qualities.



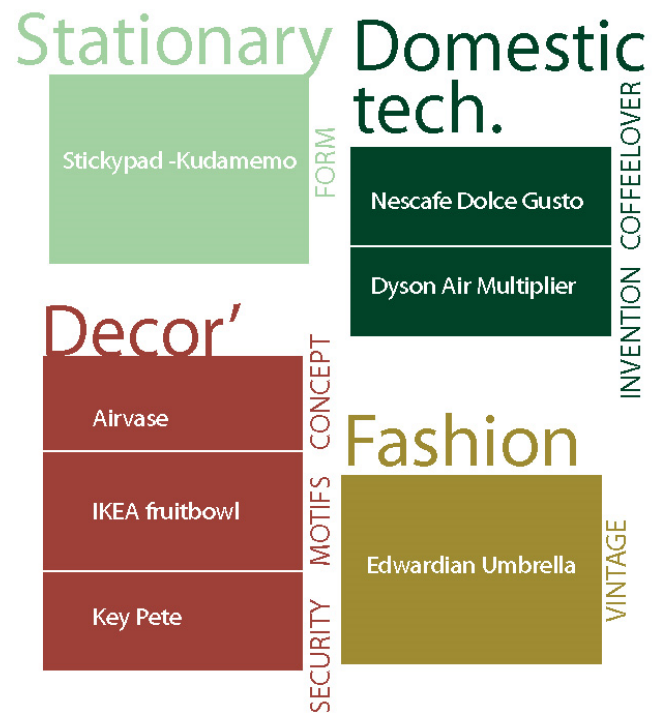


Figure 22: Task 1 admirable objects' category⁶²

⁶² Figure 22: Task 1 admirable objects' category (Source: Researcher's collection, 2013)

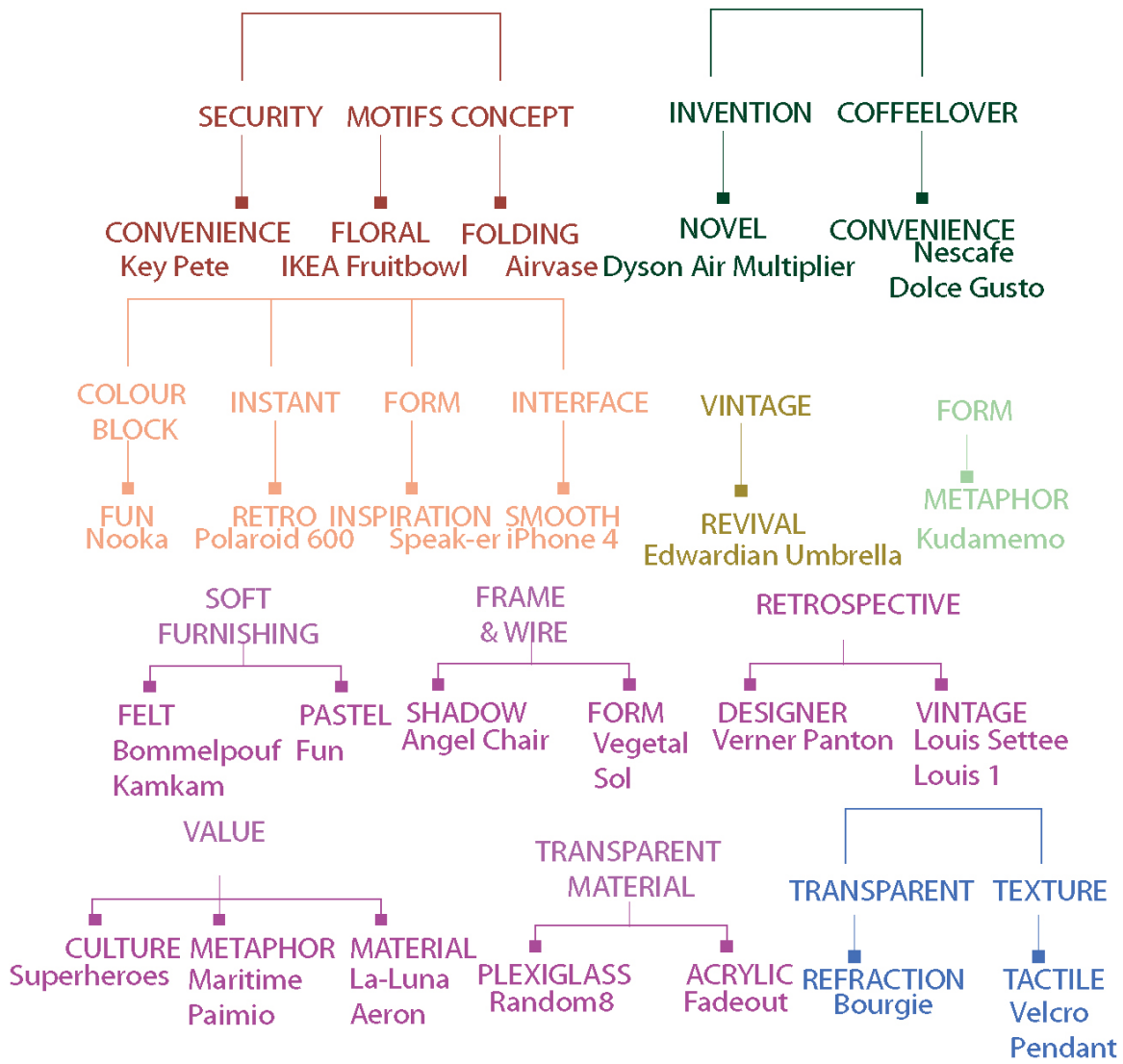


Figure 23: Task 1 admirable object's typology⁶³

⁶³ Figure 23: Task 1 admirable object's typology (Source: Researcher's collection, 2013)

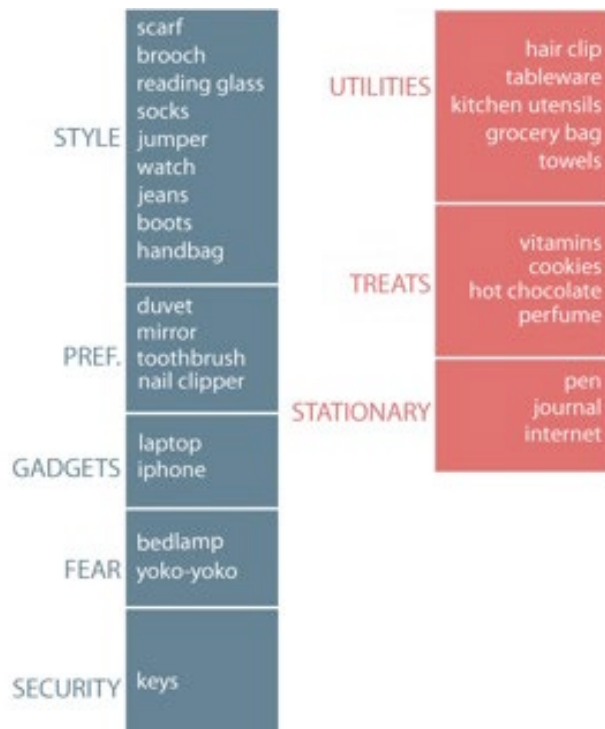


Figure 24: Task 2 possessions' category⁶⁴

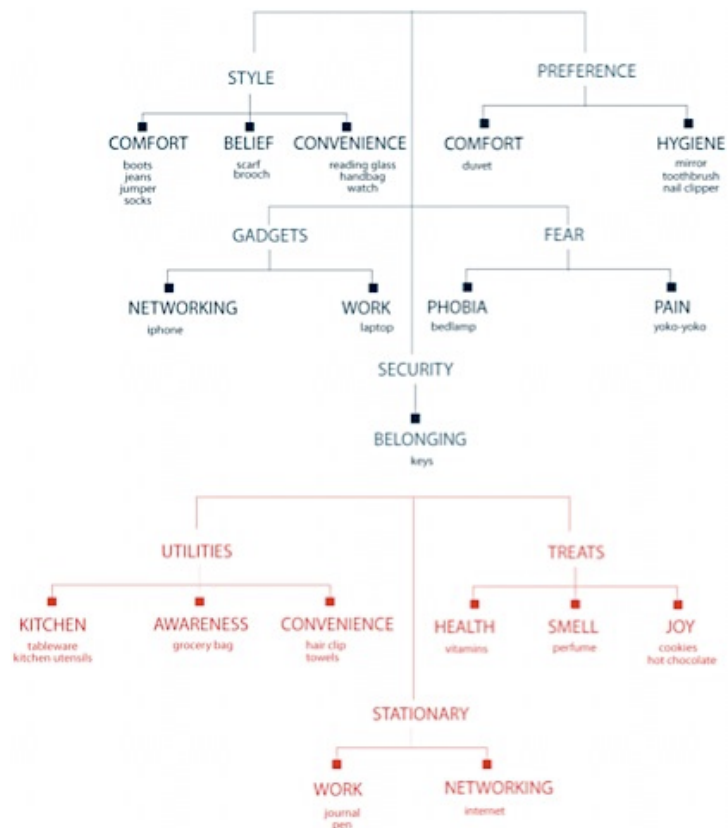


Figure 25: Task 2 possessions typology⁶⁵

⁶⁴ Figure 24: Task 2 possessions' category (Sources: Researcher's collection, 2013)

⁶⁵ Figure 25: Task 2 possessions' typology (Sources: Researcher's collection, 2013)

4.2.2.3 Keyword Coding: KJ Method

Jiro Kawakita, a professor from the Tokyo Institute of Technology, developed a brainstorming technique that allows an idea to shape its course according to the neutral facts and nuances of the situation (Kawakita, 1991). In Japan, this is known as the "kami-kire ho", which means "scrap paper technique" because originally Kawakita involved participants who wrote thoughts and ideas on scrap paper. The technique is commonly referred to in the West as simply KJ. Its aim is to synthesise different individual perspectives and experiences into a problem definition and solution. There are two types of activity in KJ: understanding and solving the problem. Understanding the problem is achieved by getting each contributor to get a sense of the essence of the problem in order to define it; whilst solving the problem involves encouraging all contributors to participate in suggesting solutions (Scupin, 1997).

The KJ Method was utilised for both tasks in this research. It was useful to bracket oneself as the researcher and also the studied subject. Random samples of people contributed keywords for the heuristic findings, which were based on the implicit and the explicit justifications. The keywords given can be an allegory of one's own experience or entirely unrelated to more contrast to the findings. After synthesising the keywords given by contributors, the researcher intervened by deciding upon the best representation of the objects admired.



Figure 26: Keywords collected from KJ Method for Task 1⁶⁶



Figure 27: Admirable simplified keywords⁶⁷

⁶⁶ Figure 26: Keywords collected from KJ Method for Task 1 (Sources: Researcher's collection, 2013)

⁶⁷ Figure 27: Admirable simplified keywords (Sources: Researcher's collection, 2013)

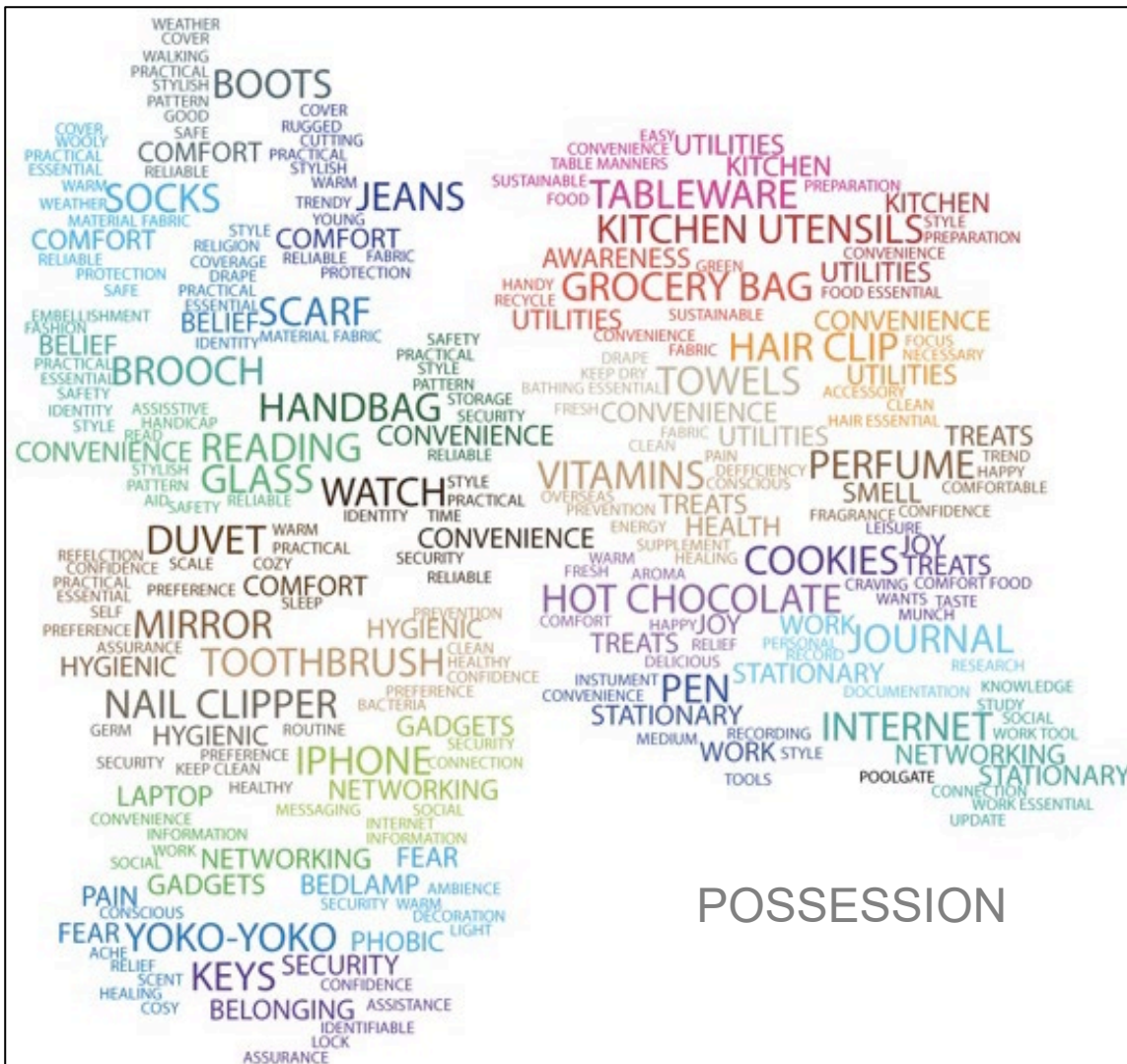


Figure 28: Keywords collected from random samples for Task 2⁶⁸

⁶⁸ Figure 28: Keywords collected from random samples for Task 2 (Source: Researcher's collection, 2013)

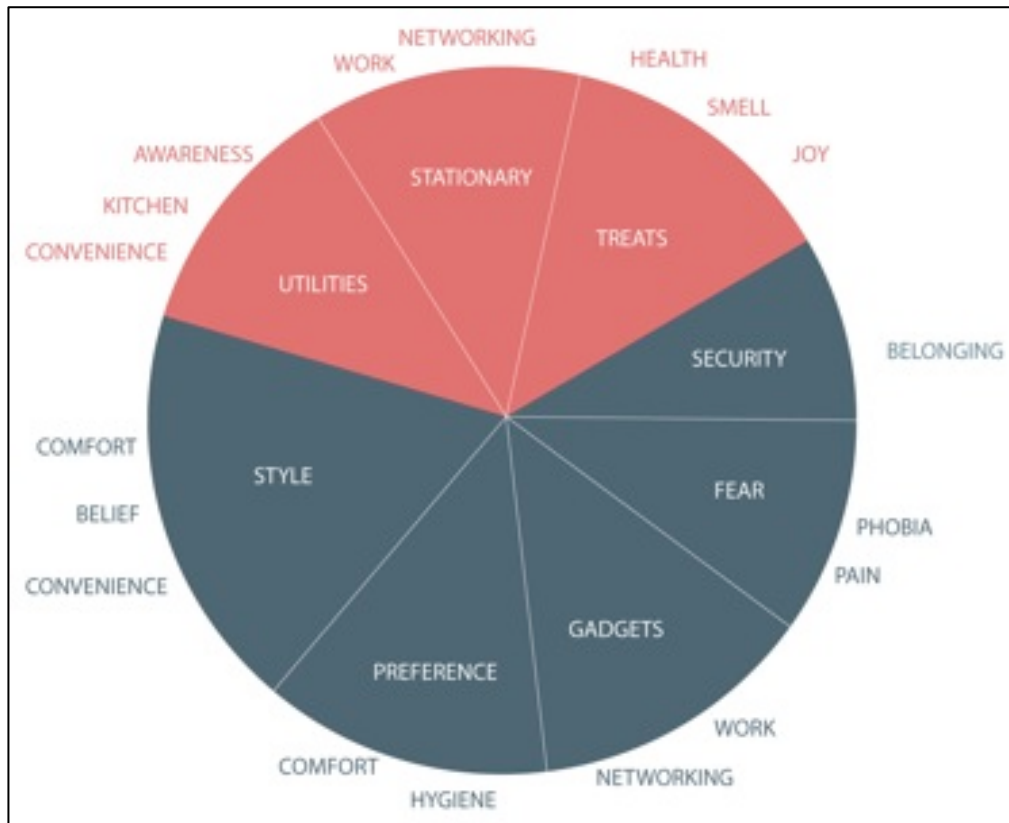


Figure 29: Possessions simplified keywords⁶⁹

Figures 26 and Figure 28 show the keywords that were collected using the KJ Method. Friends and colleagues were asked to contribute categories or words that generalise each object group. Because the researcher provided implicit and explicit justifications that describe her experience, the contributors' justifications enabled them to immerse themselves in the researcher's experience, thus providing concise keywords that captured the researcher's experience. By adding a layer of external information, the keywords were now more comprehensive but also more generalised. It was important for the researcher to refrain from scrutinising her objects from too narrow a perspective, as this would have prevented the keywords from expanding. Figures 23 and 29 also show a simplified version of the keywords that represent those collected from

⁶⁹ Figure 29: Possessions simplified keywords (Sources: Researcher's collection, 2013)

random samples in Figures 22 and 29. The keywords orbiting the pie chart circle are taken from the researcher's implicit and explicit justifications while the keywords inside the circle are the researcher's own synthesis of the keywords provided by the random samples in Figures 22 and 29.

4.2.3 Reflective Methodology

A reflective methodology is characterised by a recognition that all data is the result of interpretation and involves systematic reflection on the implications of such interpretation at several levels. It is a direction that the researcher took in order to comply with the auto-ethnomethodology utilised for this body of work. The tabulated data comprising contributors' efforts was interpreted and reflected on systematically in terms of the researcher's justifications. This praxis relied on the evidence collected in the literature review combined with the researcher's analysis. Therefore, it was important to include the researcher's insights whilst also remaining cognisant of others' opinions.

The researcher compiled a reflection on each object selected. Objects play a significant role in the formation of identity, and are material embodiments of cultural practices. One way to understand this is to characterise the trajectory of the designed objects. Objects follow an incredibly complex journey from their origins as immaterial concepts in the mind of designers, inventors, and engineers to their inevitable death and disposal into garbage bins or recycling containers. As they interact with several stakeholders through this trajectory of

production, distribution, and consumption, they acquire and discard multiple meanings. Each one of these activities signifies a unique culture; that of design and manufacturing, of sharing and exchange, of possession and use, and of waste and abandonment. Additionally, the meaning of each object is self-contained and content dependent, and specific to the researcher. From the object study task, the researcher developed a taxonomy of the objects in a linear form. The objects were dichotomised into two categories as follows:

(i) Possession

Possession was divided into the keywords and linked with the reflective methodology that described how the researcher understands the content of each object in relation to the existence of the other objects. The possession categories were dichotomised into two types: functional and supplemental. The types were defined based on their priority level and the relationship the researcher has with each object (which held the status of cannot live or do without). The objects were then linked with the relationships that were described as the keywords.

It is important to emphasise that there are boundaries defining how relationships overlap in order to ensure the information is a clear representation of the researcher's own emotion with the objects. Emotion is an affective phenomenon. It is used because it is a clear expression that can be used without requiring lengthy explanation and formulates the basis of this research domain, as objects are not static but dynamic stimuli (Demir, Desmet & Hekkert,

2009).⁷⁰ In addition, ownership involves emotional episodes that include both pleasant and unpleasant episodes. The experience of an object may vary within one and the same interaction. However, in this case, possession is appropriately described as the stimuli of a pleasant experience.

(ii) Admiration

Admiration is divided into several categories: (a) chair, (b) light, (c) stationary, (d) gadgets, (e) decoration, (f) domestic technology, and (g) fashion. The categories are theme-based in the obvious function type as a hint to the researcher's own reflection on their outside appearance and knowledge about the objects. Most of the admiration objects could not be categorised according to the researcher's relationship with them as the researcher does not own them and therefore has no real experience with them (except for the iPhone and the Kudamemo). Consequently, the objects were typified using the generic typological approach (as before). The objects were then connected with other objects through a reflection on the relationship that was previously synthesised. Thus, the relationship was now more transparent and well defined but remained vague in terms of its ability to answer the research questions.

⁷⁰ Dynamic stimuli refer to the fluctuating situation that an object might hold in a certain period of time. For example, currently we feel the need to own a car to commute but, in 10 years, there might be changes in the demand and supply of cars (the object) as we may no longer commute by car but by trains, or perhaps we may not need to commute at all.

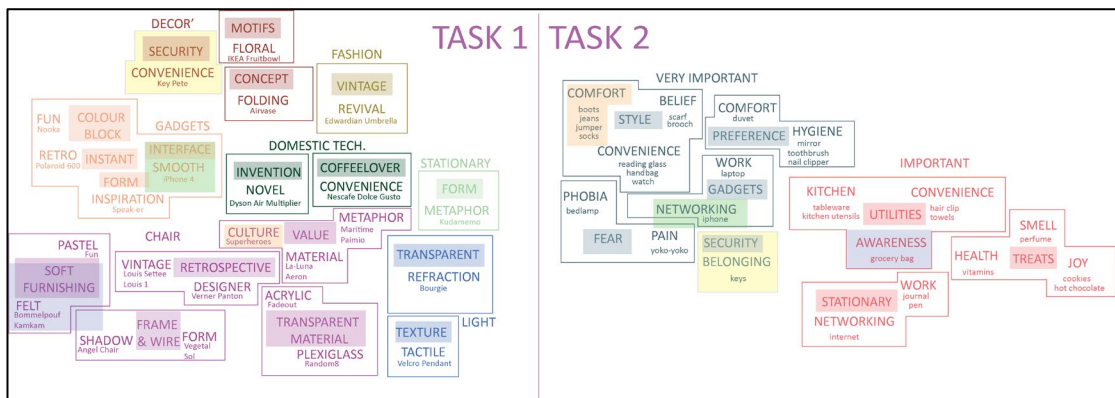


Figure 30: Shared keywords of possessions and admiration⁷¹

Figure 30 shows the keywords identified in both tasks (see Figures 22 to 30). Objects that share the same keywords are highlighted in coloured squares to mark their resonance. This presentation of the data helps to assist an analysis of the objects that uncovers the potential of materiality and experience as a tool with which to investigate the person-object relationship. Each object is connected to its related keywords. Keywords were developed from the reflection of the user (researcher) about the objects. Keywords that contain Fundamental, Supplemental, and Admirable elements are well connected with household objects and some of the objects shared the same elements. These elements can be assumed to be perpetual and not ephemeral as timelessness is one of the keys to innovation. In understanding the timelessness of why the object matters to the user (researcher), even though the function takes a different form, the keyword remains the same. For example, one object that has been addressed as a fundamental object is a key, and the keyword associated with this object is security. Security includes protection and safety. In years to come,

⁷¹ Figure 23: Shared keywords of possessions and admiration (Sources: Researcher's collection, 2013)b

the object might be different, for instance, a fingerprint lock, but the keyword remains the same, which is security.

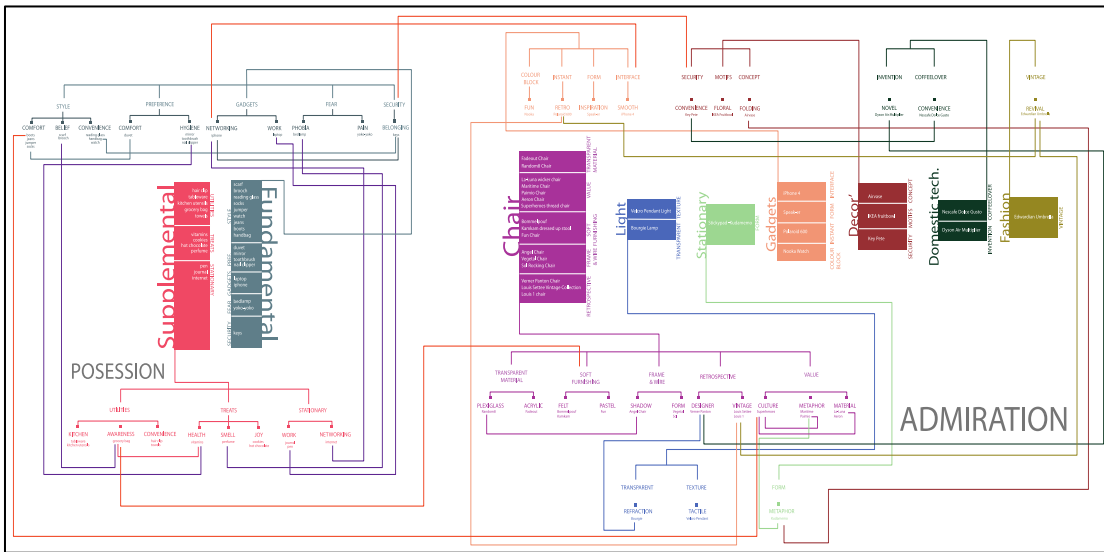


Figure 31: Linear tabulation of keywords and objects⁷²

The researcher systematically developed a linear map that provides a linear understanding of the relationship with the objects (Figure 31, refer Appendix A for larger illustration). From the linear map analysis, the materiality and experiential elements of the objects are easily read. Figure 31 shows the keyword for Task 2 in detail and the lines that connect each keyword represent the relationship each object embodies with the researcher’s justification. Experience, in this context, is evident in the relationship. For example, the researcher chose a fabric grocery bag as one of her possessions as it represented her advocacy of Reuse, Reduce and Recycle awareness.⁷³ This object represents an ideology and belief that the researcher supports. Rather than using plastic carrier bags, the researcher chooses to use her own grocery

⁷² Figure 31 Linear tabulation of keywords and objects. (Source: Researcher’s collection, 2013)

⁷³ The three R’s - reduce, reuse and recycle awareness is a campaign that promotes minimising the amount of waste we throw away. They conserve natural resources, landfill space, and energy.

bag which is made of non-woven re-usable polypropylene (NWPP).⁷⁴ The grocery bag was placed into the utilities category, which means that it is frequently used and is highly significant to the researcher.

In Figure 32 the grocery bag is connected to the multi-vitamins in that both objects are equally significant in their ability to keep the researcher 'healthy'. The grocery bag that promotes green living keeps the earth healthy while the vitamins keep the researcher healthy. However, materiality, which is not restricted to the physical characteristics of the bag, could also be seen from the perspective of how the bag actually came to be in the researcher's possession. The researcher bought the bag as a memento of her visit to the Tate Britain in London, and came in a choice of two colours; teal green and black. The researcher chose the black one for the versatility of the colour and the stain-free qualities a black bag possesses. The shape of the bag, which is square, is ideal for carrying books, whilst the long handles allow the researcher to carry a heavy load without any difficulty.

⁷⁴ This material is defined as a web or sheet of polypropylene fibres bonded together by entangling fibre or filaments mechanically, thermally, or chemically. They are flat, porous sheets that are made directly from separate fibres, not by weaving or knitting, and do not require converting the fibres to yarn. Nonwoven polypropylene bags promote a greener earth because they are reusable, easy to clean, recyclable, and sometimes made with recycled products. These bags can be quickly wiped clean, and some of them are machine washable in cold water if they are drip dried

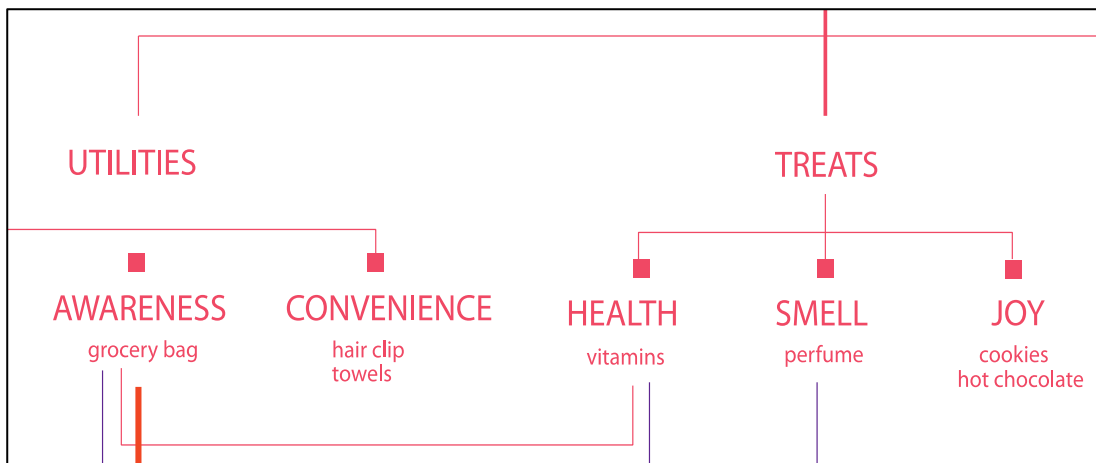


Figure 32: Relationship of objects in keyword format

4.3 Analysis

There are several methods, theories, and instruments underpinning the analysis of these objects. From the original thinking to the visual analysis, the researcher has carefully embarked on each journey in order to explicate the person-object relationship. Experience is not a property of the product but the outcome of a human-product interaction; it is therefore dependent on the temporal and dispositional characteristics the user brings to the interaction. People differ from one another with respect to their concerns, motives, abilities, preferences, and goals, and therefore with respect to their affective responses to a given event (Desmet & Hekkert, 2007). Referring to the overarching research methodology employed, this is qualitative research and therefore relates to ontological issues (relates to nature and characteristics of reality). Experience (as prescribed by owning and admiring objects) is then translated from the phenomenological lens in the study in visual formats. Both the subjective experience of a

phenomenon and the objective experience of something are common among people (Moustakas, 1994).

4.3.1 Interpretative Phenomenological Analysis

Interpretative phenomenological analysis is a specific hermeneutic version of phenomenology. The aim of interpretative phenomenological analysis (IPA) is to explore in detail how participants make sense of their personal and social world, and the principal focus of an IPA study is that of the meanings particular experiences, events and states hold for participants. The approach is phenomenological in that it involves a comprehensive examination of the participant's lived experience. It attempts to explore personal experience and is concerned with their personal perception or account of an object or event, as opposed to an attempt to produce an objective statement about the object or event itself (Smith & Osborn, 2003, 53)(see Figure 31).

The owned and admired objects have projected the researcher's self through their form. Experience is well connected with this body of work, and thus the researcher attempted to diversify the findings by studying other people's experiences. As a designer, the researcher's tacit knowledge, experience, and familiarity with the objects were semantically synthesised according to her own interest and understanding. First, through phenomenological analysis, the researcher aimed to grasp her own emotive experience of the everyday objects and translate this into a working framework. Phenomenological analysis is

related to the space-time structure originally developed by Merleau-Ponty (see Chapter 3), whereby several participants were asked for descriptions of the phenomenon being investigated, and each gave a response according to their standpoint and their perception (Sadala & Adorno, 2002). However, different people's perceptions, at different times and places, provide several different perspectives of a phenomenon, which can cross each other through the process of inter-subjectivity and present common meanings that enable us to understand that phenomenon's structure.

When the researcher then makes a phenomenological interpretation of the data, the structure of the phenomena is understood from within the researcher's own perspective, scientific knowledge which is another perspective, field, and horizon. This interpreted data allowed her to reach a specific field of generalities, which we can say belongs to the general structure of the phenomenon. The phenomenon therefore depends on that particular person's perspectives. As something that alternatively shows and hides itself, it shows itself to whoever perceives it according to human perception, which means one's perception from different standpoints in time and space. One could say that a phenomenon is never seen in its totality, because this would be an abstraction; the convergence of several perspectives, however, leads us to perceive a phenomenon's structure. Employing such an approach, the whole scientific universe has been built up from the perception of the lived world and thinking with scientific rigour. It is first necessary to review experiences in the lived world from which science is the second expression.

How things were meant to turn out' and 'how it will all finish'; each present permanently, underpins a point of time which calls for recognition from all the others, so that the object is seen at all times as it is seen from all directions and by the same means, namely the structure imposed by a horizon. The present still holds on to the immediate past without positing it as an object, and since the immediate past similarly holds its immediate predecessor, past time is wholly collected up and grasped in the present.

(Merleau-Ponty, 1962, p. 79)

Therefore, through the lens of phenomenology, the researcher built the keywords pre-reflectively, as shown in Figures 22 - 24. These keywords embody the understanding of the researcher's own experience, with the opinions of outsiders used as pointers in deciding upon one concise keyword that represents each group of objects. These well-filtered keywords were synthesised with the researcher's own knowledge of materiality and experiential element of objects, combined with the general knowledge outsiders have about the objects.

4.3.2 Mapping the Complexity of Objects through Visual Analysis

Possessions are complex as they are connected with other adjacent views, and it is more convenient to visualise the relationship with these possessions by mapping the connection through visual means. These connections are in fact captured by the keywords provided in the simplified keywords figure (See Figure 23 and Figure 25). Manuel Lima⁷⁵ developed a method to capture the

⁷⁵ Manuel Lima, a leading voice on information visualisation, has spoken in numerous conferences, schools and festivals around the world, including TED, Lift, OFFF, Eyeo, Ars Electronica, IxDA Interaction, Harvard, MIT, Royal College of Art, NYU Tisch School of the Arts, ENSAD Paris, University of Amsterdam, MediaLab Prado Madrid. Manuel has also been featured in various magazines and newspapers, such as Wired, New York Times, Science, BusinessWeek, Creative Review, Fast Company, Forbes, Eye, Grafik, SEED, Étapes, and El

complex networks through visual exploration by mapping (Lima, 2014). Visual mapping is a critical step in information visualisation, where data finally comes to life through a deliberate visual form. It takes into consideration key factors such as top-to-bottom hierarchy, colour, legibility, typeface, contrast, spacing, position, size, shape, orientation, layout, and depth. Lima is one of the important figures in the field who suggests there a structural foundation is needed to visualise the information. Lima asserts that, in order for information visualisation to take the next step and grow into a cohesive field of study, it requires the consolidation of three critical components:

(i) Theory

Assemble a clear fundamental theory and develop the ability to combine knowledge and insights from a variety of disciplines, which will aid the visualisation.

(ii) Taxonomy

According to Chen (2006) 'a taxonomy of information visualization is needed so that designers can select appropriate techniques to meet given requirements' (p. 27). This is meant to be expansive and is fixed and definite.

(iii) Evaluation

Provide easy evaluation methodologies for existing tools and approaches. Information visualisation requires a common rule system that can accordingly distinguish the good from the bad, the

Pais. His latest book *Visual Complexity: Mapping patterns of information* has been translated into French, Chinese, and Japanese. Information retrieved from <http://www.mslima.com/myhome.cfm>

appropriate from the inappropriate, the usable from the unusable, and the effective from the ineffective.

Based on these insights, Ian Dapot (2005) visualised this type of information perfectly. Dapot's work, *The Force of Things*, is derived from Jane Bennett's essay, *The Force of Things: Steps Toward an Ecology of Matter*. Dapot employed Bennett's arguments as the axis (i: Theory) for his visualisation. He developed Bennett's theory into connection (ii: Taxonomy) that he investigates and then clarifies each connection by referring (iii: Evaluation) to the visual maps. Dapot (2005) explained that:⁷⁶

I tried to demarcate the territory of each cited author or work to show how Bennett's thinking and arguments were constructed. I tried to clarify the connections between each author and make reference to the visual language of maps. I then worked on a typographic layout for the title and masked off the intersections of the connections and the typography.

(Dapot, 2005; *The Force of Things*)

Dapot visualises the text of Bennett's essay and the graphic elements underpinning the artwork have elevated the standard mind map we usually construct when summarising books or articles. Furthermore because he understands the theory, Dapot's work translates Lima's three components in his work so well that he develops a taxonomy out of this and draws connections that evaluate the texts and his own analysis. Lima's three components inspired the researcher's mapping visualisation, and hence enriched the structure of the maps.

⁷⁶ Ian Dapot's work was the Winner of an Honorable Mention at the 2005 Adobe Design Achievement Awards, **The Force of Things** is a series of posters (24 x 32 inches - 61 x 81 cm) based on mapping the relationships between cited authors and referenced ideas in Jane Bennett's essay, *The Force of Things: Steps Toward an Ecology of Matter*.



Figure 33: Dapot's visual mapping⁷⁷

⁷⁷ Figure 33: Retrieved from (<http://visualcomplexity.com/vc/project.cfm?id=534>)



Figure 34: Dapot's visualisation with write-up keywords⁷⁸

⁷⁸ Figure34: Dapot's visualisation with write-up keywords Retrieved from (<http://visualcomplexity.com/vc/project.cfm?id=534>)

4.3.3 Theoretical Intervention in Visual Mapping: System of Objects

Phenomenological methodology can be analysed by reducing the information to significant statements and combining these into themes. Each theme then develops a textural description of experience (condition, situation) and a combination of the textural and structural descriptions convey an overall essence of the experience (Moustakas, 1994, p. 80). Further investigation through the use of mapping revealed that the keywords were groundless; therefore, to locate specific points to anchor the relationship, the researcher needed to develop a concrete axis for the findings. As Lima emphasises, a theoretical framework is required to form the basis of the visual analysis. Baudrillard's System of Objects has generously influenced the visual analysis. Baudrillard (1968) claimed that objects are categorised into four systems: (i) Functional, (ii) Non-functional, (iii) Metafunctional, and (iv) Socio-ideological:

(i) Functional

Colours, forms, materials, design, and space are functional. Function suggests that the object fulfils itself in the precision of its relationship to the real world and to human needs. An object's functionality is the very thing that enables it to transcend its main function in the pursuit of a secondary one, to play a part, to become a combining element, an adjustable item, within a universal system of signs. Functional objects depend on their various properties such as colour and form

and they no longer have value of their own, as they are merely a universal sign (Baudrillard, 2005, p. 68).

(ii) Non-functional

There is a whole range of objects including unique, baroque, folkloric, exotic, and antique objects that seem to fall outside the system. They appear to run counter to the requirements of functional calculation, and answer to other types of demands such as witness, memory, nostalgia, or escapism. It is tempting to treat them as survivors from the traditional, symbolic order. Yet for all their distinctiveness, these objects do play a part in modernity, and that gives them a double meaning (Baudrillard, 2005, p. 114). Symbolic and kitsch objects are among those the researcher would ally with the system.

(iii) Metafunctional

The principal basis of this system would appear to be the official, obligatory, and supervised demise of the objects it comprises: a gigantic collective 'happening' whereby the death of the group itself is celebrated through the euphoric destruction or ritualistic devouring of objects and gestures. With the advent of our consumer society, we are seemingly faced with an irreversible and organised attempt to swamp society with objects and integrate it into an indispensable system designed to replace all open interaction between humans (Baudrillard, 2005, p. 114). Based on Baudrillard's insight, the researcher typified gadgets and electronic objects that utilise interfaces and technological advancement as objects that mediate an "open interaction between human."

(iv) Socio-ideological

The psycho-sociological dynamic of a model and series does not, therefore, operate at the level of the object's primary function, but at the level of a secondary function, at the level of the personalised object. The objects in this system do not structure social relationships but break them down into a hierarchical repertoire; a status. It is a system of identification in which the signs of value are entirely socialised and objectified (Baudrillard, 2005, pp. 210-215).

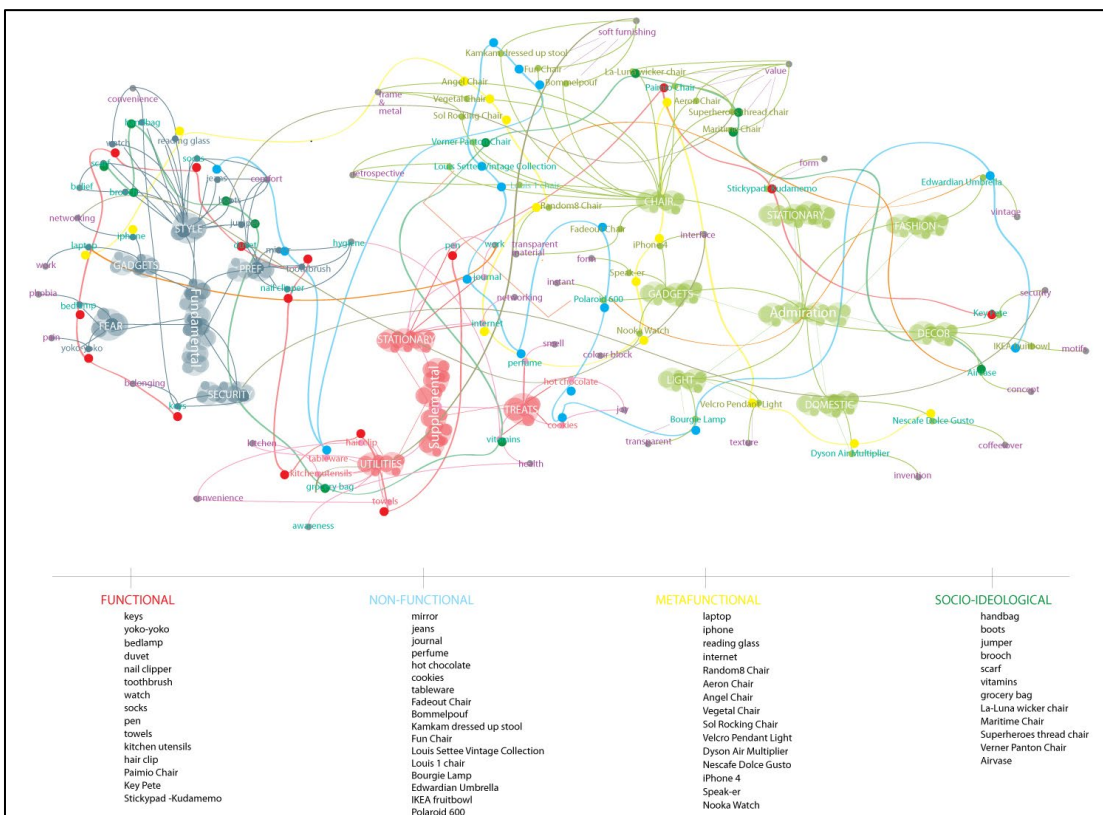


Figure 35: Visual analysis based on Baudrillard's System of Objects (SEE Appendix B for larger illustration)

Figure 35 presents the visualisation in coloured areas to mark the area of objects that belong to Baudrillard's four systems of objects. Red represents the Functional objects, such as socks, a hairclip, and the Paimio chair. Blue stands for the Non-functional objects, such as a mirror, perfume, and the fun chair,

while yellow denotes the Metafunctional objects such as a laptop computer, the Internet, and the Dyson air multiplier. Finally, green signifies the Socio-ideological objects, such as a handbag, a brooch, and the La Luna chair. The researcher connected each object with the colour framing to enable readers and viewers to experience the journey of 'making sense of each object'. Figures 3 and 6 - 40 then visualise each coloured continent in its own highlighted version. These objects are personal and signify a very subjective yet deeply meaningful relationship with the researcher. By bringing out the coloured continents in a lucid manner through this mapping, readers and viewers can refer to and understand the experiential and materiality elements underpinning the researcher's analysis of her objects.

Figure 41 presents another variation of the visual mapping in a triangular format. The triangle represents the direct connection between Fundamental, Supplemental, and Admirable elements in objects. A derivative of Figure 42, this analysis is still based on Baudrillard's system, but it is visualised in a different style to allow readers and viewers to see the map in a different form. Overall, 16 functional objects have been identified (the objects that are marked in red dots), 17 non-functional objects (the objects that are marked in blue dots), 15 metaphysical objects (the objects that are marked in yellow dots), and 12 socio-ideological objects (the objects that are marked in green dots). The lines are translated as the relationship the researcher has with the objects and are explained by the keywords orbiting the objects. However, the relationships drawn on the map were based on Baudrillard's system of objects developed in the late 1960s. Although Baudrillard's perspective is timeless,

object ontology has grown so much since that epoch and therefore the researcher will shed new light on this mapping; a new theory to support the analysis that still retains the mapping style of Lima.

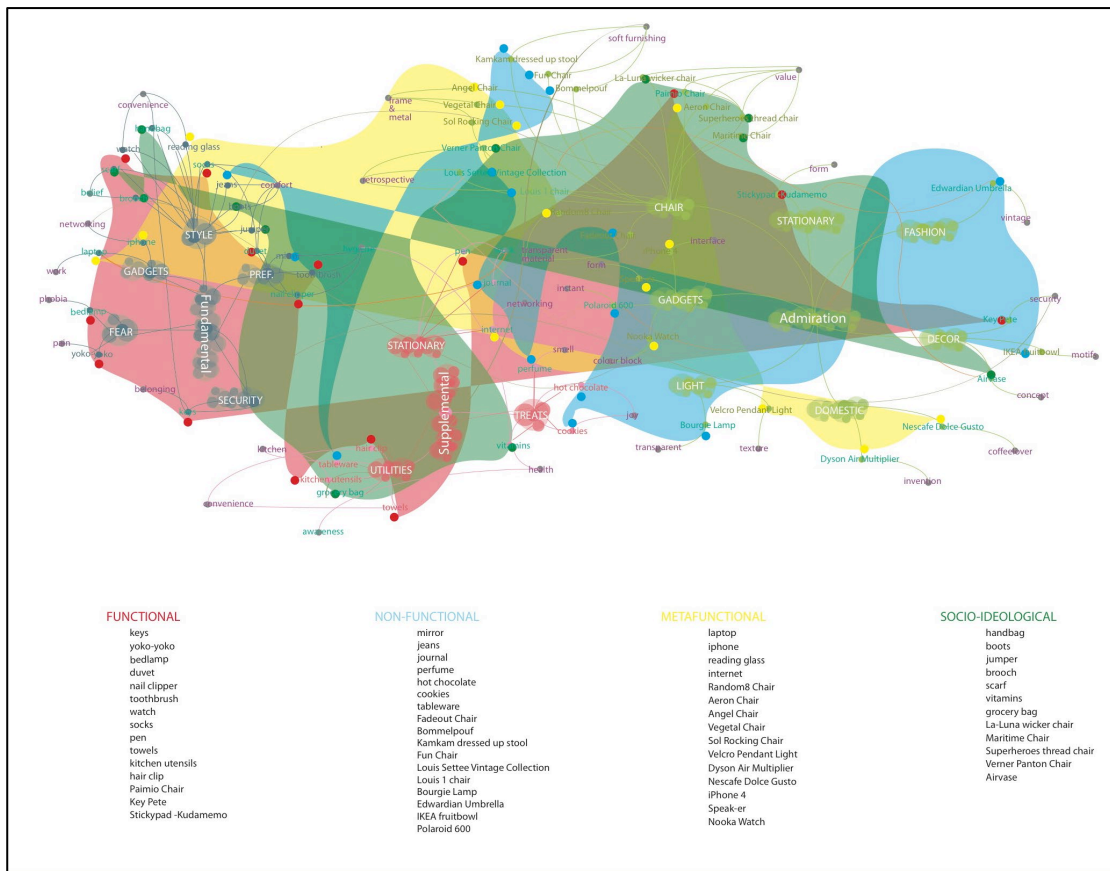


Figure 36: Visual analysis rendered in coloured shade⁷⁹

⁷⁹ Figure 36: Visual analysis rendered in coloured shade (Source: Researcher's collection, 2014)

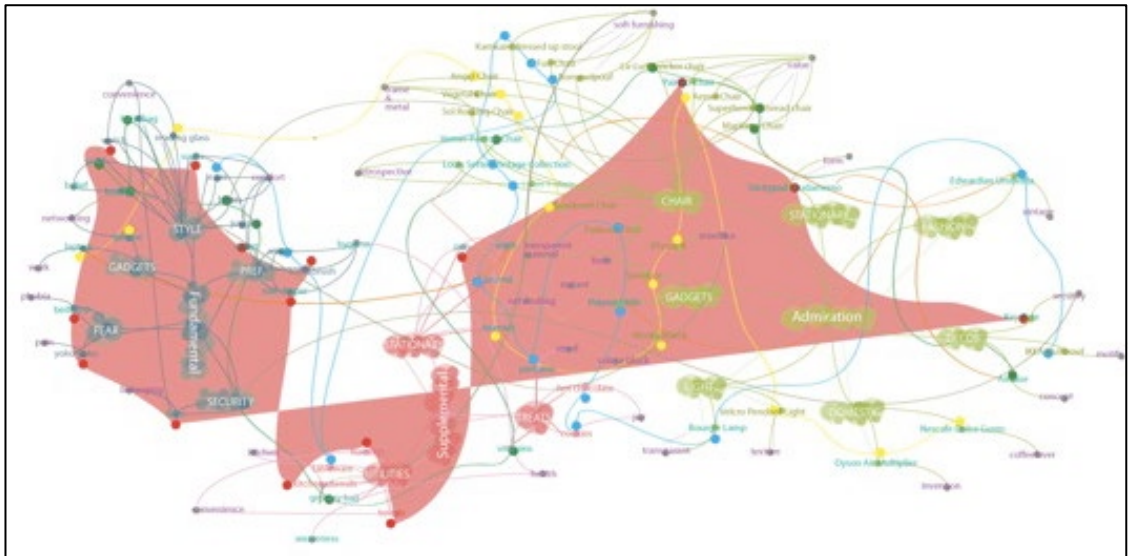


Figure 37: Red continent that represents Functional Objects⁸⁰

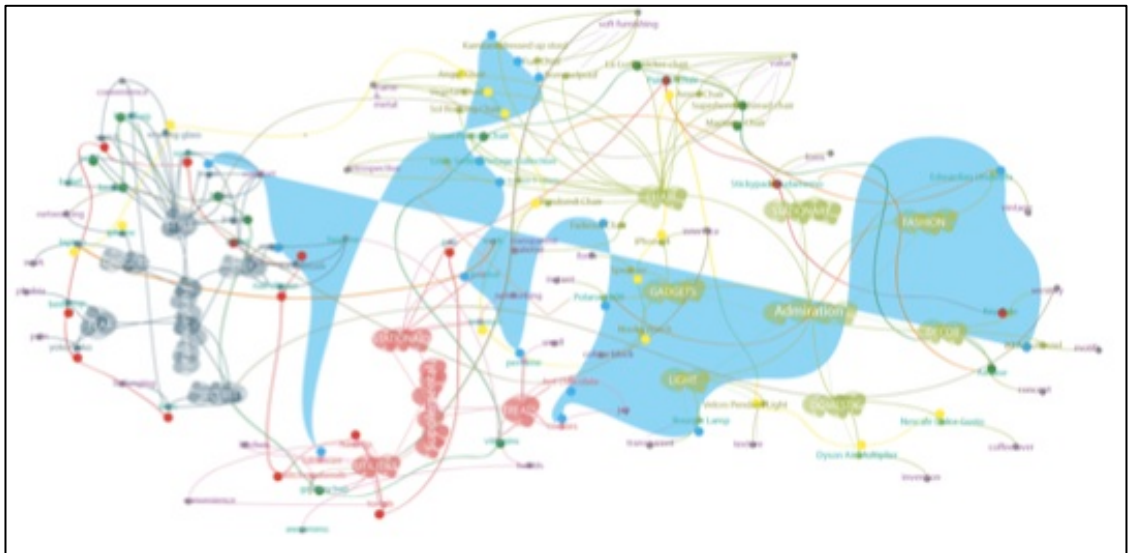


Figure 38: Blue continent represents the Non-functional Objects⁸¹

⁸⁰ Figure 37: Red continent that represents Functional object. (Source: Researcher's collection, 2013)

⁸¹ Figure 38: Blue continent represents the Non-functional objects. (Source: Researcher's collection, 2014)

to the cognitive perspective, object experience can be analysed through an understanding of the processing levels in the brain.

4.5 Three Levels of Processing

Norman (2004) provides interesting insights into how brain processing relates to why we hate or love various objects. There are three levels of the brain processing involved: (1) the visceral level; the automatic and prewired layer, (2) the behavioural level; the part that contains the brain processes that control everyday behaviour, and (3) the reflective level, the contemplative part of the brain (see Task 2: possessions). Norman's insights relied heavily on the emotional responses, moods, traits and the personalities of the people that took part in his study. He asserts that emotions only last for a short period, whereas moods last longer. However, traits are much more enduring and can last for years, while personality lasts a lifetime. However, all are subject to changeable as there are many variables that influence personality. Family, friends, culture, education, and lifestyle are among the factors that can alter these variables .

Norman (2004) provides a short explanation of how the three levels of processing in fact work in everyday routines:

At the visceral level, people are pretty much the same all over the world. Yes, individuals vary, so although almost everyone is born with a fear of heights, this fear is so extreme to some people that they cannot function normally – they have acrophobia. Yet others have only mild fear, and they can overcome it sufficiently to do rock climbing, circus acts, or other jobs that have them working high in the air. The behavioral and reflective levels, however, are very sensitive to experiences, training, and education. Cultural views have huge impact here: what one culture finds appealing, another may not. Indeed, teenage culture seems to dislike things solely

because adult culture likes them.

(Norman, 2004, p. 10)

Norman (2004) investigates objects from standpoint of neurobiological emotion theory while Desmet & Hekkert (2007) discuss objects from a cognitive psychology perspective. These levels of brain processing and the product experience framework will provide the basis for the next visual analysis, not just for their contemporary nature but also because of ability to nourish the previous analysis developed by Baudrillard. It is not the researcher's intention to compare these theoretical understandings of objects, but to allow the map to grow to elucidate the outcome of the relationship. It is best that the relationships are analysed holistically, from the standpoints of philosophy, psychology, and design. The visual analysis of object will further explore these frameworks by locating the objects within them.

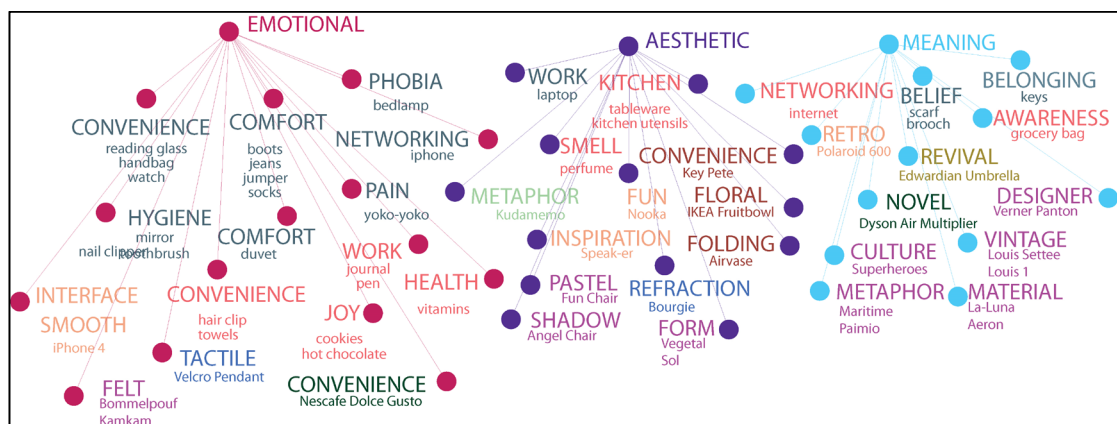


Figure 42: Mapping based on the product experience framework⁸⁵

Figure 42 presents the visual analysis developed using Desmet and Hekkert's framework in conjunction with an inherent understanding of Norman's three level of processing. The three levels of product experience provide a basis for

⁸⁵ Figure 42: Mapping based on the product experience framework (Source: Researcher's collection, 2015)

the taxonomy of the objects, which researcher grouped according to the categories specified earlier: aesthetic, meaning, and emotional. The keywords from previous exercises retain their significance as the researcher sorted the objects based on the emotional responses that were articulated in the keywords provided. Figure 42 also illustrates the relationship between these emotional, aesthetic and meaning levels in a free form format. It is imperative to include insights from Norman's theory in the map but not to articulate these in a visual way as the three levels of processing are seemingly embedded in the researcher's understanding of both her own possessions and the objects she admires. It is fair to say that the researcher has carefully adopted Norman's theory during the selection of the objects for Task 1 and Task 2.

Visceral, behavioural ,and reflective levels are all well documented in her photo journal study, where the researcher has stated the reasons why she has chosen the objects, what emotions have been elicited, and the reflective meaning that the objects might hold for her. Figure 43 shows the areas that share the same relationship, that of convenience, and these are mapped in a green hue. The researcher elicits this emotional response "convenient/convenience" while admiring or owning these objects. It seems that "convenient/convenience" manages to encompass all three levels of experience and delivers a similar experience to the researcher regardless of the type of object.

4.5.1 Convenience-ness in objects

Universally, we are attracted to beautiful objects for their beauty and for the pleasure they might provide us with, either through their visual or functional qualities. Some objects are designed to make us feel good about ourselves such as perfume. Furthermore, we as humans are far more prone to the attraction of “convenience” that the objects have to offer. Convenience takes many forms, such as ease of use, essential function, or by simplifying our daily chores. The map in Figure 44 assisted the researcher in visualising the experience while admiring or owning the objects. Objects are inanimate, but they possess traits that provoke us to elicit emotions when we look at, interact with, or use them. The map shows visualised resonances between the objects keywords (see Figure 27), where the shaded coloured shapes are representative of the resonance each keyword holds. The objects then interlaced with the keywords and formed similar emotional responses.

Figure 44 shows the keyword 'convenience' that is frequently coded. The respondent elicited this emotion when interacting, using, owning, or admiring the chosen objects. 'Convenience' appeared to be coded in all three experiences. For example (see Figure 36), the laptop computer from the Aesthetic zone, the Dyson Air Multiplier from the Meaning zone, and the watch from the Emotional zone are among the objects that belong to the 'convenience' keyword. In Figure 36, the laptop (from Task 2 objects) is coded as very important and one of the working tools. It is in the Aesthetic zone as the respondent chose the laptop computer not just for its workability and

performance but also for its beauty and its translucent finish. The respondent elicited the convenience emotion because the laptop enhanced her working experience, either due to its performance and its user-friendly operating system or just because it made everything simpler and more convenient. In comparison, in Figure 36 the Dyson Air Multiplier (from Task 1) is coded as novel and as an invention. For its genuine and innovative design, it is marked in the Meaning zone. Imagine a fan without blades and the cooling air supplied from the uniquely motorised system. These admirable qualities provoked the respondent to elicit the convenience emotion. The watch (from Task 1) is coded as both convenience and style in Figure 36. The respondent chose the watch because it is important to tell the time and also to project the part of her personality that is concerned with time management. It is marked in the Emotion zone, as the watch reflects her personal values; hence, the respondent elicited the convenience emotion as it keeps her well informed about the time.

Furthermore, Figure 44 shows that the “convenience” areas consist of three types of objects: Fundamental objects, Supplemental objects, and Admirable objects. The researcher also identified the three components (keywords) of the object’s “convenience-ness”: essential, technological advancement, and enhancement. These components are in fact attached to each type of object. In light of the object’s “convenience-ness”, the experiences that underpin each type of object are clearly tallied with the components discussed, as follows:

- i) Essential: **Fundamental objects** (Emotional experience)
- ii) Enhancement: **Supplemental objects** (Aesthetic experience)

- iii) Technological Advancement: **Admirable objects** (Experience of meaning)

4.6 Essence of the Objects:

Values: Fundamental value

This value refers to the importance of an object. This attribute acts as a self-image, it portrays the main intention of the object and most of all it presents the solution to the design problem. This value is generally related to functional, pleasant, and secure comfort experiences. The category comprises objects that the researcher could not do or live without. Without them, she loses herself, her daily chores would be incomplete and life would not be the same. Having these objects ensures the researcher has a sense of security, comfort, safety and belief. This category has the potential to be developed as one of the general criteria for objects, as 'fundamental' holds a value that every object should have, 'important-ness'. The essential-ness of these objects has greatly influenced the researcher's emotional experience whilst owning or admiring the objects. (Without these objects, she would feel incomplete and burdened by chores).

In addition, fundamental objects do not exhaust their experience horizon with pleasant and comfort responses, but they should be efficient in performing their jobs and as tools with which to enhance the quality of one's life, even from a micro perspective, such as an item like a toothpick. Although a toothpick was not

selected as one of the 30 objects, it is a useful example to describe the fundamental object in this context. A toothpick does not exhaust its purpose as a tool to clean our teeth, its thin and disposable design allows the user to discreetly clean their teeth behind the palm of their hand. It is also an allegory of a person who is obsessed with oral health, and a manifestation of someone who is willing to spend money on additional dental products. However, having a toothpick available after a meal is a pleasant and comforting experience, especially when there is a chunk of meat stuck within the cavity of your teeth.



Figure 45: Toothpick⁸⁸

⁸⁸ Figure 45: Retrieved from (Sources: <https://everyrecordtellsastory.files.wordpress.com/2014/04/toothpick-held-in-hand.jpg?w=300&h=225>)

Values: Supplemental value

A supplemental value makes life easier; it simplifies our chores and ensures that life is more enjoyable. This value includes the elements of pleasantness, aesthetics and pleasure; it offers added value to our life whilst resonating with the fundamental value embedded in the object. Supplemental objects are typically associated with the aesthetic appeal of an object as this trait evokes the aesthetic experience of the object. Enhancement is imperative as it segregates society into different classes, it can also symbolise status and can be highly influential. Consumer moguls gain most from marketing an aesthetic experience to users as it is human nature to be labelled, whether we realise it or not.

Labels are not only a way of denoting rich and poor, certain labels and marketing will appeal to other types of consumer such as green consumers and anti-animal testing consumers. These objects cater for this need, which reflects a desire to be different either in a noble or sophisticated way. 'Toms' offers an excellent example whereby the founder had a vision of donating a pair of espadrilles to Argentinean children each time consumers purchase a pair. This makes the purchase a meaningful act of kindness because consumers make charitable gestures to the poor at the same time as purchasing a pair of espadrilles for themselves. The shoes are also well designed and very comfortable to wear.



Figure 46: Toms shoes⁸⁹

Values: Admirable value

Admirable value comprises elements of amazement, wonder and exquisiteness that allow the designed object to set itself apart from other more mediocre objects and thus becomes somewhat unique. While the object will not be liked by everyone, it will be adored by some. This object can be a novel invention that inspires interest in onlookers. Admirable objects often use some form of technological advancement. In contemporary society, we are aware of the rapid development of technology and companies use this as a strategy in their marketing, urging consumers to upgrade their old technology and purchase the

⁸⁹ Figure 46: Toms shoes campaign (Sources: <http://shop.nordstrom.com/c/all-toms?campaign=0229boutiquep01>)

latest 'must have' gadgets. Gadgets are not simply wonders, their potential to exist in our modern world is highly admirable and valuable. They connect us to other media that are out of reach and allow us to explore dimensions we never thought possible, such as face-to-face conversations with someone on the other side of the world, for free using software such as Skype. In the design field, Anton Suvorov invented a 3D printer pen called Lix. To do this he first managed to raise £170,000 to fund the design process through the Kickstarter website (Collins, 2014). A total of 1000 backers pledged their support and ordered the pens while Lix was still in the conceptual phase. Lix evokes amazement and promotes a desirable experience for architects, designers and makers, who could not wait to explore this new sketch tool that may realise the possibility of transforming a two-dimensional drawing into a three-dimensional object.

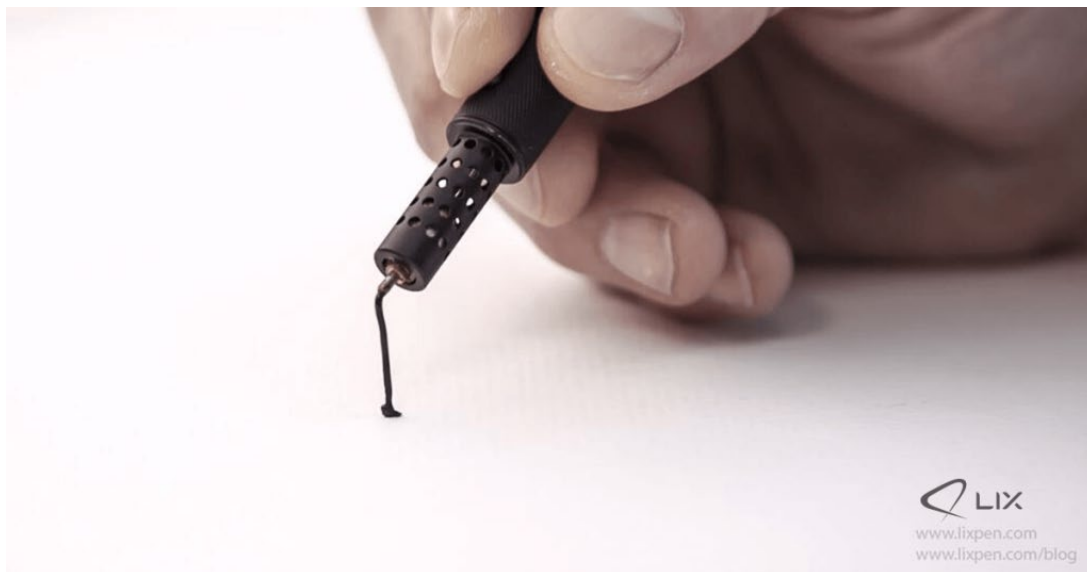


Figure 47: Lix-3D printing pen⁹⁰

⁹⁰ Figure 47: Lix 3D printing pen (Sources: <http://cdn-media-1.lifehack.org/wp-content/files/2015/02/lix-pen-photo-credit-lixpendotcom-1024x535.png>)

4.7 Product Semantics Resonance

The relationship that we intentionally design objects to have with the user or potential user should be sacred, pure, and affective. Objects are not bought simply to serve a function, they often act as a life companion, no matter how long this is for. As designers, we need to acknowledge what kind of relationship we are trying to create with the objects, either for fundamental objects (goods that we use up) such as Colgate toothpaste, supplemental objects (goods that we use) such as the four-legged wooden console table, or admirable objects (goods that we desire) such as the latest edition of the iPhone. Relationships are relative, they are context- and time-dependent and entirely rely on the intention of the designer and the meaning created by the user. For the user, the relationship we have with our objects, is nurtured and most of the time it is anticipated whilst we own it. For example, consider a mother who has bought her girl a birthday present, a toy pony named Sparkle. She has anticipated her daughter's reaction. One day, they go to the playground, together with Sparkle. The girl unintentionally leaves Sparkle at the playground and cannot sleep without the toy. The mother then goes to the nearest toy store, picks up a new Sparkle (version 2), and the girl sleeps soundly that night.

Sparkle is therefore replaceable; the mass objects culture has saved the mother and the girl from having a sleepless night. Sparkle serves not only as a cuddly toy but also as a sleep companion for the girl. As for the mother, Sparkle is nominated as an acquaintance for her beloved daughter and a symbol of the appreciation and love that a mother can show for the little girl as she reaches

another milestone. The relationship with Sparkle version one is affective, thus in an instant the same meaning, love, and affection are transferred to Sparkle version two. Sparkle has purple wings, big round eyes, and a glitter plush look. Whether it is Sparkle version one or two does not even matter. The presence of the purple pony transcends these versions. Krippendorff (1989) reaffirms the notion of anticipation with a sensorial process: seeing.

Seeing allows people to locate objects that they see cognitively; constructed, recognised, anticipated, or wholly imaginary, in a certain context.

Seeing something in a store as a chair requires imagining its use at home or in an office, a context that may or may not be realized in practice. Estimating its durability requires constructing from past experiences contexts of misuse or extreme stress.

(Krippendorff, 1989, p. 12)

Krippendorff's system of objects provides a strong foundation for understanding objects through the lens of semantics . Semantics refers to the experiential components that connect people with objects, ergo to make sense of the objects that surround them. The objects identify what they are, for what, how, and in which context they may be used. To be used by someone, objects must signal this kind of representation.

Semantic understanding offers an interesting opportunity for innovation (Steffen, 2010; Krippendorff, 1989; Demirbilek & Sener, 2003). In the middle of the 1970s, Jochen Gros and Richard Fischer from the Academy of Art and Design Offenbach in Germany developed the theory of product language that addresses semantic concerns (Steffen, 2010). Their framework suggests that products have two functions: i) practical function and ii) semantic function. The first function refers to the relationship between user and product and is related

to the practical functions of the product (such as ergonomics, whether it is user friendly, and usability) whilst the latter refers to the language of the products in relation to its concepts. There are three types of semantic function: i) formal aesthetic function, ii) indicating function, and iii) symbol functions. These functions correspond to the meaning-making process in the user-product-designer relationship (See Figure 48).

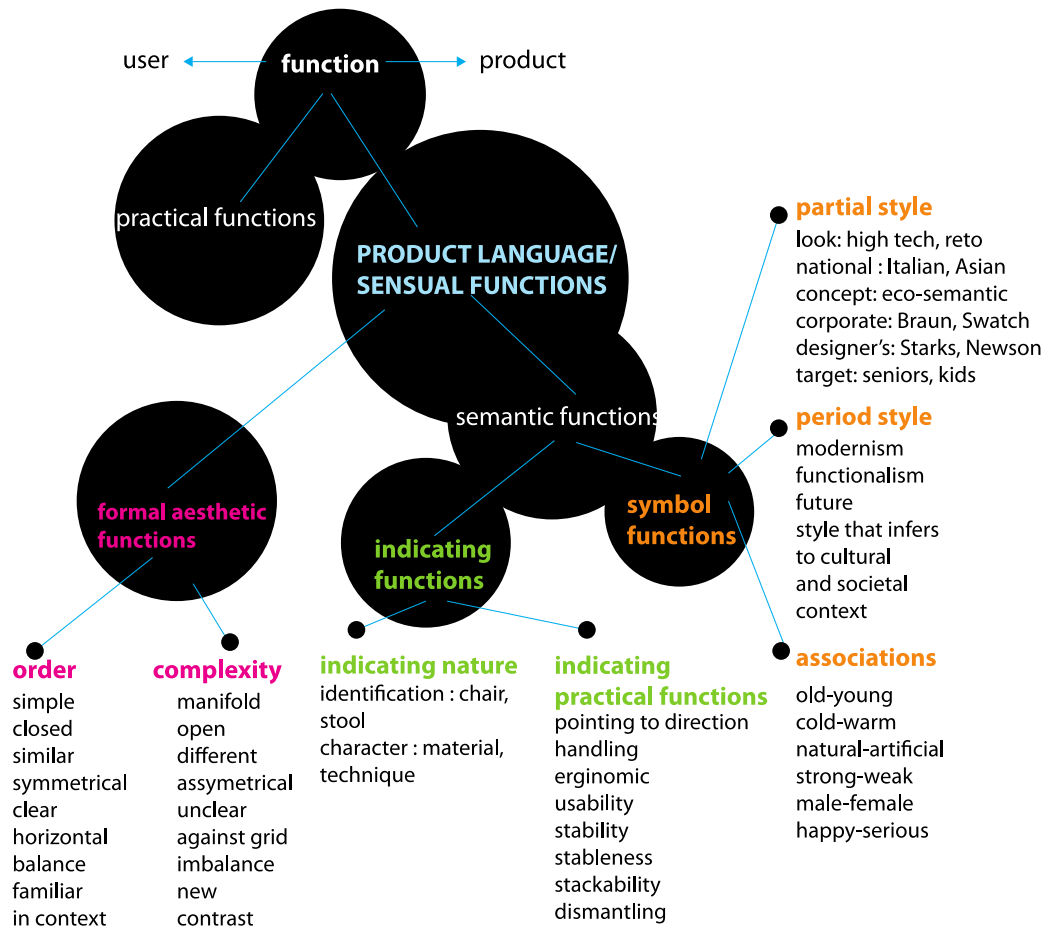


Figure 48: Product-language theory

Gros and Fischer's framework offers an objective way of understanding objects. It suggests a definite formula that can be used to read objects that have impacts on the user or designer. However, the framework is lacking in the experiential elements that can only be felt and sensed upon looking at or when

using the object. Figure 49 shows the FSA framework interlaced with the Product Language framework. Fundamental objects can be tied to the practical functions in the product language. The formal aesthetic and indicating functions relate to the Supplemental objects and symbol functions are connected with the Admirable objects. These objects are reasoned using their materiality, emotions, and memories, which are then further enhanced by the reflection of meaning they imply to the user/owner.

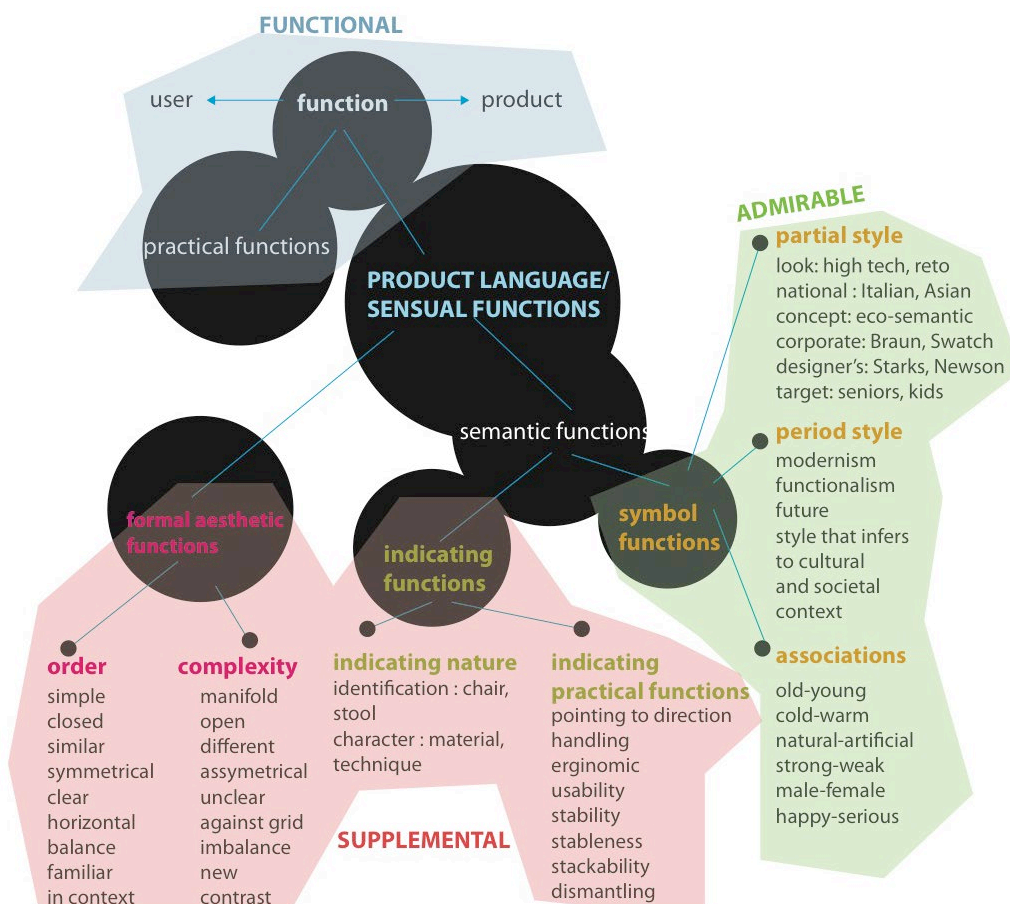


Figure 49: FSA resonates with Product Language Framework

Heidegger (1962)⁹¹ outlined a useful analogy of tool-being in his *Dasein* behaviour article. Among the fundamental objects that adhere to the practical

⁹¹ *Being and Time*, translated by J. Macquarrie and E. Robinson. Oxford: Basil Blackwell, 1962 (first published in 1927).

functions of everyday life are tools and goods that we use up on a daily basis. Supplemental objects relate to the formal aesthetic functions and indicating functions. Formal aesthetic functions deal with the colour, choice of material, the formation of the objects, while indication functions refer to the enhancement of the capacity of the design, such as its stack ability, stability, and ease of dismantling. Admirable objects are connected to symbol functions, as these two notions of desire and representation are inseparable: symbol signals status and status is representation. Married or single, rich or poor, royal or commoner, status is something that people long for, whether through consumer objects or status objects such as jewellery.

4.8 Summary: theory testing

The components discussed in this section have shed new light on an understanding of the subjective relationships that humans have with objects. The researcher presented these components as tools in order to frame design thinking and thus developed the Fundamental, Supplemental and Admirable (FSA) tool which postulates a new taxonomy of designed objects. This brings a fresh perspective to novice designers or makers in understanding their upcoming design project. According to Damien Newman (2010) (known for his

[NB: Page numbers in the article refer to the Macquarrie and Robinson translation. A more recent translation of *Being and Time* exists: *Being and Time*, translated by J. Stambaugh. Albany, New York: State University of New York Press, 1996. The Stambaugh translation has many virtues and is certainly more user-friendly for the Heidegger-novice, although arguably the Macquarrie and Robinson translation remains the first choice for most Heidegger scholars.]

famous squiggle for IDEO), in design research especially, designers often face 'uncertainty' at the beginning of a design activity but, towards the end, often gain the clarity and focus they require to complete the design task. Although it is quite common for designers to face this foggy situation at the beginning of a design task, often due to a restricted timescale, a working solution seems to be an unnecessary luxury. Grebici, Wynn and Clarkson (2008) argue that 'uncertainty' can be viewed in the broad sense of any lack of knowledge about the final solution. James Self (2012) wrote in a design blog that, in certain cases, uncertainty is assumed as an approach to explore an ill-defined design problem; however, in design agencies, especially where time is of the essence, there is often no room to explore the 'uncertain' space; hence, an assistive tool is required to minimise and reduce the time taken to complete the design task. According to Aspelund (2015), in a product design agency, time, money and person-power constraints are inflexible, and it is very difficult to address changes midstream. Therefore, a great deal of effort must be invested in planning whilst also encouraging creative elements to flow within the design project.

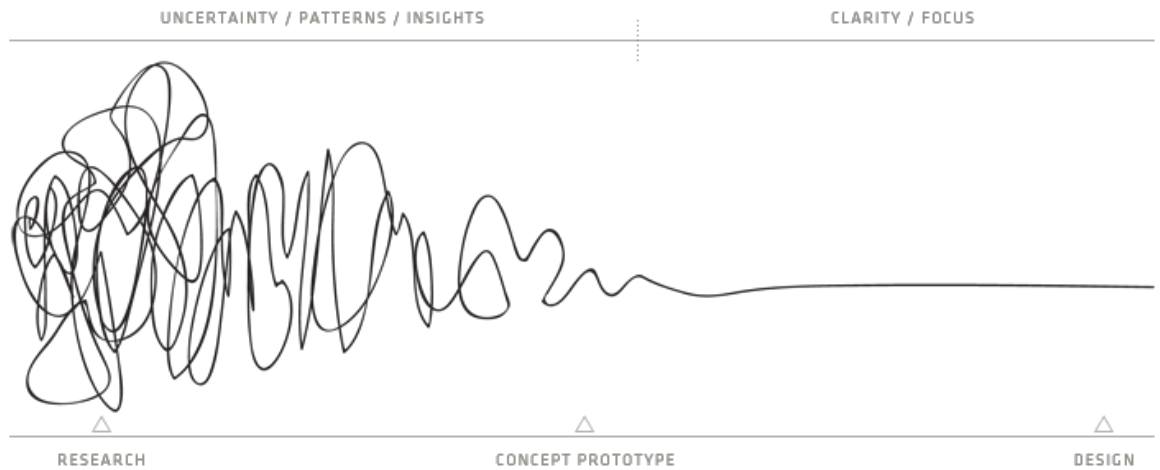


Figure 50: The squiggle design process by Damien Newman⁹²

According to Newman (2010), the squiggle in Figure 50 symbolises the complex dimension of ‘uncertainty’ that occurs in the ‘research’ phase at the beginning of a design activity. In this context, the ‘research’ refers to the proposal phase of a design brief. The brief should outline a workable and innovative solution to the design problem or situation. To innovate, Brown (2009) states there are three stages designers typically have to go through. At the preliminary stage of design, ‘during inspiration, they experience a problem or opportunity that sets them in motion; during ideation, they generate and test ideas; and during “implementation,” they move their innovation from the project room to the market’ (p. 3).

The stages of innovation are related to the design activity as innovation stems from designing an object that is marketable and highly desired by consumers. Brown (2009) explains that designers face problems at the preliminary stage of designing, which in fact motivates them to move from the problem to developing

⁹² Figure 50: The squiggle design process by Damien Newman (Retrieved from <http://tinyurl.com/plyoc6w>)

creative answers. However, to move from the inspiration stage to ideation, good ideas are commonly generated from a well-informed client brief or what we term a design brief. Therefore, to establish a good design brief, a clear set of design criteria helps to communicate relevant solutions to other design teammates or stakeholders.

In addition, design criteria provide a transparent specification for the designed object, attributes that designers wish to embed and to enhance. It is a list of key benefits that typically become the main function or attraction of the objects. In the event of uncertainty, design criteria are saviours as they are an aid to creative thinking because they focus the designer's mind on what the user needs and can be a spur to thinking of alternative, creative ways of meeting those needs. Designers and deadlines are inseparable. Therefore, design activity is all about making the right choices, especially where time is of the essence (Aspelund, 2015).

The FSA model proposed in this chapter postulates a workable approach to defining ill-considered design problems whilst also fostering creativity.

Designers' preferences for solving problems are varied; the FSA model aims to alleviate the time-consuming process of brainstorming ideas and defining problems. Although designing should be a way to discover marvellous designs, in certain situations a workable solution is the only viable dream. The FSA model idea stemmed from the researcher adopting the auto-ethnography approach to understand her own arboretum of objects that stimulated emotional responses. Because relationships are speculative, the analysis adopted by

Desmet and Hekkert (2007), Norman (2004), and Baudrillard (1968) provide insights into the construction of a trajectory of the object-person relationship taxonomy. Relationships (products of keywords elicited from emotions, feelings, materiality, and experience) were used to measure the importance of each object and the admiration the participant/researcher held towards each object. The FSA model attempts to assist designers in developing design criteria and in constructing a workable design brief. The model offers new perspectives on the design thinking process; it shows that it is possible to alleviate uncertainty by adopting a formulaic approach to design. Moreover, it provides a new dimension of understanding to the object-human transaction, as well as the possibility of discovering new ethnographic methods to unravel the object's latent relationship with its user.

Furthermore, the FSA model may have similarities with the design principles proposed by Vitruvius (Harp, 2009). Vitruvius proposed three elements of design: *Firmitas* (Durability), *Utilitas* (Function), and *Venustas* (Aesthetic) as the fundamental principles of architecture. These elements are interlinked cannot stand alone within the design process. Vitruvian principles provide a holistic approach to architecture, while the FSA is more flexible and allows designers to explore their own design flair while simultaneously considering the client's needs. Future research could further explore the potential of the FSA model in assisting novice designers. In this study, the researcher has demonstrated the FSA application but only at a pre-test level. In future research, a large input from novice designers participating in testing the FSA would undeniably enrich the findings and exploit the potential of the FSA model in dealing with real

design situations. These values form part of the new taxonomy of objects that extrapolate the design criterion in establishing a well-informed design brief. Prioritisation is the task any designer has to adhere to as part of the design process. Therefore, designers will be assisted in prioritising their design intentions through the use of the FSA model. It is hoped that this new taxonomy will alleviate the uncertainty faced by designers during the early design stage.

Few research studies have focused on the uncertainty phase (refer to Figure 39) and most have relentlessly aimed to ensure the final product outcome rather than investigating the critical phase, which lies at the beginning of the process of designing an object. According to Louridas (1999), a design must have a purpose and both execution and occasion also matter. A good design has a structure that fits well into its context; it is a structure corresponding to its context. The structure of the context must be internalised in some way into the structure of the design. A good design involves the creation of a structure out of the integration of external structures and events. In contrast, bad design refers to a structure that does not fit well into its context. Having said that, bad design involves mending, manufacturing a solution for a problem (Louridas, 1999). Golsby-Smith (1996) described the essence of design as the nature of the thinking it entails. It is integrative, rather than merely analytical: visual rather than merely abstract; and humanistic rather than mechanistic. In the end, design is intuitive and irreducible to component steps, yet still tantalisingly capable of description (Buchanan, et al., 2010, p. 260). When designers discuss products, they almost always talk about them in terms of signs, functions, meanings, or styles. What they often fail to do understand them as

material entities that play certain roles in our lives and cultures (Buchanan, et al., 2010, p. 83).

4.9 Practice 1: Using the FSA model

Values are subjective and content dependent. Objectifying each value with specific types of objects is impossible as emotions are subjective and relative. Products are objects; they are often simply liked or disliked because of their appearance, for the way they look. The emotional reactions are basically unstructured and varied. Therefore, these values can be developed into a set of design criteria with prioritisation as the key to their utilisation. With regard to alleviating uncertainty in the design activity, the designer should understand the fundamental values that need to be embedded into the design and articulate how supplemental and admirable values can enhance the design.

In essence, a design that comprises the depth of one's understanding of the taxonomy of an object's components will ameliorate the designers' uncertainty at the beginning of a design activity. Figure 51 presents one of the project briefs developed using the FSA model. By interjecting these profound elements of objects, the brief can be expanded which would then create a gap for innovation

and allow designers to be more certain at the earliest stage of design and alleviate any uncertainty while designing.

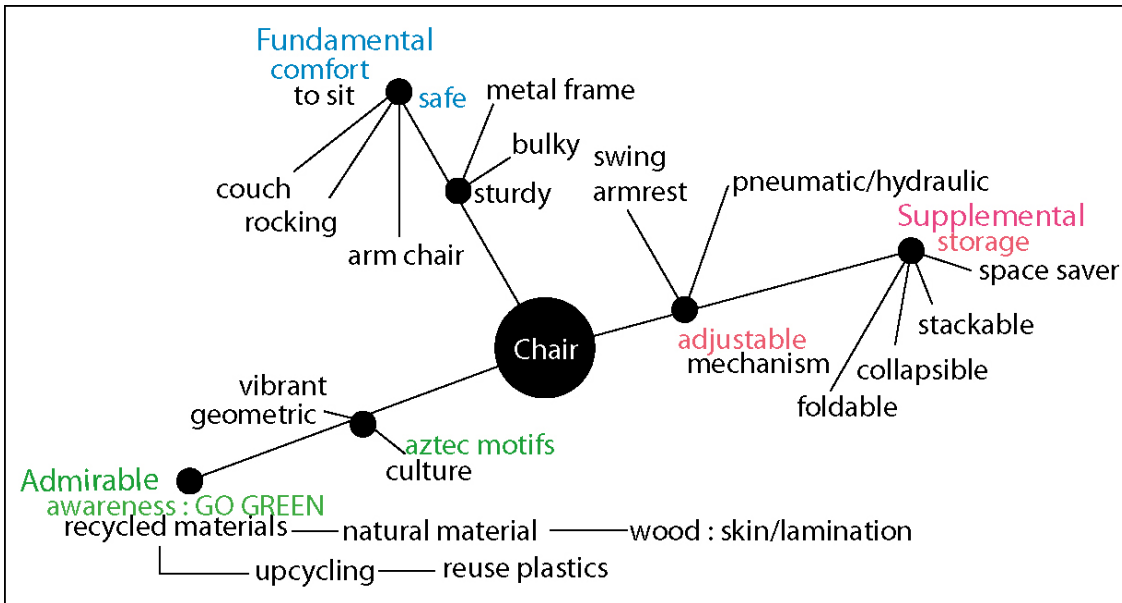


Figure 51: Application of FSA tool by researcher⁹³

Implications of the model

The model suggests the values that can be prioritised when establishing a design direction in a design activity. Designers have total control of the design direction as the design criteria are developed based on the designer's (individual) prioritisation. The model will hopefully aid designers at the earliest stage while framing and scoping the problem. Understanding the concepts of fundamental, supplemental, and admirable values will assist the designer in identifying the requirements of the brief in a shorter amount of time. Designers' preferences regarding problem solving are varied (López-Mesa, Thompson & Williander, 2002) and the FSA model is one of the approaches that can reduce

⁹³ Figure 51: Application of FSA tool by researcher (Sources: Researcher's collection, 2013)

the time spent brainstorming ideas and defining problems in order to construct a design brief. It will shed new light on the design thinking process whereby the uncertainty phase can be systematically embraced and will inform the designer about the attributes or relationship they want to fabricate in the newly designed objects.

4.10 Conclusion

This chapter forms a body of knowledge that promotes materiality and experience as a tool to understand objects. With this in mind, the researcher addressed a research question to challenge and direct the investigation to explore the notion of the essence of objects. The question “what should be preserved and what can be changed in an object?” focuses our thinking about the implication of designed objects, the need to redesign, and why we design an object. From the object analysis chapter, the findings show there are three distinctive values embedded in possessions and admirable objects or the designed object: fundamental, supplemental and admirable values. These values prioritised differently in the nuances of materiality and experience. Fundamental values emphasise the functionalism of objects, which most probably rests on the materiality axis. However, supplemental and admirable values are defined on the experience axis. Both axes are important in these values, and so are the values that are significant in the coordination of the axis. They are mutually dependent and inseparable. These values then form a set of tools to address a design problem, and thus answer the next research question:

'how can designers utilise the understanding of materiality and experience in designing an object?'

The tool is not dogmatic, there is room for improvisation but the sole purpose is to improvise ways of probing design problems, especially when we approach design from a mainstream world – design is all about problem-solving.

Chapter Five: The Design Tool

Introduction

In this chapter, researcher demonstrate the application of the FSA tool (refer to Chapter 4) and explore its potential in materialising a well-informed outcome out of a design situation. This will fulfil one of the objectives, which is to form a body of knowledge that can inform a tool of materiality and experience in understanding objects. This chapter will further elucidate the application of the FSA tool in design activity and provide explicit outcomes that contribute to enhancing new improvised FSA tool. FSA not only contributes to the design thinking system, it also enhances the design outcome. Therefore, in this chapter, the researcher will further explore the multifaceted attributes of the FSA components in designed objects. Practice is essential in embodying the materiality and experiential components in objects. Therefore, several sets of practices will be further explained to illustrate the FSA concept in a design situation. Previously, the researcher found that the FSA tool is useful for novice designers who wish to alleviate uncertainties at the earliest stage of design. The FSA is now further explored and viewed as a separate unit, and these practices will illustrate each element and its variation in values. The mechanism of FSA is hypothesised to be unsuitable for a midweight designer or an experienced designer. For instance, midweight designer knows how to tackle and solve design problems in a shorter time, due to the nature of the company which is typically confined to a specific theme or interest. Thus, the clientele's wish is easily fulfilled and the design brief is easily probed and mapped out before client. However, for the entry-level designers, due to lack experience in

articulating clientele's wish, they need more time to process and understand the style, theme and wishes of the client, thus sometime leads to under developed design briefs.

5.1 Contribution 1: Locating the certainty in design activity

Chapter 4 summarises the output of two studies carried out to evaluate the efficacy of the FSA tool. It will further discuss the designs of both studies and explain the trajectory and analysis of the outcome. Both studies were conducted with 21 Year 3 product design students. This, ensured the relevancy and validity of the findings as they utilised the "pre-post FSA studies design⁹⁴".

Demographic

21 third year product design students from the Universiti Malaysia Kelantan (UMK), Malaysia, with an age range of 21-23 years old, participated in both studies. They were selected due to their level of knowledge as they are young novice designers who will be undertaking their internship at numerous industrial companies or design agencies before resuming their final year of studies. It is

⁹⁴ An approach where the dependent variables are measured before and after an intervention has been delivered. The intervention can either be delivered by the investigator or by others (observational before and after study). It is an approach that is often called a pre-post study. Participants in pre- and post-intervention stages can either be the same (A) – as is often the case for simple 1-to-1 intervention studies – or different (B) – as is often the case for large scale interventions.

imperative to emphasise that their gender and race have not been taken into consideration, as they are irrelevant to the aim of the studies.

The studies

Pre-FSA study required two hours of the participants' time, while post-FSA required three hours of their time. The first study (i) pre-FSA was carried out on Wednesday, 15th April 2015, while the post-FSA was conducted on the following Wednesday, 22nd April 2015. Hence, there was a one-week gap between the two studies, which was essential in order to allow the participants to reflect, recollect, and refresh their thoughts about the previous study they had taken part in.

Pre-FSA

At 3pm on 15th April 2015, participants were given a project by the researcher. In their usual setting, their own studio, the participants were asked to design a new toothbrush, and they needed to submit their design brief within an hour to the stakeholder (researcher). The instruction was generic, without any specific requirements provided by the researcher. This was to allow participants to expand their creativity in the articulation of their design needs. However, participants were allowed to ask for guidance on the requirements.

Post-FSA

For this exercise, an extra hour was needed to complete the questionnaires at the end of the exercise. At 3pm on 22nd April 2015, participants were given the same design scenario by the researcher, which was to design a toothbrush.

However, this time, the researcher began the briefing by introducing the FSA tool, including its potential and application, and providing samples of the application and an information sheet pertaining to the FSA (see **APPENDIX C**). The participants were then given two hours to complete and submit the design brief to the stakeholder. After collecting the briefs, the researcher distributed specific themed-questionnaires on topics such as *uncertainty*, *understanding*, *priority* and *time* to the participants. This pre-test (pilot) evaluation study was intended to yield a concise result about the efficacy of the tool.

Findings

The outcome of the exercises should enable the researcher to improve her tool and provides insight into the types of challenges faced by novice designers in completing a design activity. The tool aims to alleviate uncertainty in the early design stage; hence, it should shape the design criterion, frame design attributes, and inform designers about the details they need to consider in their design. Therefore, the pre- and post-studies yielded significant responses from the participants. Although they were given the same design situation, which was to design a toothbrush, most participants responded differently in both studies.

Toothbrush-design task

Designing a toothbrush is a seemingly superfluous and redundant task.

However, the researcher chose this specific object to spark critical thinking among the participants because of the complex articulation involved. A utility object is known for its ubiquitous-ness and common-ness. Due to its common

traits, it adheres to the semiotics study that postulates the common attributes of a toothbrush; shape, function, colour and even the way we brush our teeth. Are there any innovation gaps to be filled in this task? That was one of the challenges faced by the designers – to redesign or improve the elements of the toothbrush, which is challenging as participants need to design a toothbrush that is recognisable by users yet also innovative. For this task, participants were required to give new forms to the toothbrush, multiply its existing functions, and shape the new ergonomic definition, which relies on the demographics of the chosen target users. The newly designed toothbrush should encompass its unseen character, function, shape or function, which will lead to an innovative yet inventive toothbrush design. This task allowed participants to freely choose their target users, from infants to the elderly, and propose the functions of their toothbrush depending on their target groups.

Pre-FSA

During the exercise, the researcher many questions about the design task. Many were unclear about the design exercise, thus the researcher needed to clarify the intention of the exercise several times. Even so, most experienced ‘uncertainty’, as some looked at their friends’ papers, searched the Internet for references, or were indecisive as to the type of toothbrush that they wanted to design. In other words, participants were uncertain about their design intentions. As a designer, it is important to develop initial ideas for the design task as quickly as possible, especially in a design agency. Designers, especially junior designers, are laden with a plethora of tasks and do not have the luxury

to immerse themselves in one specific design task for a long time due to other tasks awaiting them. Therefore, when time is of the essence, it is important for designers to articulate the design intentions, specify the attributes for further exploration, and provide a direction to guide the design task trajectory. In this case, all 21 novice designers were unable to deliver lucid outcomes for further exploration as the responses recorded were mostly repetitive and too ambiguous. Furthermore, some were unable to provide design briefs due to the confusion, although they were allowed to discuss the briefs with the other students. This is in contrast to the common understanding that, when armed with an existing knowledge of design, the participants should be able to at least establish their design direction in order to move on to the design stage.

Post-FSA

On 22nd April 2015, the researcher held a short briefing about the FSA tool, providing samples and information sheets to the same participants. Participants were allowed to ask questions to ensure they had understood the tool thoroughly before the researcher moved on to the next exercise, whereby the participants were instructed to design a toothbrush, this time with the aid of the FSA tool. This task needed to be completed within two hours. Finally, the participants were required to complete the questionnaires given by the researcher (**see APPENDIX D**).

Two types of findings were obtained in this exercise, which were as follows:

- (i) Design briefs

Most responses specified their design intention brilliantly, as they managed to grasp the idea of designing the toothbrush and the tool assisted them in probing the uncertainties. Participants were able to complete the design task more quickly as their attention was now focused in three directions; fundamental, supplemental and admirable. Although the FSA's definition is subject to the participants' way of understanding their design problem, following a lengthy explanation by the researcher, participants understood the tool and were able to deliver the outcome better than in the pre-FSA study. Some even managed to come up with toothbrush sketches and lengthy explanation for their designs. The FSA tool thus shaped their design intentions, although only at the surface level.

However, the most significant observation is that the tool managed to alleviate the uncertainty faced by most participants in the early stage of design.

(ii) Questionnaires

The questionnaires used a Likert⁹⁵ scale to capture the collective intensity of the participants' likeness. Most of the participants agreed that the tool helped them to articulate their design task better and improve their design direction, with 57.1% agreeing that the FSA model alleviated their uncertainties while framing the design criteria.

Furthermore, 47.6% of the participants strongly agreed that the model

⁹⁵ A Likert-type scale suggests that the strength of experience is linear, for instance, from strongly agree to strongly disagree, and assumes that attitudes can be measured. Participants may be offered a choice of five to seven or more responses with the neutral point being neither agree nor disagree. Retrieved on 25th March 2016 from <http://www.simplypsychology.org/likert-scale.html>

enabled them to understand what they needed to highlight in their design solutions. 57.1% of the participants also strongly agreed that the FSA model assisted them in prioritising values for the construction of the design criteria, whilst 66.7% agreed that the model reduced the time spent brainstorming ideas and constructing the design briefs. Therefore, this evaluation study provided an opportunity for the researcher to strengthen the FSA component and explore its impact on a multitude of designers. The study is the first of a series of exercises that will provide valid findings about the efficacy of the tool and hopefully will bring a shared understanding among stakeholders about the potential for communicating design solutions to a various stakeholder using the FSA tool. The detailed results of the questionnaire are as follows.

Uncertainty

“The tool helps me to alleviate **uncertainty** at the beginning of the project” was the first item in the questionnaire distributed to the participants. Uncertainty refers to a state where/when participants faced uncertainty or experienced an unclear situation in relation to the needs of the design task. In any design activity, when designers are asked to design an object or solve a design situation, they will typically be given a certain amount of time to come up with ideas. The initial ideas generated will be developed into comprehensive concepts and that is when other team members start to assemble their random ideas, building on the initial ideas of the designers. Hence, it is crucial to articulate these early ideas, define the specification, and guide the flow of

creativity whilst fostering innovation in the design at an early stage. Some scholars may assert that scoping or restricting ideas at an early stage will leave no room for the ideas to expand. The main intention of the tool, however, is to help designers see the light at the end of the tunnel, or at least a streak of light, as ideas can be expanded and multiplied in an array of circumstances. The tool will guide designers who face uncertainties whilst looking for answers for their design problem, it will not prevent new ideas from emerging. Table 4 presents the responses regarding the uncertainty phase that clouded their judgment during the design activity. A total of 19 respondents agreed that the FSA alleviated their uncertainty about the design at the beginning of the project.

	Frequency	Valid Percentage	Cumulative Percentage
Neutral	2	9.5	9.5
Agree	12	57.1	66.7
Strongly Agree	7	33.3	100.0
Total	21	100.0	

Table 4 : Uncertainty keyword

Understanding

The second item in the questionnaire refers to the level of participant's understanding – "The tool helps me to **understand** my project better", to which most participants agreed. Understanding is gained by knowing how to articulate design outcomes, deliver the design attributes, and verbalise the design criterion prior to transferring them onto a paper to be materialised. Furthermore, raw ideas are imaginative and some of the great ideas are often unexplored.

This is due to the difficulty of translating them into words, as our conscious minds require a deep understanding of what we in fact mean and intend to do (Tomes, Oates & Armstrong, 1998, p. 127),

"Design is commonly regarded as an act of individual creation to which both verbalisation and logical analysis are only peripherally relevant".
(Tomes et. al., 1998, p. 127)

Designing typically involves both verbalisation of thoughts and their transmission onto a piece of paper. This is then followed by materialisation of the ideas with the help of technological advancement machineries or traditional hard labour such as woodworking using hand tools. Understanding is one of the keys for a design to be realised, not just any design but one that is informative, relevant, and meets the requirements of the clientele's. Overall, 18 respondents agreed that the tool helped them to articulate the brief more effectively (Table 5).

	Frequency	Valid Percentage	Cumulative Percentage
Neutral	3	14.3	14.3
Agree	8	38.1	52.4
Strongly Agree	10	47.6	100.0
Total	21	100.0	

Table 5: Understanding keyword

Criteria

Table 6 shows the responses to item number 3: "The tool plays an important role for my design **criterion** trajectory." The question invites participants to acknowledge and evaluate the implications of the FSA tool for the articulation of

their design criteria. Most participants concurred, with 16 respondents strongly agreeing that the tool assisted them in constructing their design criterion. “Criteria” is one of the most critical and earliest steps in design activity that directs delivery of the whole design. Criteria are crucial in shaping the design outcomes, giving form to the clientele’s requirements, and communicating the designer’s perspective to the various stakeholders. In addition, the criteria typically employ basic terms of design so that other team members and stakeholders can grasp the ideas designers are trying to initiate. More comprehensive and concise criteria will then be developed following approval of the initial ideas by the supervisors, employers, or fellow senior designers. Furthermore, “criteria” is one of the negotiation tools used between the stakeholders and designers to capture the outcome of the conversation between designers and clients. Therefore, to establish a sound and concise criterion, designers should be able to grasp their clients’ requirements, understand the anticipated outcome, and then enhance these without compromising the requirements. To do so, participants agreed that the FSA tool assisted them in generating the criteria.

	Frequency	Valid Percentage	Cumulative Percentage
Valid Neutral	5	23.8	23.8
Valid Agree	6	28.6	52.4
Valid Strongly Agree	10	47.6	100.0
Valid Total	21	100.0	

Table 6: Criteria keyword

Priority

Table 7 presents the responses to the item: “The tool helps me to prioritise my design criterion” with “priority” as the keyword. Priority refers to the prioritisation of criteria in the later stage of the development of the design criteria. Once designers have set out the criteria, these need to be carefully selected whilst avoiding compromising the client’s needs. The FSA tool offers the three components of objects that portray the fundamental, supplemental and admirable values of the designed objects with which designers wish to comply. Prioritising allows the designer to identify the significant elements they want to feature in the design, evaluate each element of the design they wishes to pursue, and reflect their design decision whilst responding to the client’s brief. Table 7 shows that all participants either agreed or strongly agreed that the tool helped them to prioritise design criterion, thus helping them to resolve the design criteria dilemma. Therefore, prioritisation allows the criteria to be presented lucidly and systematically so that it is easily read and understood by the designers and others.

	Frequency	Valid Percentage	Cumulative Percentage
Valid Agree	12	57.1	57.1
Strongly Agree	9	42.9	100.0
Total	21	100.0	

Table 7:Priority keyword

Time

The item, “The tool helps me to articulate my design criterion in shorter time” in the questionnaire responds to the keyword “time” which is pivotal in the development of any design project. Designers adhere to deadlines, therefore time is one of the limitations they need to embrace whilst delivering a sound design outcome. However, Table 8 shows that one participant disagreed that the tool helped her to alleviate uncertainty in a shorter time. Another participant gave a neutral response, which meant she did not agree or disagree that the tool was helpful in this respect. The researcher observed that two participants struggled to critically articulate the attributes. Designer sometimes face problems focusing on the design situation, especially when the stakes are high or when they are being observed (in this case by the researcher). Thus, they felt that the tool did not help as it took longer for them to get ‘in the zone’. Nevertheless, 19 of the participants responded that the tool helped them narrow the design criteria more quickly.

Furthermore, time also acts as a constraint for designers to explore innovative routes as such exploration requires endless research and testing. The FSA assists the designer in knowing her own constraints by identifying the niche area she wants to discover. By mapping out the elements that the designer wants to use, she is able to focus on the area she wishes to research rather than stumbling upon an unknown zone, which may or may not be fruitful. The tool has not only set the direction for the design, it has also articulated the design criteria, thus saving time.

		Frequency	Valid Percentage	Cumulative Percentage
Valid	Disagree	1	4.8	4.8
	Neutral	1	4.8	9.5
	Agree	14	66.7	76.2
	Strongly Agree	5	23.8	100.0
	Total	21	100.0	

Table 8: Time keyword

Figure 52 (see APPENDIX E or larger illustration) captures the responses of the participants regarding the toothbrush design project. The responses (see Figure) are the design criteria, documented in two separate columns to show the significant elements that have been enhanced and developed for pre- and post-studies. Texts that are in a blue hue represent the new criteria developed after employing the FSA tool. As shown, the post-studies postulate well informed, concise, elaborated design criteria in comparison to the pre-study.

BEFORE	FSA TOOL	AFTER	BEFORE	FSA TOOL	AFTER
thin bristle to reach unreachable adjustable, spot, different type of brushes, soft bristle, undisposable, brushes that will not harm the gum for elderly only buy a holder material choices	flexible, soft brushes, adjustable, (toothbrush that can change heads), easy to clean, plastic material, heritage (ornament) embellishment for decoration, spacesaver, stickable		colour (white with blue line) material (plastic), target market (over 40 yrs old), ergonomically designed, futuristic	bulky for elder grip, longlasting, colour for elderly easy to see, easy to use, comfortable, mechanical soft brush, safe materials, not edgy, sleek design ergonomic, futuristic	
	easy to use, scale to carry, vibrate, nature, grip, multitasking, attachable, split and combine, comes with many brush heads (medium, strong, hard)			none	comfort to hold, smooth, durable, suitable size, safe, foldable, multifunctional, mechanical, colourful, unique design, covered, futuristic cultural design, easy to use, portable, plastic material, safe, futuristic, recycle materials, modern, without holder, geometric, puzzle concept, ergonomic, mechanism, save energy, sensors, foldable, cheap
for sensitive teeth reach unreachable spot light will light up when you brush too hard	comfortable to hold, soft brushes many designs, two brushes (soft and hard), changeable heads, longlasting (6months), comes with light, voice activation, brushing tongue, changeable holder grip, easy to carry, chargeable			modern, lightweight, easy to use	
	easy to use, cost effective, functional, safety, space saver, long lasting, no need to put toothpaste, soft bristle, clean inside out, theme (patterns), comes with toothpick feature				
using common material shape user-friendly	ergonomically design, can use both hands, mechanism plastic, comes with toothpaste, both function (auto/manual), for the fake teeth, energy saver, safe for elderly, suitable material for mouth, plastics, charcoal			none	small size, easy to use, ergonomic, lightweight, flexible, safe to use, thin bristle, attractive colours, can customise colour, east to store, adjustable, foldable
ergonomic water resistant material	brush size, suitability with users, safe, comfort, brush protector cover, easy to keep, easy to use, colour, modern, rubber grip			ergonomic shape colour posture function	ergonomic, appropriate size with Malaysian, easy to use, rubber grip for the holder, easy to hold, portable, comes with own case, use recycle plastics, with cultural characteristics
toothbrush with paste space to keep toothpaste	plastic material, ergonomic, size according to palm, colour, grip holder, storage for paste, mechanical			none	toothbrush for ulcers soft brush, easy to hold, grip, ergonomic, separate brush heads, foldable, material :plastics, geometric shape and puzzle, theme : rock and roll
teeth fixing component	shape of the toothbrush, adjustable (longer/shorter), comfort safe				for travellers, small in size, multifunctional, pattern of the body, colourful design, rubber natural, medium texture, easy to hold, space saver, foldable, collapsible, ergonomic material, flexibility, safety, organic shape, futuristic, long lasting, grip
people with artificial tooth useful safe to use soft brush	soft, flexible, safe materials, hygienic, easy to grip, odourless, foldable, lightweight, easy cleaning, changeable grip				
	none	easy to store, multifunctional, water resistant, futuristic, plastic as material, colour/gender biased, comfort, ergonomic, soft brushes, size		none	safe, comfort, flex, soft bristle, attractive colours, adjustable, heritage
	none	ergonomic, foldable, organic, colourful, changeable brush heads			

Figure 52: Analysis responses in linear visualisation⁹⁶

⁹⁶ Figure 52: Analysis responses in linear visualisation (Researcher's collection, 2015)

Analysis Pre- and Post-FSA

Name	Pre	Post	Remarks
Faiz	Flexible, thin bristle to reach unreachable spot, soft bristle, brushes that will not harm the gums of the elderly	Soft brushes, adjustable, different type of brushes, inter-changeable heads, only buy a holder	Disagreed that the tool helps him to alleviate uncertainty in a shorter time
Nurazwani	Material choices	Usability (safe and easy to hold), easy to clean, plastic material, heritage (ornament) embellishment for decoration, space saver, easy to hang	
Hazline	Material, scale	Easy to use, carry, vibrate, nature, grip, multitasking, attachable, split and combine, one-size-fits-all brush heads (medium, strong, hard)	
Fathiah	For sensitive teeth, soft brushes, reaches unreachable spots, light indicator turns on when you brush too hard	Comfortable to hold, many designs, two brushes (soft and hard), changeable heads, long lasting (6months), comes with light indicator, voice activation, changeable holder grip, easy to carry, re-chargeable	
Syahril	Easy to use, cost effective, functional	Safety, space saver, long lasting, toothpaste not required, soft bristle, clean inside out, theme (patterns), comes with toothpick feature	
Nadia	Using common	Comfortable for both genders, ergonomically	Narrow the scope such

	material, shape, user-friendly	designed, can use both hands, plastic mechanism, comes with toothpaste, dual function (auto/manual), denture-friendly, energy saver, safe for the elderly, suitable material for mouth, plastics, charcoal, colour	as Fundamental: comfort? In what way? Safe for whom? More specified.
Aqib	Ergonomic, water-resistant material	Brush size, suitability for users, safe, comfort, brush protector cover, easy to keep, easy to use, colour, modern, rubber grip	
Ridzuan	Toothbrush with paste, space to keep toothpaste (sketch provided)	Plastic material, ergonomic, size according to palm, colour, grip holder, storage for paste, rechargeable toothbrush	
Fatimah	Teeth-fixing component	Shape of the toothbrush, adjustable (longer/shorter), comfort and safe	
Ku Anwar	Colour (white with blue line), material (plastic), target market (over 40 yrs old), ergonomically designed, futuristic	Bulky for elder grip, long lasting, vibrant colours for middle-aged clients, easy to see, easy to use, comfortable, rechargeable (for ease of brushing), soft brush, safe materials, not edgy, sleek design and ergonomic, futuristic	
Siti Azlinda	None	Comfort to hold, smooth, durable, suitable size, safe, foldable, multifunctional, mechanical, colourful, unique design, covered, futuristic	
Ahmad Fadhil	Modern, lightweight, easy to use	Cultural design, easy to use, portable, plastic material, safe, futuristic, recycle materials, modern, without	Use design thinking to improvise the tool

		holder, geometric, puzzle concept, ergonomic, rechargeable, energy-efficient, sensors, foldable, cheap	
Nabilah Naser	None	Compact, easy to use, ergonomic, lightweight, flexible, safe to use, thin bristle, attractive & customisable colours, easy to store, adjustable, foldable	
Fadhil Mat Din	Ergonomic, shape, colour, posture, function	Ergonomic, appropriate size for Malaysians, easy to use, rubber grip for the holder, easy to hold, portable, comes with own case, use recycle plastics, with cultural characteristics	
Nazirul Izzat	None	Toothbrush for ulcers: Soft brush, easy to hold, grip, ergonomic, separate brush heads, foldable, material: plastics, geometric shape and puzzle, theme: rock and roll	Include symbol or picture
Vinotine	Toothbrush with paste, multifunctional, rubber material, easy to hold, easy storage, bendable, for adults and travellers, easy to carry	For travellers, small in size, multifunctional, visually appealing, colourful design, natural rubber, medium texture, easy to hold, space saver, foldable, collapsible, ergonomic	
Thavaseelan	People with dentures, useful and safe to use, soft brush	Soft, flexible, safe materials, hygienic, easy to grip, odourless, foldable, lightweight, easy cleaning, changeable grip, colour, compact	

Izzati	None	Easy to store, multifunctional, water resistant, futuristic, plastic as material, colour/gender biased, comfort, ergonomic, soft brushes, size	
Amar Aizat	None	Material, flexibility, safety, organic shape, futuristic, long lasting, grip,	Design thinking method
Ikahaziera	None	Safe, comfort, flex, soft bristle, attractive colours, adjustable, heritage	
Liyana	None	Ergonomic, foldable, organic, colourful, changeable brush heads	

Table 9: Transcription of BA studies (from direct transcription of the participants' responses)

Summary of the study

This study aimed to validate the feasibility of a FSA tool in solving design problems faced by the novice designers. It yielded a promising result, in that the FSA tool was shown to assist the novice designers and therefore should be able to alleviate the uncertainties faced during the early stages of design. Participants also contributed critical insights into the tool, proposing the inclusion of symbols and photographs to help them communicate better with other stakeholders. Another useful insight that needs to be considered is to narrow down the Fundamental, Supplemental and Admirable (FSA) elements into a specific context such as comfort, beauty and others. Although objectifying the values of the general project is impossible as design itself is subjective, the initial purpose of the tool was to expand the horizon of subjectivity (preference) that allows designers to locate their own preferences in their own design context. However, by giving scope to the FSA, designers can easily understand

what to include and such constraints sometimes are helpful in framing general design ideas. Hence, FSA should be contextualised into specific themes whilst leaving sufficient room for subjectivity.

In response to the pilot study conducted, seven participants did not manage to deliver any design outcomes within two hours in the 'pre-FSA study' because they were experiencing "uncertainty", , and therefore could not articulate any design needs or criteria. It is undeniably true that the thinking process involved in articulating design intentions and researching criteria that responds to the client's needs are time-consuming; however, in reality, timing is everything. Designers are expected to deliver innovative ideas in an instant. Therefore, the FSA tool offers five explicit possibilities (uncertainty, understanding, priority, criteria, and time) for enhancing the design outcome. Thus far the researcher has discussed the implications of the FSA tool with regard to locating uncertainty in design activity, and she stipulates that the tool is useful at the early stage of designing, as it sparks the development of the design criteria, shapes the outcome of the design, and gives structure to the design activity. Although the FSA tool has helped novice designers to frame their early thoughts and ideas, the investigation into the validity of the model ends here. FSA will be further explored in relation to the Fundamental, Supplemental and Admirable components as these should be visualised, tangible, and evident in order to demonstrate the essence of objects' understanding. The making process is the final step in design activity (also called prototyping); however, the FSA is not suitable to be tested at this level of design activity. It could mislead the outcome and create unnecessary layers of understanding that involve

criteria/characters revolving around design problems, which is not congruent with the objective of RQ 3.

5.2 Book Author Analogy

The authors of fiction literature provide a speculative space for us, the readers, to inject our own imagination into the content of a book. If it is a magical fairy tales book, the authors provide context and give form to the character and the setting of the stories, enabling readers to grasp the magical-ness they are trying to describe. However, it is up to the readers to decide how far their imagination can stretch, and what the magical kingdom looks like. The essence of the stories reaches the readers and, although some might imagine the fictional characters differently, similar responses are anticipated. Verbalising the thoughts is challenging enough but to transfer them into texts is another level of challenge altogether.

Designers are similar to authors; they write stories in the way that they design objects and users read their stories by using or displaying the objects. It is entirely up to the users and owners to stylise and use the objects, although the designers have set the context (the main function) and settings of the object (enhancement features of the object). An example is the macramé lampshade developed by Plumen X Wool and the Gang. This collective revive the popular 1970s culture of textile knotting and revamp the concepts, making a lampshade using a knotting technique. Plumen X Wool and the Gang came up with the

idea of making your own pendant lighting using the materials kits they have designed (Figure 53). Pendant lighting is not just an incandescent object that emits light and creates ambience, with the DIY kit it also echoes users' personalisation, as the macramé lighting acts as a signature, symbolise users' personalities. Finishing the project by successfully hanging the pendant light in their own interior not only proves that the user can craft their own object, it is also an allegory of their creative side. The kit comes with an instruction manual booklet to guide users so that they are well informed as to the steps required for this particular craft. Yarn is typically related to women's craft while lighting fixtures are typically associated with men. This kit not only responds to both genders, but it also challenges both genders to become oblivious to the thin line that divides men and women in crafting. This particular object demands a knowledge of circuits and electrical details, which appeals to most men, and the skill of handling the yarn, which is typically possessed by the women. These conflicting elements are unified in the simple manifestation of a Macramé pendant light that binds both genders' skills and knowledge.



Figure 53: Macrame lampshade⁹⁷

⁹⁷ Figure 53: Macramé lampshade (Sources: <http://design-milk.com/plumen-x-wool-gang-diy-macrame-lampshade/>)



Figure 54: Macrame lampshade DIY kit⁹⁸

Figure 55 shows the framing of the Macramé lampshade elements using the book author analogy. The object is given a context, which is to utilise the Macramé knotting techniques and include Plumen as the source of light. The setting, which is the enhancement of the features, uses yarn as the material for the knots and the Plumen bulbs.

⁹⁸ Figure 54: Macramé lampshade DIY kit (Sources: <http://design-milk.com/plumen-x-wool-gang-diy-macrame-lampshade/>)

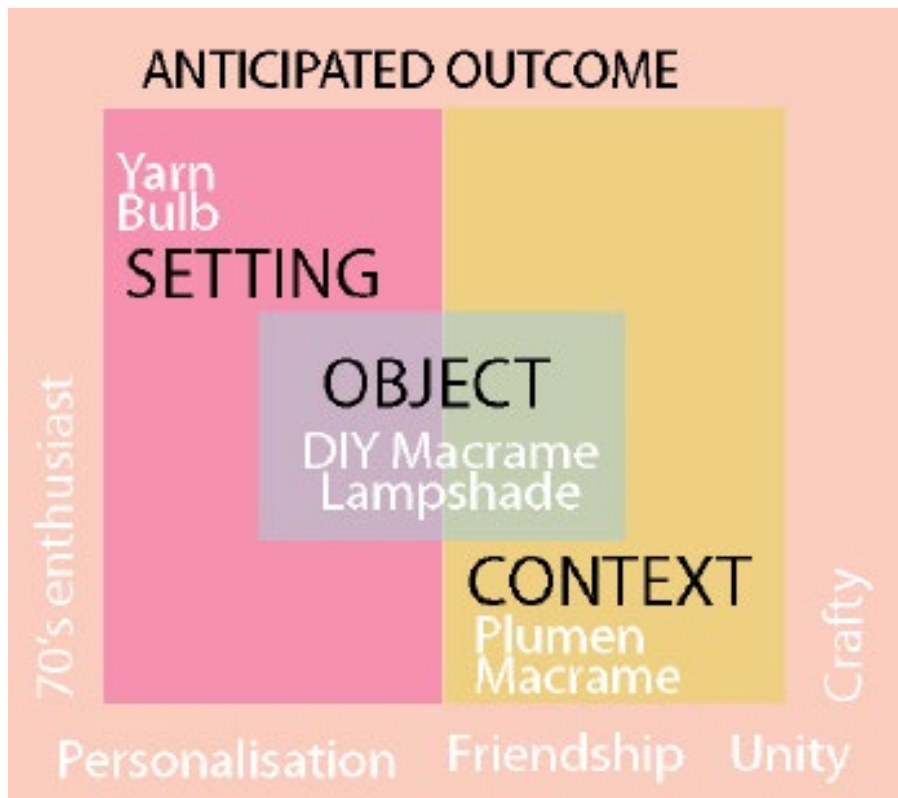


Figure 55: Macrame lampshade analogy



Figure 56: Plumen bulbs⁹⁹

⁹⁹ Figure 56: Plumen bulbs (Sources: https://static.dezeen.com/uploads/2016/06/plumen-pendant_dezeen_banner.jpg)

Plumen is known for its serpentine bulbs (see Figure 56) and the lights are typically designed as pendant or ceiling light fixtures. Thus, Macramé knots blend wonderfully with the shape of Plumen and its tangled rope-shaped bulbs. Using the book author analogy, the object, the Macramé pendant light, is given the context of manifesting the Macramé knots and fascinating Plumen lights through the specific choice of using yarn and bulb as main materials.

These designers, Wool and the Gang and Plumen, have anticipated the outcome of their collaborative object, which is a pendant light that will hopefully cultivate the creative side of users by encouraging them to adopt a DIY approach and revolutionise home decoration using upcycled yarn to create a sustainable and fashionable piece. It is evident that the targeted users will be 1970s enthusiasts and environment-conscious consumers, as the collaboration shares the common ethos of making sustainability desirable, fashionable, and easy. Imbued in the current fashion trend, the lampshade thus reflects the emergence of an increasingly popular 1970's design style this in consumer trends. This is shown by the latest Gucci campaign for the pre-fall 2016 collection (see Figure 48). Gucci injected the 1970s hippie theme into their latest collection to invoke retrospective elements of the trend; floral, fringe, drape, and knits. The fashion mogul collection will surely influence current trendsetters and ensure that every fashion house and all designers will infuse a similar vibe into their designs.



Figure 57: Gucci pre-fall 2016 collection¹⁰⁰

In essence, anticipation is a keyword for designers in ensuring the objects reach the market and create a general sense of hype among design enthusiasts and the public. By understanding the context, setting and object that they intend to design, designers can anticipate responses from the public or the targeted audience. Thorough research on the comeback of the 1970s theme has been undertaken by the fashion design researchers for the Gucci pre-fall 2016 campaign, thus timing is another important t factor that guarantees successful trends.

¹⁰⁰ Figure 57: Gucci pre-fall 2016 collection (Sources: <https://fashionista.com/2016/03/gucci-pre-fall-2016-campaign>)

5.3 The FSA tool and the book author analogy

Based on the pilot study, the researcher found that the FSA tool has the potential to novice designers. However, at the same time, the pilot study has highlighted a few limitations of the FSA tool. Feedback from the participants has contributed to the new analogy developed by the researcher who developed the FSA tool. The book author analogy derived from inspecting a cultural object, with support from previous studies and references relevant to the object study. The FSA tool combines the depth of an individual's emotion, feelings, experience, and understanding of the physical embodiment of the object and its materiality. However, it lacks an effective framework that could help designers to shape early ideations. Nevertheless, context, setting, and anticipation provide an additional layer of preface for the new ideations to act as catalysts to spark creativity and probe uncertainties in a more structured and contextualised format.

Context is defined as the scope or area that designers can locate while probing the criteria for the newly designed objects. It covers the intention of the design and prioritises the benefits for the main stakeholders, which is usually related to the client's brand or the theme of the project. At the same time, **setting** acts as the entourage that shapes the criteria. It features the relevant style or materials that need to be considered in the outcome. Setting helps designers to reaffirm the object's intention, hence ensuring their response to the client's brief is precise. In addition, **anticipation** suggests the aim, hopes, and wishes of the object and the reactions of the users after owning or using the object. This

element is fundamental as it is evaluative and can be revised or improvised from time to time. Outcomes are usually dynamic and, by evaluating the outcome in this linear relationship (object – context- setting – outcome), , designers will know what and how to fix the next version of the object, just in case it requires improvisation.

5.4 Findings turn to practice: FSA's tangibility

In the spirit of embodying phenomenological understanding throughout practice making, “I” will be used instead of “researcher” in both Chapter 5 and Chapter 6. This change is necessary for readers to differentiate my own practices from the works of others. To amplify the values of the FSA in practice, I further explored tangible aspects of visual mapping by creating the map in a three-dimensional format; a sculpture. One of the critical aims of the thesis is to echo the materiality and experiential elements in my own practice, which is demonstrated by this sculpture. ‘Twigs’ (see Figure 58), the name of the sculpture, refers to the material used as it is made of- old autumn twigs that were found around the moors, the university, and the researcher’s house. It represents the conceptual mapping of the structure of my objects, capturing my ‘arboretum’ of imagination by materialising the visual mapping of the twigs in a three-dimensional format. The sculpture (see Figure 58) exhibits the mapping that I had in mind, materialising it into a tangible form in which I further explored the possibility of connecting each relationship by binding both separated twig ends together using different adhesives and natural glues.

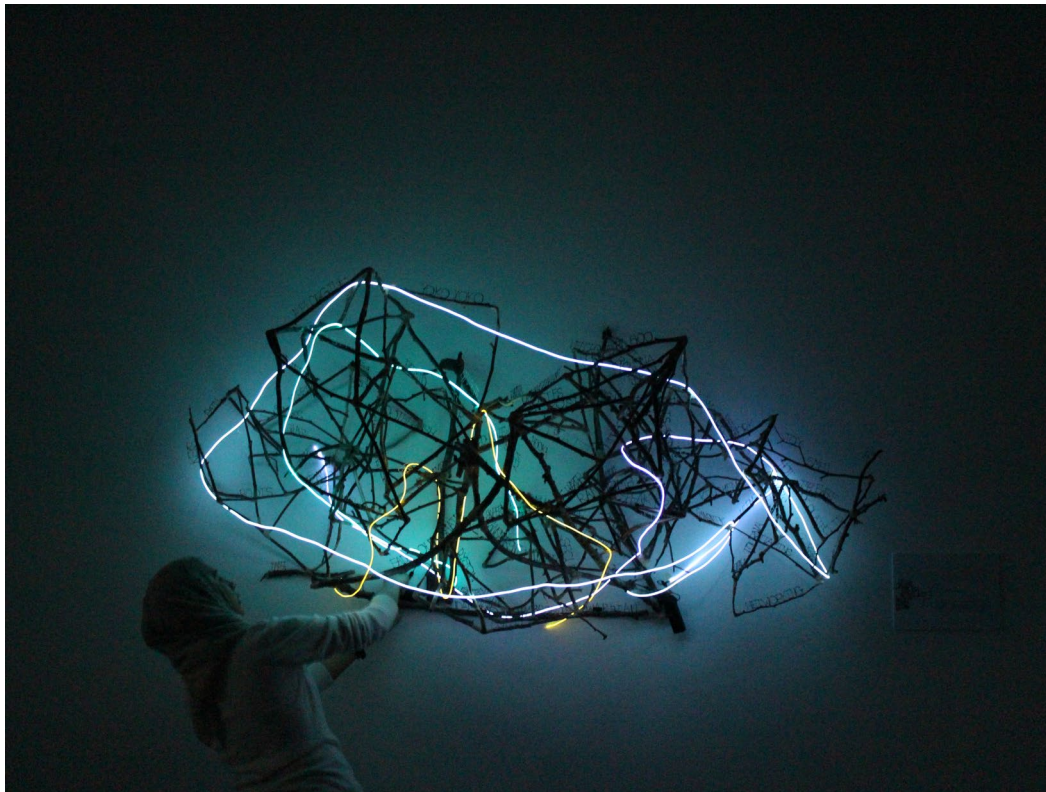


Figure 58: The 'twigs' sculpture¹⁰¹

'Twigs' alludes to the mind map that exists in our interior world, a map that will not be exhausted by realising it, as twigs are endless and expandable. Usually, a tangible object is dogmatic and acts as an unchanged final outcome, thus we always want it to be perfect. However, twigs are expandable and can always be reverted to previous thoughts as the joints were designed to be mobile. In addition, neon strip lights are embedded onto the twigs to show the connection between one branch and another that possesses a similar and identical theme or keywords. Thus, the 'twigs' mimic the visual elements of my mapping analysis in Chapter 4. The map is interlaced with other strings relating to that specific theme. The lights highlight the resonances shared between similar keywords, thus creating a wonderful set of adjacent light that permeate each

¹⁰¹ Figure 58: The 'twigs' sculpture (Sources: Researcher's collection, 2014)

keyword's lit space. Shadows are another critical aspect of this sculpture, especially when one directs a source of light near to the sculpture as the shadow creates a wonderful effect that emphasises the distance between the 'twigs' shadowed on the wall and the branches. I used a 3D pen to fabricate each keyword and placed these on the branches to allegorically represent each keyword of the relationship, as described in Chapter 4.

In the process of making 'twigs', I explored the idea of connecting each end with different shapes of twigs to create an asymmetrical sculpture. The twigs were connected using bandage, as it was one of my intentions to avoid adhesives due to their synthetic property. Bandage was the preferred choice as it possesses the perfect elasticity to hold each twig, it binds them well and the properties of each bandage blend in with the 'twigs' structure. The following section outlines the steps taken to join the twigs together. Figure 59 shows my first attempt at use galvanised steel wire as the joining agent. Although the wire provides the structure with sturdiness to, it did not hold the shape of the twigs. Furthermore, the silver shades of the wire gave a malleable look to the sculpture, which is unnatural; hence, the researcher opted for a new joining agent, the bandage.



Figure 59: using galvanised steel wire to join twigs¹⁰²



Figure 60: Using screw and bandage for bigger twigs¹⁰³

Screws were used to mount bigger branches or twigs to hold them in place (see Figure 60).

¹⁰² Figure 59: Using galvanised steel wire to join twigs (Researcher's collection, 2014)

¹⁰³ Figure 60: Using screw and bandage for bigger twigs (Researcher's collection, 2014)



Figure 61: Bandage is used to hold the 'twigs' structure¹⁰⁴



Figure 62: 'Twigs' triangles¹⁰⁵

Figure 61 shows the detail of the bandage and way it enveloped the sharp edges of the joint twigs. Bandage was used not only to hold the structure but also as an adhesive that camouflages the colour of the natural twigs. The

¹⁰⁴ Figure 61: Bandage is used to hold the twigs structure (Researcher's collection, 2014)

¹⁰⁵ Figure 62: Twigs triangles (Researcher's collection, 2014)

bandage was not painted and remained in its natural state, *ecru*, in order to express the materiality of the bandage's pores and its adhesive property. Figure 63 shows the twigs in a triangle structure format. These triangles were assembled together on site and thus formed a bigger twig structure. I mapped a new triangle format visual map to guide the sculpture's formation.



Figure 63: 'Twigs' testing formation¹⁰⁶

Figure 63 shows the parts of the “twigs” that have been assembled. I measured the maximum size for the sculpture for logistic reasons. It was important to at

¹⁰⁶ Figure 63: Twigs testing formation (Researcher's collection, 2014)

least know the estimated size in order to transport the sculpture to the exhibition room and to plan the ideal way to present the sculpture, whether hanging, mounted, or freestanding.



Figure 64: Bare structure of 'twigs'¹⁰⁷

Figure 64 shows the mounted 'twigs'. I decided to mount the sculpture onto the wall due to its lightweight structure; this way, viewers can stand at three different points to admire the sculpture. Figure 65 shows the visual analysis in triangle format. The analysis was useful in directing the flow of the twigs. I used this format as my guide to assembling the "twigs" and for the neon lighting fixing and arrangement of the keywords at a later stage. Although the intention of "twigs" is to demonstrate the relationships that emerge from my objects, namely, that of owning and admiring the objects, the sculpture also highlights the experience of the audience who will see the map in real life. Furthermore, I internalised the depth of my own analysis and presented this in a tangible format in order to inform the audience about my thinking. In so doing, I exhibited

¹⁰⁷ Figure 64: Bare structure of 'twigs' (Researcher's collection, 2014)

the possibilities of having something intimate and presenting it using everyday objects such as twigs.



Figure 65: Visual analysis in triangle format¹⁰⁸

¹⁰⁸ Figure 65: Visual analysis in triangle format (Researcher's collection, 2014)

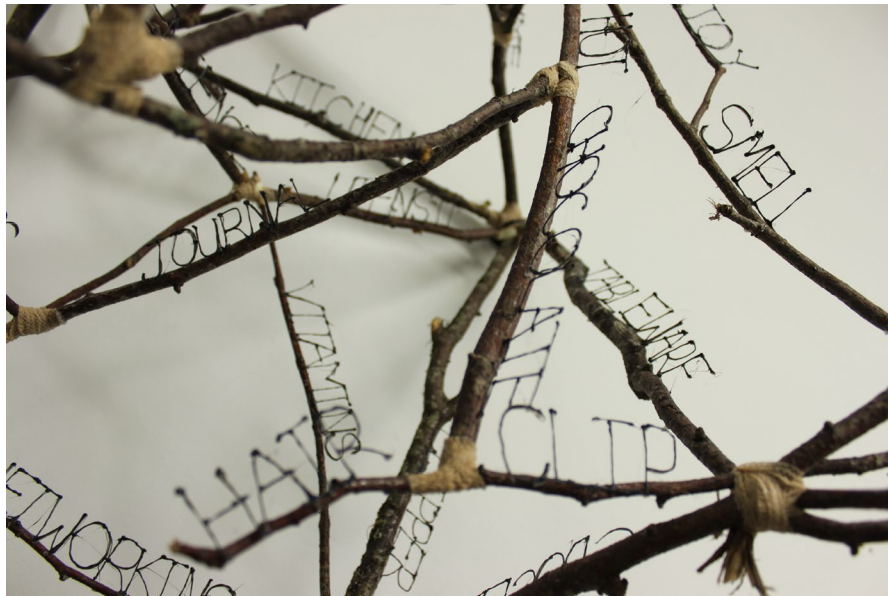


Figure 66: Using 3D pen, words from the visual map are materialised¹⁰⁹

Figure 66 shows the lettering of the written relationships, made using a 3D pen. The letterings are arranged on the twigs according to the triangle visual map. I further elucidated the connection of each relationship by fixing the neon strip lights (See Figure 68) to create lines indicating the relationship on the ‘twigs’. Neon strips lights provide vivid colours – five in total: red, green, blue, yellow and white (see Figure 67) that glow in a low-lit area or in total darkness. The glowing effects are intended to convey the meaning of each relationship through the variation in neon light colours. The colours represent the analysis illustrated in Figure 65.

¹⁰⁹ Figure 66: Using 3D pen, words from the visual map are materialised (Researcher’s collection, 2014)



Figure 67: Neon strips lights¹¹⁰

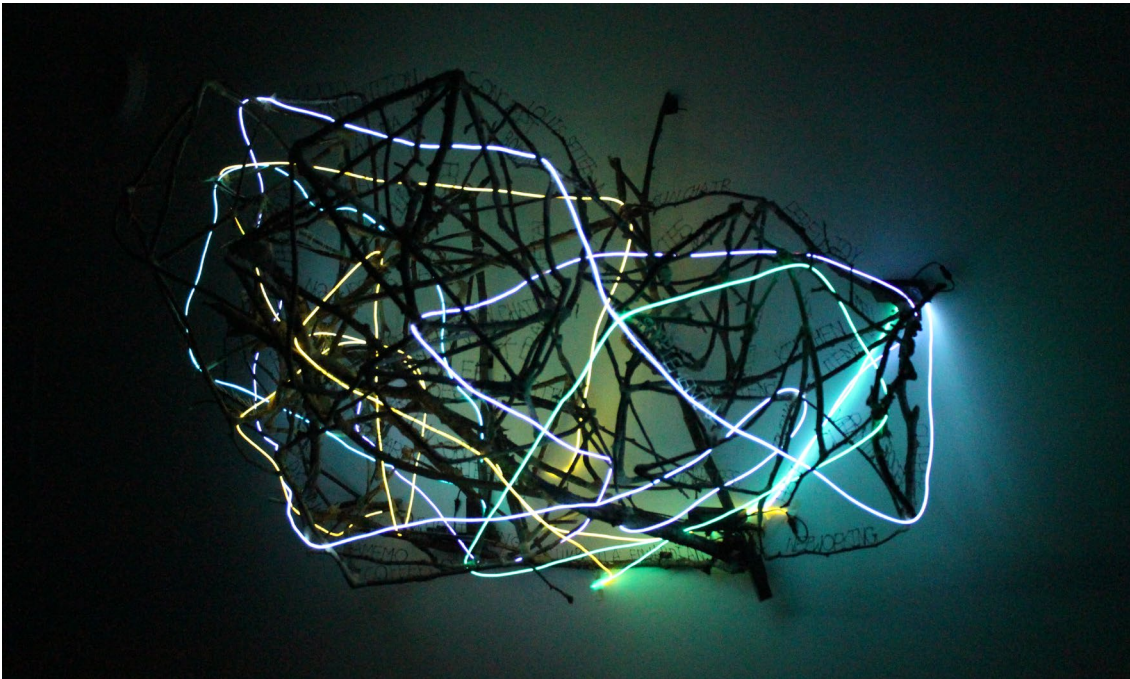


Figure 68: Lit up twigs showing the lighting variations¹¹¹

¹¹⁰ Figure 67: Neon strips lights (Researcher's collection, 2014)

¹¹¹Figure 68: Lit-up twigs showing lighting variations (Researcher's collection, 2014)



Figure 69: The sculpture installation¹¹²

Figure 69 shows the sculpture at the exhibition during my course transfer examination. 'Twigs' was mounted onto the wall at the standard eye-height (1500 mm). It was necessary for the audience to feel the presence of the analysis in a tangible format, lit-up or in total darkness. The sculpture addresses questions regarding the possibility of expanding the meaning of objects and their relationship, which fluctuate from time to time, although the essence remains.

Summary of 'Twigs'

Delivering information through a tangible object is a challenging task as a researcher/designer needs to internalise the outputs of the analysis and present them in the most familiar format, sculpture. Sculpture can be functional and this

¹¹² Figure 69: The sculpture installation (Researcher's collection, 2014)

is the case for 'twigs' as it can also be seen as an incandescent object that emits light. Although I opted for battery-operated neon strip lighting, due to the cost and to achieve a prosaic look, they suffice in portraying the striking neon lights that highlight the lines of the relationship. Furthermore, battery-operated neon lights are very mobile and enable the researcher to move lights to different twigs in order to resemble the fluctuating state of my relationship keywords. The lettering was added to the map later, to mark each word and to inform the audience of the objects' continents whereabouts. The lettering was made using brown ABS filaments to blend in with the natural properties of 'twigs'.

'Twigs' embodies the depth of my own understanding of my own objects and the interpretation of the material and experience of each in a very straightforward way. There is great potential for the sculpture to grow. Although the study was limited to exploring only 30 objects, this sculpture can be expanded and interlaced with many layers of additional objects in future. Furthermore, the use of natural material as the basis for this investigation has propagated the 'upcycling'¹¹³ method by transforming recyclable material into something new and useful. Overall, the sculpture sparked a great deal of discussion about the direction and relationship that each keyword holds. It also invited questions about the system of objects the researcher tried to establish in this exercise. I researched Baudrillard's 'The System of Objects' and combined this with Desmet and Hekkert's product experience framework and Norman's

¹¹³ Upcycling refers to the creative reuse of waste materials. Typically, the original form of the existing material will be given a facelift or changed into something else. For example, upcycling milk cartons into wearable bags or rugs.

three levels of design to create the 'twigs'. The sculpture, therefore, marks the start of the my journey of practice.

5.5 Manifestation of the FSA values in designed objects: Eating implements

For the next practice element, I theorised the FSA values in tangible objects that share the same values. Eating is an activity that has monumental effects on our lives, especially in this epoch; we take our food seriously. Furthermore, food movements revolve around our dietary preferences, such as vegetarianism, 'clean-eating', *pescetarianism*, and other food movements. It has emerged that a monochromatic diet, designed for daily sustenance, has evolved into this colourful menu to express ideology, fashion statements, and of course to satisfy our cravings. We are now open to accepting different types of diets and styles of cooking due to the globalisation of food. In fact, food is the perfect example of how globalisation has influenced society. Indirectly, food affects the way we embrace it, as we must familiarise ourselves with a specific way of handling, eating and, sometimes, digesting it. Food comes with its own utensils and rituals with which one must comply. Utensils are synonymous to a choreographer. They affect our engagements, clothing, transportation, usage, position, removal; they are influenced by the materials and the way in which they are made. In addition, utensils navigate our daily sitting posture as they connect us to the ubiquitous objects that surround us; they also influence our eating manners or even gestures.

For the next practice element, I delved into the mechanism of eating objects or utensils that can teach us to understand the materiality in motion and experience occurring in the form of designed objects. For example, to eat a bowl of Kitsuno Udon¹¹⁴, one should use a pair of chopsticks and a Ramen spoon,¹¹⁵ usually accompanied by green tea as the main beverage. Utensils are like our instructor as they demand we use them indirectly in specific ways and, like most users, we simply concur. One question to consider is, “Do the utensils determine our unique eating experience or do we customise ourselves to fit in with the eating rituals using the implements available?” Eating is a sacred activity. Everyone opts for individual styles, preferences, likes and dislikes, and favourite places to dine. Suri (2011, as cited by Clarke, 2011¹¹⁶) claims that such personalisation illustrates the value of an approach to observation that involves respecting and reflecting upon a personal and intuitive point of view.

Furthermore, by understanding the observations that capture one’s imagination, customs and norms imply that unique traits can enrich one’s design intuition. According to Gen Suzuki (as cited by Suri, 2011, in Clarke, 2011), by observing in this way, it is possible to learn how certain qualities evoke a sense of aesthetics, intrigue, and amusement. Suzuki brings the notion of sensitivity to his designs, evoking such experiences for other people.

¹¹⁴ Kitsuno Udon is a Japanese noodle soup with deep fried tofu as the main topping.

¹¹⁵ Ramen spoon is a type of spoon shaped like a ladle that is used for sipping the broth.

¹¹⁶ Clarke, A. J. (2011). *Design anthropology: Object culture in the 21st century*. Springer. pp21
250



Figure 70: Gen Suzuki's 'Kami' tray challenges the limitation of the *urushi-e*¹¹⁷

Figure 70 is a work by Suzuki that renders the beautiful lacquered tray, a high quality environmentally conscious design product using the *urushi-e* technique. *Urushi*, a Japanese lacquer, is applied to the surface of the tray, thus producing an amazing glossy effect. *Urushi* is an outstanding colouring material with an anticorrosive effect, but it will separate gradually as time passes.

¹¹⁷ Figure 70: Gen Suzuki's Kami tray challenges the limitation of the *urushi-e*. Retrieved from <https://industryplus.com.sg/kami/>

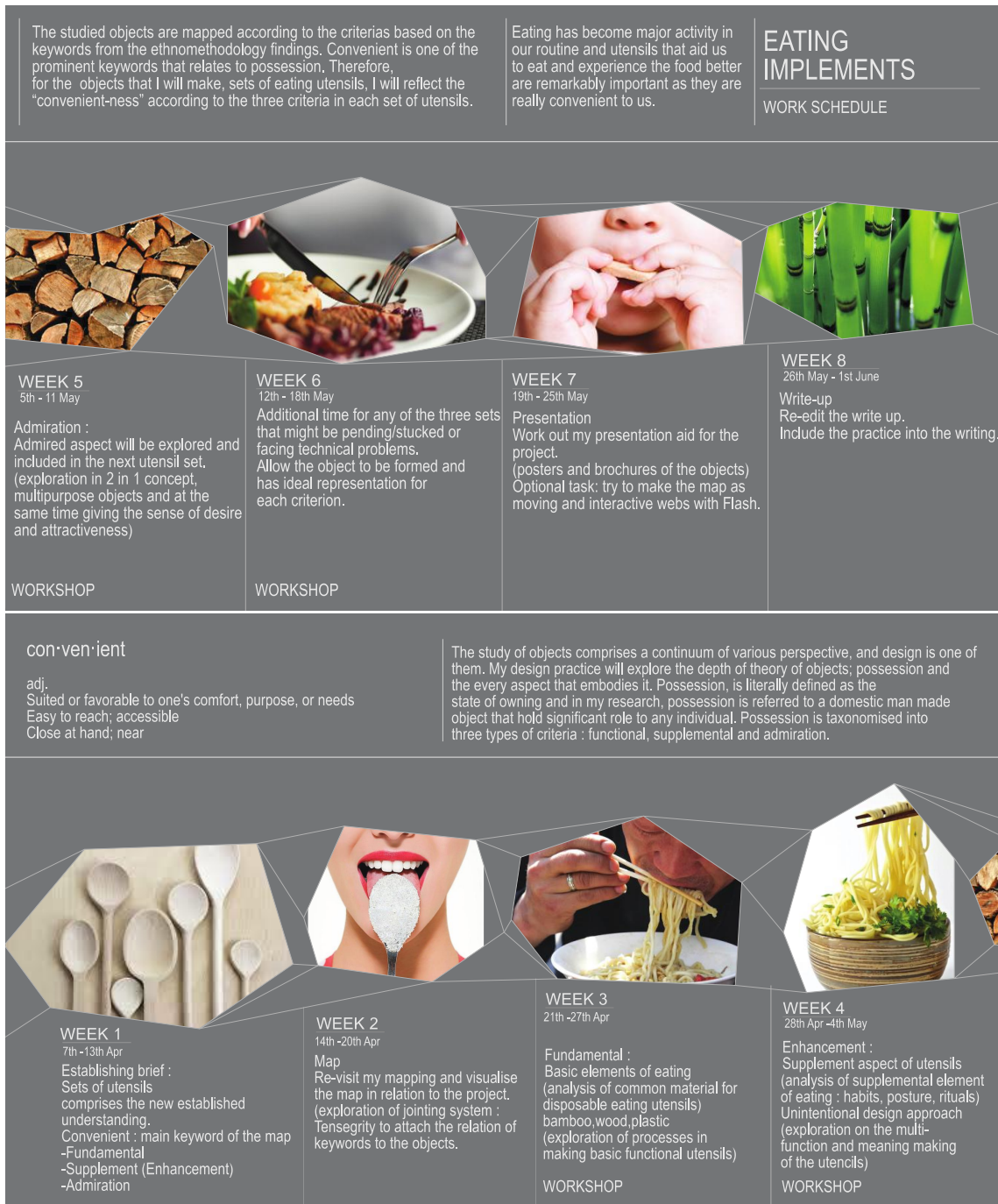


Figure 71: Eating implements project timeline

For the next series of practices, three types of eating implements are investigated and are proposed to encapsulate the sense of materiality and various experiences in material bodies. Figure 71 shows the practice timeline for the series of eating implements.

I worked around the FSA framework to produce my own set of practices, developing them by understanding the Fundamental, Supplemental and Admirable elements of the objects, and translating them into material bodies; I hypothesised that tangible forms could project the ideas more eloquently and lucidly.

5.5.1 Fundamental Object: Utensil One

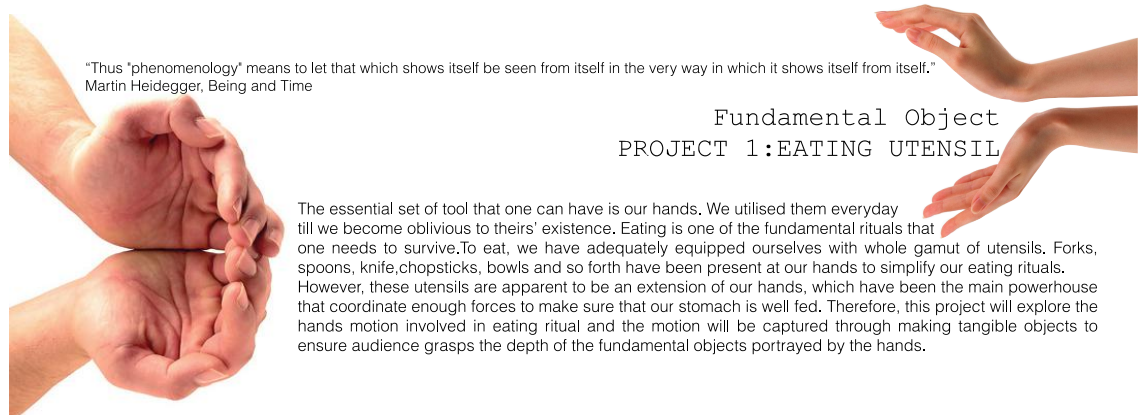


Figure 72: Fundamental Objects¹¹⁸

Figure 72 shows the Fundamental object project brief, which is the first design project I needed to embark on. According to Oxford¹¹⁹ dictionaries, the word 'utensil' is, a noun that means to function as a tool, container, or other article, especially for household use. In this context, the fundamental utensil for eating is the hand, whilst the essential set of tools is that of our hands. We utilise them every day, either directly or indirectly, so that we become too oblivious to them to notice their importance. To eat, we have adequately equipped ourselves with a whole gamut of utensils - forks, spoons, knives, and chopsticks have been present in our hands to simplify our eating rituals. However, these utensils are

¹¹⁸ Figure 72: Fundamental object (Researcher's collection, 2014)

¹¹⁹ "Utensil" definition, retrieved from <http://www.oxforddictionaries.com/definition/english/utensil>

extensions of our hands, which are main powerhouse that coordinate the function of the utensils. Hands alone suffice to demonstrate the motion and coordination that shape our daily eating rituals. Therefore, for this particular project, I aimed to explore the various motions of hands while eating and to capture this in tangible form.



Figure 73: Hand sculpture¹²⁰

Figure 73 shows hand motions in sculptural form. Each hand was made using alginate powder for the casts and plaster of Paris for the filling. Alginate powder is a popular material used to make dental casts and also for wound dressings. The researcher opted for alginate powder due to its natural property as it is derived from seaweed or dried kelp, as opposed to chemical latex which can be hazardous and difficult to dispose.

¹²⁰ Figure 73: Hand sculpture (Researcher's collection, 2014)

The casting process was carried out while the right hand¹²¹ was using chopsticks, spoons, and forks; it was mostly captured while eating. Typically, I use my bare hands to eat, an implicit skill requiring a form of tacit knowledge as my diet mainly involves rice and gravy. Using my hands to handle the food allowed me to feel the essence of the food, every grain of rice, which enhances the taste. Cutlery, on the other hand, is more structured and man-made, hence using it might heighten the experience of food-tasting, especially when it involves the act of sipping.

Figure 74 shows the same hand motion in linear formation on shelves against the glass window. The silhouettes of the hands therefore contrast the eating movements with the natural setting as the background. Viewers are more informed by looking at the silhouette of the hands and thus associate their own eating experience with the silhouettes of the hands. These hands illustrate various ways of handling food, such as holding the bowl to sip and using a fork, spoon and chopsticks to eat solid food. Mostly, however, ways of eating are embodied using just the hands.

¹²¹ For the casting process, the researcher's own right hand was used as the mould in order to capture the essence of her own experience using the objects.



Figure 74: Hands motion in tangible form¹²²

In summary, the fundamental object, the hand, plays a major role in constructing the next projection of the adjacent objects that aid the eating experience. Based on research understanding of the fundamental object, the hand grasps the essence of the basic utensil in order to eat food. The hand cups (spoon) then points and pushes food into our system, thus making it essential as a tool to create various eating experiences. Therefore, utensils are the extension of the hand that assist the eating experience and are designed to accommodate different types of food.

¹²² Figure 74: Hands motion in tangible form (Researcher's collection, 2014)

5.5.2 Supplemental Object: Utensil Two



Supplemental Object PROJECT 2: EATING UTENSIL

Supplemental objects refer to objects that add details to the elementary objects that we acknowledged. They can be a decoration that represent us, symbolise our culture, enrich our lives and elevate our lifestyle up to our own definition of comfort. Objects that assist us during eating are relative; they can be bowls, fork, knife and other tools. They are content dependent, and the type of food for our daily diet determines the utensils that we use. Supplemental utensils can be a derivative of user's favourite colour, shapes and material and therefore, for this project several materials will be experimented. The ubiquitous function and shape of utensils will be enhanced without taking out the essential components of the object.

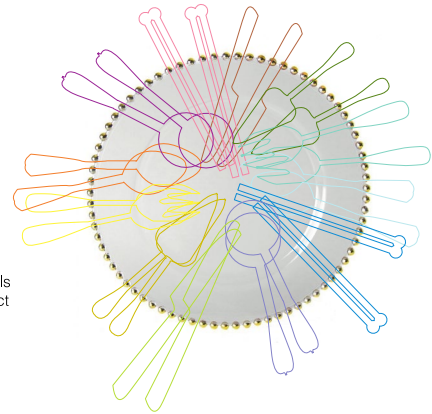


Figure 75: Supplemental object project brief¹²³

The supplemental objects presented in Figure 75 refer to objects that add details to the elementary objects acknowledged earlier. They can be decorations that represent us, mementos that symbolise our culture, objects that enrich our lives, or items that elevate our lifestyle to meet our own definition of comfort. Objects that assist us during eating are relative; they can take the form of a bowl, fork, knife, and other tools. They are content-dependent; hence, the type of food in our daily diet determines the utensils that we use. Supplemental utensils are a blend of the user's favourite colours, shapes and material and, therefore, for the course of this project, I will experiment with several materials. The ubiquitous function and shape of utensils will be enhanced without removing the essential components of the object. In addition, the final designed object encapsulates the mental thoughts that have been developed through the makers' or designers' own synthesis of perceived images with the semantic analyses of recorded stories that can be related to the

¹²³ Figure 75: Supplemental object project brief (Researcher's collection, 2014)

designed objects. Therefore, eating implements should encourage people to celebrate, appreciate and understand food in order support the reasons why food has actually brought everyone together.

Party utensils are proposed as supplemental objects that potentially enhance the party ambience whilst being conveniently at hand. The party bring-along set (see Figure 76) is designed to invite people to appreciate the details of finger foods, snacks, or appetisers. The simplistic form derives from a basic understanding of how basic 2D drawings can influence the experience of eating, either making it more pleasant but quirky, impossible but fun, or interesting but complicated. As objects can be sourced out of inquiries, these utensils demand that users start navigating their ways around food, not just by gobbling the food down straight into the tummy, but to place oneself in the correct posture for eating, sitting, swallowing, and digesting food.



Figure 76: Wooden and plastic party cutlery set¹²⁴

¹²⁴ Figure 76: Wooden and plastic party cutlery set (Researcher's collection, 2015)



Figure 77: Experiencing the party food using the disposable plastic spoon¹²⁵

Figures 76 and 77 show the party cutlery set backdrop in a real picnic experience. I aimed to create a fun and quirky party set that can be enjoyed by everyone, as eating at a party should be fun.

¹²⁵ Figure 77: Experiencing the party food using the disposable plastic spoon (Researcher's collection, 2015)



Figure 78: The plastic fork¹²⁶



Figure 79: Disposable wooder party set¹²⁷

¹²⁶ Figure 78: The plastic fork (Researcher's collection, 2015)

¹²⁷ Figure 79: Disposable wooden party set (Researcher's collection, 2015)



Figure 80: Disposable wooden chopsticks¹²⁸

The party set celebrates the notion of sound, such as the cracking sound while splitting the spoon and fork from the case before using them (Figure 80). My intention was to recreate acoustical-themed party cutlery that is reminiscent of the sound of cracking a disposable bamboo chopstick head (Figure 80). The prototype was made using *Nyatuh*, a type of wood that is widely available in many hardware shops in Malaysia. However, this was not fully functional due to the wood thickness. The object was made using a CNC¹²⁹ machine; thus, there were certain limitations that the I needed to comply with, *inter alia* the thickness of the material. The wood needs to be at least 5 mm thick in order for it to be clamped with ease. For that reason, the *click clack* sound could only be achieved using a 2 mm thick wood sheet rather than a 5 mm *Nyatuh* wood

¹²⁸ Figure 80: Disposable wooden chopsticks. Retrieved on 30th April 2016 from (<http://www.davidlebovitz.com/saying-non-to-d/>)

¹²⁹ The CNC router machine is a computer-controlled cutting machine related to the hand held router used for cutting various hard materials, such as wood, composites, aluminium, steel, plastics, and foams. CNC stands for *computer numerical control*. (<http://www.protolabs.co.uk/cnc-machining/cnc-milling/design-guidelines>)

sheet a. The simplicity and dispensability of this party set lies within the overall design itself; it is made as a piece. A spoon and fork in a piece (Figure 81) symbolise the essence of eating, which is to scoop out the food without touching or contaminating the party food.



lines

The minimal shape provides new platform for other designers to think about the association of meaning, in addition to making objects aesthetically pleasing.



Figure 81: Lines as inspiration

On reflection, it became apparent that this was not the best material to work with, for the post-*Nyatuh* prototype; it is a type of hard wood and impossible to crack due to its strength. To reproduce the discussed artefact, a wooden tongue depressor machine must be used to achieve the desired outcome. Although the “acoustical” sound appears to be central to my argument, I shall rephrase my practice elements as a “conceptual” project. My hypothesis is therefore that the sound of cracking the picnic set/practice will give an acoustical experience

almost similar to the sound made cracking the chopsticks. In future, I will consider using other soft wood such as *Jelutong* or bamboo to enable the cutlery to be cracked or split easily, hence producing the desired acoustical sounds. I will also consider using the tongue depressor machine to make the “bowl” of the spoon, as a design is about making sense of things. For instance, Krippendorff defines design as follows:

Could be read as ‘design is a sense creating activity’ that can claim perception, experience, and, perhaps, aesthetics as its fundamental concern and this idea is quite intentional. Or it can be regarded as meaning that ‘the products of design are to be understandable or meaningful to someone’ and that this interpretation is even more desirable. The phrase of things is in parentheses to cast doubt on a third interpretation that “design is concerned with the subjective meanings of ‘objectively existing’ objects.

(Krippendorff, 1989, p. 9)

For this supplemental object, I was motivated to design something that could add value to occasional activities such as parties as, in accordance with Krippendorff, design is about making sense of things. Although the meaning-making is entirely context-dependent, the meaning can be shared by the wider community by permeating the important values in the designed object. In this case, I tried to transmit the eating experience using chopsticks into the party bring-along set and, although the experience was evidently different, the similar acoustical quality was echoed in an entirely different format, which was that of Utensil Two. Design will always be concerned about the fashion of the object, the appearance, and the aesthetics. However, for this project, it was not my intention to provide rigidity to the brief by focusing on the shape and usability of the utensils.

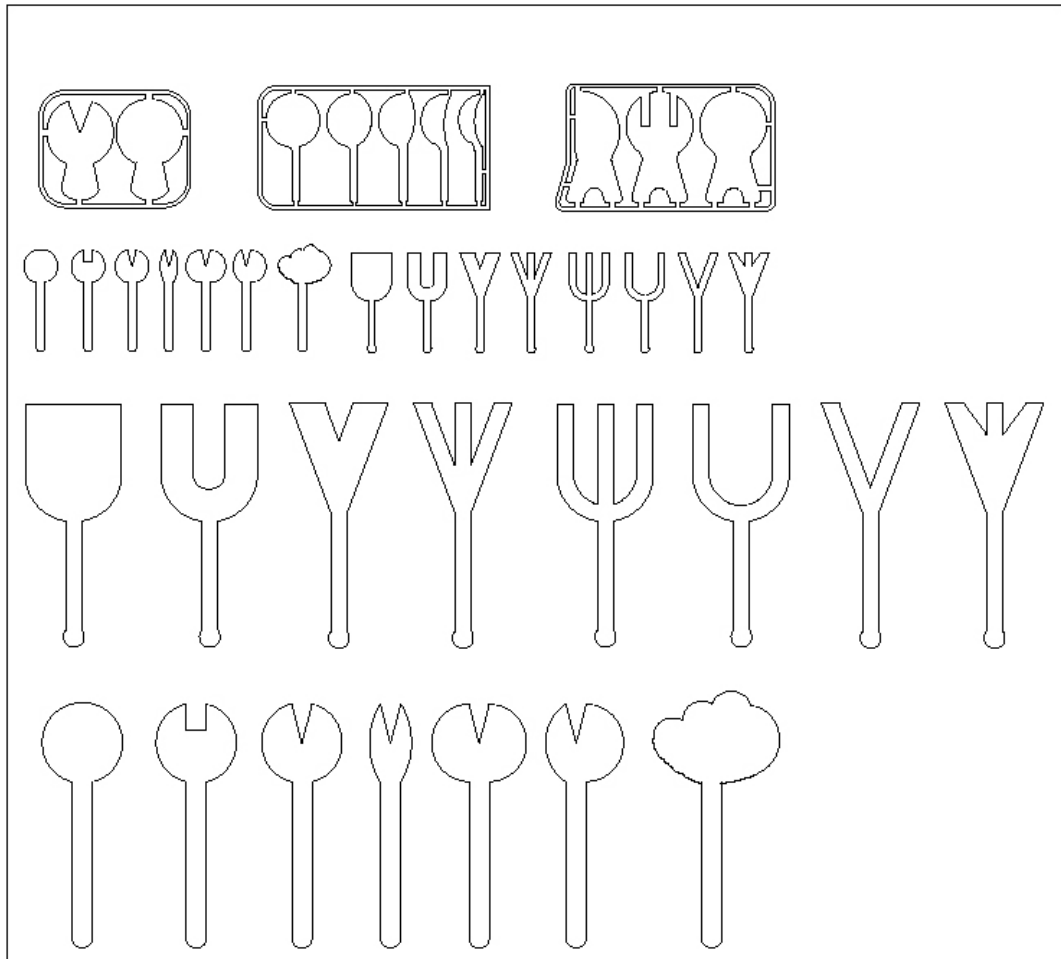


Figure 82: 2D drawing using Adobe Illustrator of Utensil Two¹³⁰

Figure 82 depicts Utensil Two, for the CNC machining purpose, where it is clear the shapes of the utensils are unusual, quirky, and more likely unusable.

However, I challenged this thought by using them in a natural picnic setting to demonstrate the ease of use of the utensils; although they are party bring-along utensils, the types of food eaten at a picnic are usually finger food and snacks.

The minimal shape provides a new platform for other designers to think about the association of meaning as well as making objects aesthetically pleasing.

Furthermore, they should be experientially pleasing and speculatively thought

¹³⁰ Figure 72: 2D drawing using Adobe Illustrator of Utensil Two (Researcher's collection, 2015)

provoking. The set comes in two materials, plastic and wood, as these utensils can be explorative. By understanding the type of food, the suitability of material, and the ritual they are designed for, the utensils act as catalysts for innovation, thus providing a new relationship between man and food. Quirky shapes and forms can invite smiles and spark conversations among users, which results in a perfect ambience for parties and picnics. The set assists the experience of eating, it adds value to the users, it sparks conversation, and it is dispensable. However, in the context of food hygiene, it is good practice to use cutlery when it comes to sharing food to avoid contaminating the shared snacks with sweaty palms. The role of the party set is thus interchangeable and content dependent. It depends on the situation, type of food, and the crowd (users) that define it as a supplemental object.

5.5.3 Admirable Object: Utensil Three

Admirable Object
PROJECT 3:EATING UTENSIL



Admirable sense captures the depth of desiring dreamy values and the sense is rooted from the amazement that filled with wonders. We are attracted to certain objects for many reasons, and one of them is the admirable quality that it has. And for that many reasons, nearest inspiration to us has become the main magnetic pole that attracts us to be associated with the object. Human anatomy or animals such as pets have always become the main source inspiration for designers. Utensil Three combines one of the human anatomy with the eating implement to bridge the connection between the inspiration and the mundane object. The outcome should reflect the admirable sense and intriguing, thus the object can be expanded and potentially be developed in the nearest future.

yimports.com/pages/how-to-play.html

Figure 83: Admirable object project brief

The admirable sense captures the depth of values that are desired and is based on the experience of amazement. We are attracted to certain objects for many

reasons, one of which is the admirable quality embodied by the object. For reasons, the nearest inspiration to us has become the magnetic attraction that makes us relate to the object. It is human nature to cling on to something familiar to us rather than noticing something unfamiliar. Human anatomy or animals such as pets have always become the main source inspiration for designers. Utensil Three combines a part of human anatomy with an eating implement to bridge the connection between inspiration and the mundane object. The outcome should reflect the admirable sense and be intriguing; thus, the object can be expanded and potentially developed in the future. In this particular type of object, I needed to be immersed in the basic eating experience to understand the amazement and wonder that I find in an object, eating implements especially. This immersive process was intuitive, narrative, and personal to me.

Because immersion is intimate, and heavily influenced by my own experience, the newly designed object had to have a visual metaphor with a strong story and be relevant. According to Suri (cited in Clarke, 2011)¹³¹, designers are storytellers who tell stories in tangible forms. It is crucial that a storyteller has the physical and mental space available for all these things to be seen and has explored and welded them together over a period of time. Suri asserted that designers utilise narrative materials to aid in design thinking and their story can be read by using or looking at tangible products and objects that have been designed. As part of the same notion introduced by Suri, I then started to

¹³¹ What is important is to have the physical and mental space for all these things to be seen, and then explored and welded together over a period of time (Suri, 2011 cited by Clarke, 2011, pp 30 para. 1)

develop the narrative of the eating experience. Immersed within it, I explored the essence of the sipping techniques in eating noodle soup. It is part of my staple diet to eat noodle soup at least once a fortnight; hence, understanding the experiential elements of the noodle soup eating experience is crucial to this admirable object.

Therefore, to combine the admirable sense in my object, I observed the importance of tools and cutleries involved in that particular dining experience; of which the main implements were spoon and chopsticks . The spoon is used to slurp the broth while chopsticks are used to carry the noodles up to the mouth. These implements depend on one another when performing the task of eating. However, in my observation of specific eating noodles experience, there was another implement I became oblivious to, which was the bowl. A bowl plays a pivotal role in serving the dish and sufficiently containing the broth . It symbolises the content's structure as something soupy and liquid that needs to be lifted carefully. It can be hot or cold, but obviously if steam starts to rise from the top of the dish, we can tell that it is hot. I further observed the experiential and material elements of the eating ritual, which are the processes involved from serving to eating. During serving, I observed that the ladle was used to scoop the broth into the bowl; a messy process indeed as a trickle of the hot broth dripped from the ladle to the edges of the bowl. Then, during eating, the broth was sipped using the spoon at first and then the bowl was lifted and I slurped the broth direct from the bowl to mark the end of the process of eating the noodle soup. From the processes discussed, materiality can be scrutinised from three aspects; the compatibility of the cutlery and the type of food, the

malleability of handling the bowl or container for the food, and the physical properties of the bowl, spoon, and the chopsticks.



Figure 84: Utensil Three

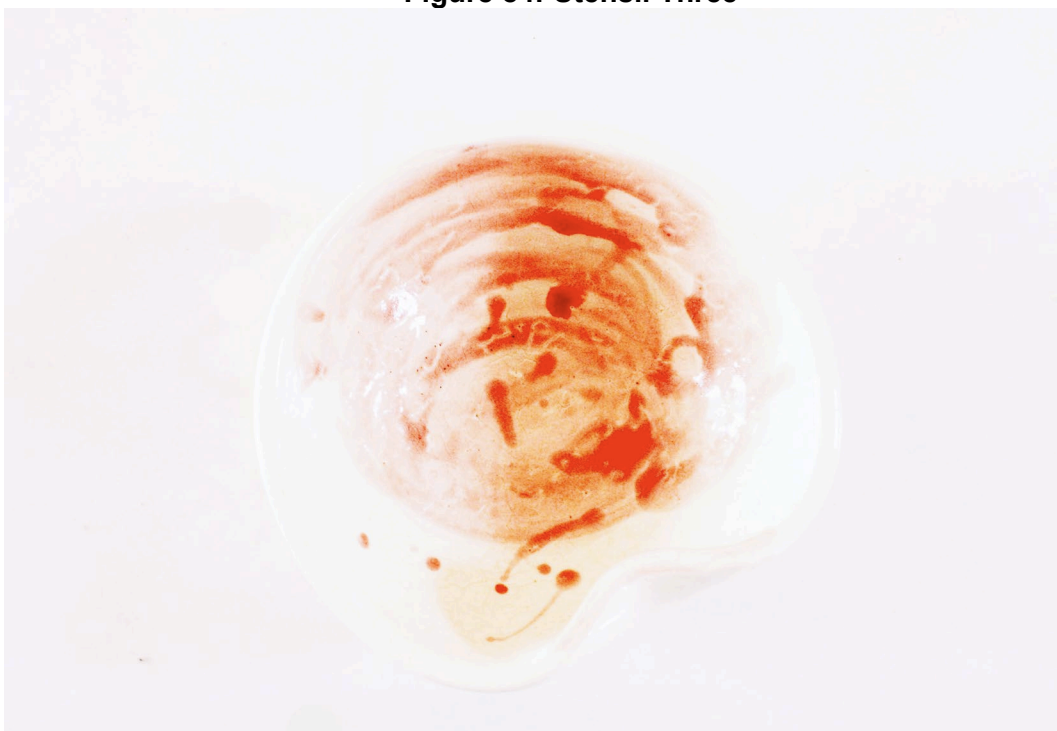


Figure 85: Folded bowl

(Source: Researcher's collection, 2015)¹³²

¹³² Figure 84 and Figure 85: Folded bowl (Researcher's collection, 2015)

Figures 84 and 85 show Utensil Three, a prototype of a bowl that I designed and made. One of the sides of the bowl was folded in the shape of a thumb rest. As I was immersed in the eating experience, I noticed that the thumb always dangled in the air, waiting for the next interaction with the bowl. This new object suggests where the thumb should sit and enables me to lift a bowl that contains hot broth easily from the kitchen to the table. The thumb rest is an excellent design solution although it might take up some space on the bowl. A fold is therefore an easy solution for the bowl and could change the way we see the bowl or plate designs. The fold not only helps the user to lift the object, it also enhances the aesthetics of the object. This combination of functional and aesthetic values is undeniably admirable and inspiring.



**Figure 86: The way of holding Utensil Three
(Source: Researcher's collection, 2015)**

Figure 86 shows the correct way to hold the bowl, which is by placing your thumb either to the left or right thumb on the fold and ensuring that the rest of your palm and fingers wrap around the bowl to provide support. In the event of

lifting a bowl of hot noodle soup, users can use the tips of their fingers to support the bottom of the bowl, with the thumb placed on the fold.



**Figure 87: Coral red paint used to create the watercolour effect
(Source: Researcher's collection, 2015)**

Figure 87 shows that the bowl was glazed in white coat and painted with red coral shade. The strokes of the paintbrush should be easily seen and the smudge effect mimics the routine of spreading strawberry jam on a slice of bread during breakfast. Red has been known to increase stimuli, and in this context can stimulate the appetite (Singh, 2006). The finishes of the bowl, the red coral smudge, resembles strawberry jam which is reminiscent of my favourite mealtime; breakfast, which everyone gathered together to eat before going to school and work. It was the busiest time, yet ironically intimate.



Figure 88: Utensil Three's size variation

Figure 88 shows Utensil Three, folded bowls with different size variations. They are stackable and easy to hold and the spout becomes bigger, depending on the radius of the bowl. I did not put any finishing on these bowls, as I wanted to exhibit the nature of the bowl itself. After two days of drying in a half-opened kiln, these bowls survived the cracks. They are made using clay found behind my friend's abode. These bowls echo a sense of familiarity as they are self-explanatory and no manual is required to tell you where to place your hand: the wide void of the bowl is where the food should be, and the spout is where our thumbs should be resting.

In Appendix F, I have compiled details of the entire process involved in the making of Utensil Three.

5.6 Conclusion

In summary, this chapter brings together both the theoretical analysis of the FSA and its application in the practice section, demonstrating the profound influence on this body of work. Although it has only been tested at the pilot stage with twenty-one students, the analysis is relevant and reliable. The FSA is potentially a tool to assist novice designers to frame their design attributes in a limited time, thus alleviating uncertainties. The researcher intends to test the FSA at different professional levels to gain more feedback about the tool and improve its application. This theoretical analysis has been published as one of my conference papers, *entitled Mediating Emotion Through Objects: The Understanding Of Designed Objects As An Assistive Tool For Designers* (Hapiz, 2016), which was published in the Design Society Journal.

I then developed the book author analogy to aid in understanding the outcome of the FSA. The analogy suggests that the creation of an object should be accompanied by context, setting, and anticipation. This is when the FSA comes into play as it shapes design thinking by alleviating uncertainties and framing the design criteria, while the book author analogy enhances the outcome of design thinking by allowing the designers to consider the context, setting, and what to anticipate from the designed object.

The next part of the chapter addressed the practice elements of the study. 'Twigs' is the introductory practice project that presented the use of natural, ubiquitous material to visualise the two-dimensional object mapping.

Deriving from the analysis of object keywords, the researcher further elucidated the relationship of the keywords by mapping them onto the 'twigs' object. This enables the audience to understand the connection between the keywords and the objects, allowing them to experience the complexity of mapping the taxonomy of the objects beyond the rigid brackets of the keywords. I then moved on to the eating implements exercise to analyse three values of objects: Fundamental, Supplemental, and Admirable. These reflect the FSA keywords and internalise the framework in a more experiential way, as well as permitting a thorough investigation into the materiality and experience of the objects.

"Hands" is a series of sculptures that replicate the ways we consume food. They depict the posture, gesture, and motion while we use our cutlery and hands. They symbolise the motion that we are often oblivious to and sum up the possibilities in terms of visual experiences Siegel (2011) believes that, 'visual experiences have contents; thus, the contents of beliefs are conditions under which the belief state is true, so the contents of experience are conditions under which the experience is accurate' (p. 12) (see Chapter 3). With semiotic understanding, the perceiver will learn that these sculptures are signalling some postural activities, and with an entourage such as a spoon, forks or chopsticks placed adjacent to them, the perceiver will hypothesise that they are food-related objects.

The picnic fun set illustrates the mass-produced object culture that surrounds us. Material wastage is an issue that every designer attempt to solve, including

myself. The wooden fun set replicates the idea of cracking an old wooden ice-cream scoop after eating which produces the creaking sound. The acoustical object explores the hearing experience, which infers the sensible experience. However, the set prioritises the materiality, narrative, and physicality of the material, utilising scrap wood and plastic to maximise the use of off-cut materials. The plastic fun set enables users to re-use and re-cycle as it is made of plastic. The fun shape and crystallised appearance should also deter people from discarding it after use, as the material is sturdier and long lasting and the clear finishes represent sophistication. Although the shapes of the utensils are quirky and odd, the underlying semiotic principles allow the user to easily figure out a way to use it.

The folded bowl is a manifestation of experiential components as it implies a specific user eating ritual as Asians use their hands to scoop food and Muslims use only the right hand to eat. The folded bowl honoured these rituals by highlighting the use of the right hand to hold the bowl. The bowl explores our sensible and tactual experience. Sturgeon (2002), in Chapter 3, defines Merleau-Ponty's system of meanings as the intentions of the person who perceives the object, and these are reflected in the situation to which the phenomenal object belongs. The folded bowl contains the sensibilities of the bowl. Hegel (1977) asserts that a sensible experience is infused with multicultural interpretations of that perceived object but remains the underlying and basic mode of awareness which all subjects share. He suggests that a bowl is a bowl, it is lifted using either the right or left hand. Besides a sensible experience, the folded bowl explores the tactual experience dimension. It not

only allows us to manoeuvre the direction of our own food, it also changes the way we consume our food: we either want to stir it or use the fold to hold the bowl while slurping the soup directly without a spoon. As such, the bowl also acts as a form of cutlery. This coalesces with one of the materiality units; the physicality whereby the fold dictates the way we use the cutlery which in turn implies the properties of the ceramics bowl, a firm fold and able to withstand gripping.

For this particular exercise, these two separate properties were seen as one co-existent unit. For instance, in the Admirable Object exercise, a focus on materiality explored the physicality of the bowl, its shape and form and the way it contains the food, while the way our hands wrap around the bowl reflects the materiality of the bowl. In that same context, experience is an input that helps to build the form, which is the fold. By evaluating my own experience while eating noodle soup, I observe that the thumb rest is aptly placed on the lip of the bowl, thus enhancing the eating experience for the user. In the next chapter, I will explore other practice elements that illuminate our understanding of the notion of materiality and experience as a design and evaluative tool used to understand the complex dimensions of our relationship with designed objects.

Chapter 6: Investigating Materiality and Experience

Introduction

Subsequent to the previous chapter, this chapter will extend the understanding of materiality and experience through newly designed objects. This chapter challenges the traditional view of materiality, a notion that has been tied to the physicality of man-made objects such as volume, mass, structure and texture. This chapter proposes a new direction for investigating materiality, which is by designing new objects that manipulate the physicality and the narrative of the materials to ignite thought and invite discursive conversations. Although FSA has clearly pointed out the usability of each value, Fundamental, Supplemental and Admirable, these newly designed objects provoked the essence of experience and materiality. FSA values are the aspects, standpoints, or perspectives I will start from. These practice elements illustrate the significant values that matter to me. In this respect experience and materiality are considered a tool with which to design a new object. Research through designing forms another part of this chapter, This is an important step in designing objects, as it told me things about the material that I was working on. I prioritised my values, how I see materiality and experience, as these are designed objects that expressed my hypothesis. They are not problem-based objects, they are expressions and merely problematised objects. FSA continues to echo in these objects; however, I shall emphasise the notions of materiality and experience, as these are the focus of this chapter

Experience, however, is seen as a separate component of the tool, in contrast to discussions in the previous chapter in which materiality and experience are considered as one unit. This chapter takes a different path of understanding, adding a new paradox to the dynamic of our object understanding as experience is assessed and utilised in the creation of an object from a reflective practitioner's standpoint. Schon (1983, p. 138) asserts that:

“The practitioner has built up a repertoire of examples, images, understandings, and actions. When a practitioner makes sense of a situation he perceives to be unique, he sees it as something already present in his repertoire.”

Archives of memories and experiences have a profound impact on the actions of a reflective practitioner, in this context, a designer. Such repertoires are stored in our brain and can be retrieved again and again. As designers, once we are assigned to design an object, we will automatically retrieve the relevant data stored in our brain to help us digest the client's brief and propose new ideas. Memories, feelings, emotions, and past experiences shape the narrative of the object thus making an object unique and different from the designer's other creations. This reflection in action usually involves experimentation. Frayling (1993)¹³³ and Friedman (2008)¹³⁴ suggest that knowledge is embedded in social memory of practices or experiments. The archival data or, as Friedman calls it, tacit knowledge, enables us to practice. Tacit knowledge is profoundly significant in the knowledge category. All professional practice including the practice of research rests on a rich stock of tacit knowledge.

Friedman (2008, p. 154) defines tacit knowledge as:

¹³³ Frayling, C. (1993). *Research in Art and Design*, Royal College of Art Papers, 1:1, (1993/4)

¹³⁴ Friedman, K. (2008). Research into, by and for design. *Journal of Visual Art Practice*, 7(2), 153-160.

“This stock consists of behavioural patterns and embodied practice embedded in personal action. Some aspects of tacit knowledge also involve facts and information on which we draw without necessarily realizing that we do so. It also includes ideas and information that we can easily render explicit with a moment’s thought, and it includes concept, issues, ideas and information that we can only render explicit after deep reflection and serious work.”

Conversely, reflective elements are deduced to be associated with the experience in general. Throughout this dissertation, the researcher hypothesised that experience is another tool adopted to explore the dynamic relationship one has with a designed object and, in this chapter, will be rigorously explored through the lens of a reflective practitioner: thus, the outcome should demonstrate the applied experience component. This chapter is divided into two parts: examples of materiality objects and examples of experience objects. Both types of objects are formed of a collective of practical works to advocate this understanding.

6.1 Found Object: The materiality of Driftwood

Driftwood (examples shown in Figure 89) has travelled across the sea, exploring and surviving the torrent, either river or sea, and is thus rich with untold stories. Driftwood is further explored as the main material and functions as the designed object. It encompasses the materiality of the wood whilst comprising the functional aspects of the object. The fact that the river, sea and rain have sculpted the intricate contours of the driftwood is amazing and is,

ironically, the elements that artists have tried to achieve when sculpting wood or even a spoon.

In reality, makers always make, and I overlooked this material and did not see that it could make a designed object as driftwood is often perceived as residing in an aquarium filled with decorated items such as pebbles and artificial algae. Driftwood is known for its strength and the ability to withstand wet and humid conditions, therefore it is perfect for aquarium decoration. However, there are additional potential values for the driftwood as it can also be used for sculptural furniture. The intricate hollow contours of the driftwood are too beautiful to be cut off, such elements are therefore ideal as ornamentation and also as a functional table leg. Driftwood is such a unique material that we tend to be oblivious of its potential; the wood not only displays aesthetic beauty but also embodies the message of materiality that can be functional and also deliver aesthetic experiences.

Driftwood pieces were found floating in the river nearby and lying on the shores of the beaches of Sepat, Pahang, Malaysia. Some of them were found at the meeting point of the river and the sea at my local beach. The genus of each driftwood is unidentifiable, as the colours of each differ from one to another. The pieces were recovered as displayed properties, except for one piece that was halved at my friend's studio. Using a table saw, the wood was halved and, surprisingly, released the same smell as newly cut logs, regardless of their time at sea. Chronologically, typical driftwood has travelled from the river to the saltwater area, following the flow of the river. Heavy rains speed up the

movement of the driftwood, therefore when the rain is scarce, they will take longer to reach the sea or the shore.



Figure 89: The collection of driftwood¹³⁵

Figure 89 shows a collection of driftwoods that are potentially functional objects. The physicality of the unique form and texture of the wood captivate viewers/users who feel acquainted with the objects and relate to their origin. Although driftwoods have the distinctive features of raw wood in their natural state (dark shades, granular, coarse, curvy and jagged), the physicality of the

¹³⁵ Figure 82: The collection of driftwood (Researcher's collection, 2015)

materials allows them to be assigned a new function. As an aquarium accessory, a planter box, a sculpture, or a paperweight, driftwood displays the great aesthetics of hollowed contoured lines whilst functioning to fulfil its assigned purpose. Driftwood embraces the beauty of materiality and directs designers to immediately understand the relationship between the raw material and its physicality with assigned content and function. Some natural materials do not need any enhancement or modification for they encapsulate their own unique beautiful identity; thus, they require no application of paint or gold dust.

Furthermore, materiality is limited not only to its physical properties and tangibility, but also to its content and the narrative of the material. Although the stories are untold, not all mysteries are interesting once they are revealed; thus, some should remain uncovered. Driftwood challenges our perspective on perfection – a quality that is embedded in every mass-produced object and which many strive to achieve. Attempting perfection in manufacturing requires limitless testing and effort just to produce that precise curve. However, as seen here, imperfection is an ineffable and mysterious quality to work with. Sudjic asserts that:

For a designer the most difficult thing about looking for the positive qualities in imperfection is the demand that it places on them to justify every aesthetic decision they make. It introduces the possibility of subjective as well as objective qualities in design.

(Sudjic, 2014, p. 231)

For an object that sits on our table, such as a paperweight, that witnesses the hardship involved in finishing numerous items of paperwork, dissertations, books or drawings, it represents something that is beyond ancient, ageless or perhaps rustic. It is almost like learning to slice a sashimi from the great

master;, driftwood offers that kind of experience. Its imperfection, packed with stories, survived the thunderstorm and yet, on the desk, as a paperweight, this object deserves respect and honour. The subjectivity that underpins its materiality reflects its functional value. It should not be a doorstopper, nor a mug holder, but a paperweight justifies its existence sufficiently.

In this section, it is not the my intention to address the design problems of driftwoods, nor will I elaborate the design activity involved in the task of redesigning driftwood. The sole aim is to illustrate the relevance of seeing materiality from different angles and to demonstrate the potential for analysing materiality differently by embracing driftwood in its natural state and re-designing the functional aspects of the material. This section aims to shift our perspective on design, which is always concerned with material wastage and sources, to consider the available material that surrounds us to which we tend to be oblivious; the perfect example is driftwood. In essence, driftwood contains the whole package of being a reclaimed wood source due to its rustic look, the nuance of the greyish black exterior, the properties of strength and durability, and a narrative that makes it so exquisite and different.



Figure 90: Interplay between light and shadow of Driftwood

6.2 Experience Object: Summer Stool Series

A chair, seat, or stool in vernacular design normally denotes an ergonomically designed object that addresses specific design thinking and philosophy whilst functioning as a platform for us to sit on. A chair, after all, is a chair, which is built for users to sit on and rest. In this section, I will further discuss experience elements adopted in the stool making process. These objects attempt to address the experiential qualities that are composed of structures with an image inside the mind of the user that is based on the experience of the designer. Such stools rely on memories and the user's subjective perception as a tool to stimulate their experience of the designed objects. According to Merleau-Ponty, to embody the sense of experience, we should allow our body to experience for us when perceiving a phenomenon. Our perception ends in objects and, once

we understand and became aware of the objects, they appear as the reason for all the experiences we have had of the object, or could have had.

Sense experience, thus detached from the affective and motor functions, became the mere reception of a quality, and physiologists thought they could follow, from the point of reception to the nervous centres, the projection of the external world in the living body. The latter, thus transformed, ceased to be my body, the visible expression of a concrete
(Merleau-Ponty, 1962, p. 64)

Stool 1: The rocking stool

Our perceptual experience is assembled by all the senses in the brain so that a memory is born. The neuroscientists call this sensorial experience Qualia. The qualities of experience are subjective, according to Sturgeon (1994), Qualia Theory stipulates the common factor as arising through non-representational properties. These properties are represented as Qualia and are tied to subjectivity. Qualia exist over and above representational content and are ineffable in that it cannot be explained to someone who has never had a comparable experience. Huemer (2001) asserts that all experiences are attached to sensory Qualia, as they respond to perceptual experience, as compared to emotional or imaginative experience.¹³⁶ Furthermore, Qualia derives from the subjective or qualitative properties of experiences, as Hara (2007, p. 100) explains:

The sense of smell and taste are responses to the components of matter that touch the surface of the mucous membranes in the nose and tongue. So membrane perceptions are not limited to those occurring on the skin. All human perception originates in the responses of membranes to things physical stimulation transmitted to the brain through the nervous system.

(Hara, 2007, p. 100)

¹³⁶ Huemer, M. (2001) *Skepticism and the Veil of Perception*. Oxford: Rowman and Littlefield Publishers, Inc.,

Hara has summed up the possibility for exploring Qualia using different forms of stimulation; thus, this particular stool attempts to stimulate the sensorial experience through motion stimulation. The stool, a rocking stool, comes in the basic shape of a rectangle as the base, with its legs mirroring the shape of an anchor. It is not a typical rocking chair, as I used my own anthropometric dimension data for the rocking stool rather than adhering to the standard rocking chair dimensions. The stool encapsulates the subjective quality of experience when one sits on it. As it is a rocking stool, the sitting experience may differ from one person to another depending on who sits on it and the direction in which they are facing; it could be either an enjoyable or a stomach-churning episode. The idea was to create a stool that invokes my personal fear; which is the fear of motion or kinesiophobia. The stool therefore managed to encompass the experience without letting me fall. Most users who have sat on the stool have mixed feelings about it and describe their experiences as thrilling and apprehensive at the same time



Figure 91: Rocking stool¹³⁷

¹³⁷ Figure 84: Rocking stool (Researcher's collection, 2015)



Figure 92: Swinging the stool¹³⁸

Arnheim describes it thus as:

The experience of the present moment is never isolated. It is the most recent among an infinite number of sensory experiences that have occurred throughout the person's past life. Thus, this new image gets into contact with the memory tracks of shapes that have been perceived in the past. These tracks of shapes interfere with each other on the basis of their similarity, and the new image cannot escape this influence.

(Arnheim, 1974, p. 38)

Sensorial experiences are also connected to our previous experiences in life.

Memories and the olfactory sense give early definition to our new experience,

thus associating it with our past experience. The stool is made from local

wood¹³⁹, *Meranti*, and hence features thin curls of cathedral grain (see Figure

80) which is reddish in comparison to the European wood due to the climate.

Meranti is a common type of wood and can be found abundance everywhere in

¹³⁸ Figure 85: Swinging the stool (Researcher's collection, 2015)

¹³⁹ Local wood refers to researcher's locality origin, which is Malaysia.

Malaysia. Its availability is similar to the availability of English ash in the United Kingdom and is popular among makers.

The aim was to design a very simple, straight and rigid stool without any backrest. It also featured one of the requirements of a rocking chair, the absence of any arm rests. The message was transparent, to deliver the sensorial experience by creating the rocking motion, and the simplicity of the stool directs the user to acknowledge and understand the rocking stool before they use it. Thus, they understand how to use it just by looking at it: it does not need any manual. Its simplicity is formed out of the banality we normally see in every rocking chair. The edges are sharp, the motion is well translated, and patterns of *Meranti* thin curls on the seat panel display sufficient aesthetic pleasure for the eyes when no one sits on it.



Figure 93: *Merantii* wood grain

This unadorned stool is a representation of my fear. It provokes the mental images of swinging or moving too fast or an abrupt motion, which results from my emotions. The only adorned feature is the *Meranti* wood grain that creates a wavy curl on the seat pan. Besides the rocking feature attributed to the stool, does the material play a part in shaping my phobic experience? I reproduced the same design with different material- Rattan. Rattan is a common material for home furniture in tropical countries such as Malaysia due to its sturdiness and its availability as a natural resource. It gave me the same phobic experience. The curve exuded the same experience, but only if I sat on it. Upon gazing at the stool, I did not feel intimidated by it. The crafted woven seat and the warm colour of the rattan affected my perception of the stool at first. Compared to the *Meranti* rocking stool, by looking at it I knew (acknowledge) the emotion that it would elicit once I sat on it. Qualia is about the mental images created within us before we even utilise our senses. The *Meranti* rocking stool gives the qualia experience, whereas the Rattan rocking stool requires our senses to feel the motion.



Figure 94: Rattan rocking stool

Stool 2: Charred stool

Sensorial experience is again being explored through the creation of this stool.

One of the senses, olfaction, is closely linked to memory. As Doop et al. (2006, p. 65) explain, the power of scent represents:

...the slightest hint of perfume can transform the present into the past; it can re-create entire sensory experiences by providing an emotional link between past events initially experienced through separate senses; it can make memories seem real and tangible¹⁴⁰.

(Doop et al., 2006, p. 65)

Doop et. al. (2006) assert that the memories of scents do not decay as quickly as memories for other sensorial modalities. Some scholars argue that scents evoke older memories and are more emotionally laden. A charred stool presented the idea of stimulating the scents of barbeque, which should suffice to evoke old memories of having a get together evening, barbequing with my family in the backyard on special occasions. It is amazing how materials such as torch and wood can reignite someone's thoughts about their family, simply by awakening my olfaction sense through burnt smell.

The charred stool (see Figure 95) is made from *Nyatuh*, a trade name for the tropical hardwood abundantly available in Malaysia. To achieve the dramatic ebonised wood finish, a torch was used to scorch the leg and the base of the stool, at the same time bringing out the wood grain. Although chemical stains will give the same effect in terms of colour, scorching will provide the same result as well as releasing a natural wood fume rather than the fumes of the chemicals. The stool's anatomy consists of a single leg, a base, and a seat in

¹⁴⁰ Doop et. al. highlight the importance of sense of smell in evoking memories. Olfactory relates to the sense of smell that utilises the nose as its primary instrument.

Doop, M., Mohr, C., Folley, B., Brewer, W., & Park, S. (2006). Olfaction and memory. *Olfaction and the brain*, 65-82.

order to achieve a minimalistic look. When we see and approach the stool, our focus is directed to the dark charcoal base of the stool, whilst the smooth gradient created by the torch directs our eyes to its leg, then the seat. As I approach the stool, I experience it differently. The sense of touch allows me to experience the smooth grain of *Nyatuh* while at the same time, my olfaction will be awakened by the smell of burnt wood when caressing the base and the leg. My attention is then directed to the smell, stimulated by the stool rather than by its appearance.

It follows that the 'sensible quality', the spatial limits set to the percept, and even the presence or absence of a perception, are not de facto effects of the situation outside the organism, but represent the way in which it meets stimulation and is related to it. An excitation is not perceived when it strikes a sensory organ which is not 'attuned' to it.

(Merleau-Ponty, 1962, p. 86)

The charred wood finish not only creates the black shade naturally but, most importantly it has a powerful smoky scent, almost like the barbeque. To me, the scent evokes memories of having the family around during Eid, having real conversations with my mum and dad about life and goals over the barbeque. The scent is ephemeral, but while adjusting my hands to lift the stool, the friction between the palms of the hands and the wood grain ignites the scent of the charcoal.



Figure 95: Charred stool

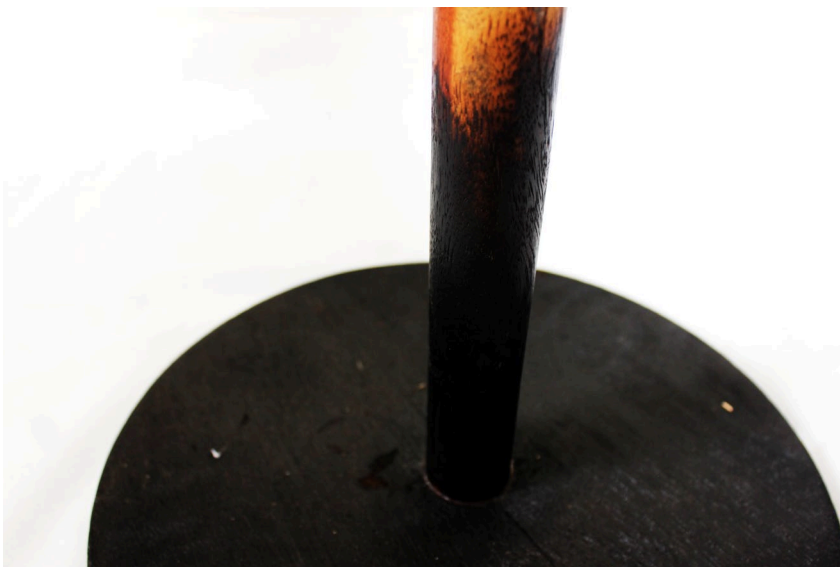


Figure 96: Charred leg and the stool base

Figure 96 shows the charred base and the leg of the stool, with the leg and whole base half-torched to create a subtle mahogany and black ombre. The gradual shift from the wood colour; mahogany to black, evokes an earthy and warm colour; a meaning which is usually tied to something humble, common, and familiar to us. The brownish colour of the trunk of my favourite mango tree and the black shades of my tinted bedroom windows; all are representations of my fond memories of my family. These colours remind me of the special annual occasion I celebrate with the family, the Eid, as the day ended with a barbeque. It is one of my profound memories that I will always treasure and cherish. In summary, the user will experience two types of experience from the charred stool, a visual experience and an olfactory experience. The visual experience encompasses the user experiences when admiring the gradient of an ebonised wood to the natural colour of *Nyatuh*, while the olfactory experience is stimulated by the outcome of the charring process; the smoky smell produced when one touches or caresses the affected area. Visually, one can connect with something familiar by associating the black gradient to the mahogany colour of memories. For example, by looking at the stool, I can reconnect with the colour of my first phone casing, which was that precise gradient, ebonised black to mahogany. The gradation of colours also reminds me of my hair colour at high school which was popular five years ago. These memories will, of course, vary for each user depending on their stock of memories. Smell, although ethereal and unapparent, contains the significant and rigid structure of memories. Many will associate charring with burning, but the occasions might be different. For example, some may be reminded of a Thursday bonfire with scout members while others might reminisce about their barbecue party night with loved ones.

These static measurements are defined by a 'stimulus' that is a message sent to the nose from the physical world. Its expression and meaning derives entirely from the activity of the users. In short, the olfactory sense affects the perception of poetic action to act as an agent for these experiences and transform them into tangible objects. We cease our own thoughts and reflection about the aesthetic-ness of the stool as all attention is drawn instead to the burning smell rather than the appearance of the charred stool.

Stool 3 : Sturdy stool

Human perception is closely related to the process whereby sensory stimulation is translated into structured experience. This experience is the joint product of the stimulation and of the process itself. Almklov (2005, cited in Hussain and Keitsch, 2010) explains that:

The perception of an object is never a mere reflection of its visual appearance but is affected by the qualities we inscribe to it based on our pre-understanding; previous experiences, prejudice, cultural background, associations, biases, and so on. What we perceive is a creation or construction that takes place through connections between incoming impressions and memory.

(Hussain & Keitsch, 2005, p. 3)

An object is perceived according to our own understanding which is built from past experiences, memories, cultural background, and, in this context, seeing the object (the stool) through the lens of semiotics. Semiotics have been defined and redefined by scholars from a wide spectrum of backgrounds, but it can be deduced that semiotic theory is primarily concerned with signs, which can mean anything that we agree on signifies with the possibility to mean different things to different people.

The third object, the sturdy stool, has legs which are made from metal whilst the seat is made of *Semangkuk* wood, a type of wood that is commonly used by cabinetmakers in Malaysia. The stool aims to offer basic articulation of our familiarity with the material used for the legs to, sparks conversations between people about the stability of sitting on a three-legged stool, which is also smaller in comparison to the other stools in the series. One might assume that the stool might topple when one sits on it due to the dimensions of the seat. However, when people glimpse the legs, they will be more certain and assured that the stool is sturdy enough to hold their weight, either as a stepping stool or a decent seating unit. The stool thus challenges perception about its compatibility as a seat, due to its triangular seat base and the fact that, at a glance, it appears narrow and unstable.

From a semiotic understanding of the material for the legs, one can be sure that the material used, metal, guarantees the stability of the stool, although the shape of the seat pan is that of a narrow triangle. Due to a great deal of practice, observations, and our experience with chairs, we can hypothesise as to whether the chair can sustain our weight and the correct way to sit on it to avoid any fall. We know this from our experience or, to use Popper's word, empirical testing. Popper (1959) explains how empirical testing leads to the emergence of evolving theories, whereby previous theories become corrected and sometimes integrated into newer, more comprehensive ones. Testing allows us to acknowledge and understand what works for us, and these metal rods offer a conclusive view as to sturdiness. We know metal is sturdy and,

whichever shape that it might take, it will operate in a way that conforms to its strength; thus, the stability of the structure is guaranteed no matter how small the seat pan is.

The welded joint takes the form of a hairpin, which then is connected to a steel slate at the base of the seat pan. There are three hairpin legs spread towards the floor, thus creating sufficient stability for the stool. The legs signify the sturdiness of the metallic property. Furthermore, its compact size and portability means that it can be used as a stepping stool or mini ladder, for example, to take the dusty coffee maker down from the top shelf of the cabinet. In a small kitchen like the mine, this stool works wonder. Sturdiness here is defined by the materiality of the rods, which are developed from previous experience with metal, despite the risky form of the stool overall.



Figure 97: Sturdy stool

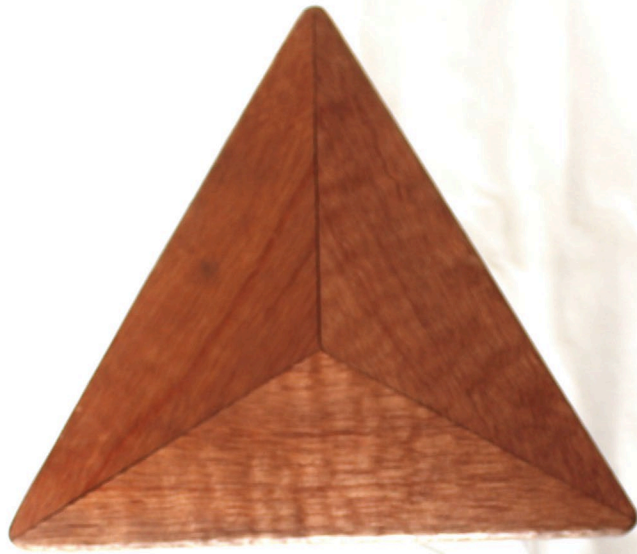


Figure 98: Stool's seat pan



Figure 99: Hairpin legs

Using the same triangular leg design, I reproduced another sturdy stool using rattan as the material (Figure 100). Rattan signifies the sturdiness of the core fibre, which is a natural material, and also its tensile strength. It is a bendable material due to its flexible wooden stem. However, the greatest concern is not the sturdiness of the rattan core stem, but the jointing system of the stool. The stool was made by local craftsman using the same drawing as that for the metal sturdy stool. The joints use self-cutting screws, thus, in time, these will, become loose. The fibre of the rattan will shrink and, in a humid area, will expand. The stool will start to wobble as the jointing starts to lose its strength. It does elicit a different kind of experience, even at first sight. I was confident about using the metal sturdy stool as step ladder, but I am not so sure about the Rattan version. It wobbles slightly. I can sit on it, but I will not stand on it. Thus, it is not as sturdy as the metal one. This shows that the sturdiness of the metal is evident in the metal stool but not in the rattan stool which is carefully made, but it is just a seat, unlike the metal sturdy stool.



Figure 100: Rattan sturdy stool

Stool 4: Knockdown stool



Figure 101: Knockdown stool

The experiential element is further explored in the next stool, the knockdown stool. Flat pack or knockdown furniture pieces have long been desired by many small dwelling owners, not just for their portability and the fact they are lightweight but also because they are usually affordable. Equipped with an understanding of basic woodworking skills, designers utilise this basic

knowledge to create something that is beautiful and highly desired, and can neatly fit in most spaces. However, a design that requires less effort to assemble and dismantle is more practical in an era of compact dwelling systems. Space is a luxury that only a minority can afford. In this epoch, most of us live in an apartment less than 700 square feet, and we could not afford to own more furniture even if we want to, due to the space limitations. Embodying the spirit of minimalism and compactness, I adopted a knockdown mechanism for this particular stool.

For the design of this stool, I focused on the activity that revolves around the chair, which is assembling the stool rather than perceiving its shape and form. Judging by my own experience allowed me to measure the level of skills required by the user to dismantle and assemble the stool. The stool requires the basic skill of cross-slotting the joinery of two pieces of the leg component to form the perfect topple-proof base. Using only interlocking joinery and four dowels, the stool is easy to assemble (see Figure 94). This knockdown stool has the potential to be developed as one of the knockdown furniture series. The two legs were precisely cut using a laser cut machine. In addition, *Nyatuh* wood was used for the seat, whilst offcut plywood was used for the legs. The design is very conventional, a mimic of an hourglass, which exemplifies time as it plays a major role in determining the joinery and mechanism embedded. The stool acts as a vehicle for a message to the future, that is if this stool still exists in 2030; it can provide evidence that we once made things out of wood to sit on and used our hands to assemble or dismantle it; that was how we experienced our furniture.

Having said that, not all furniture requires total hands-on in this way, but this stool demands a personal relationship with its owner, from where it is bought, how to assemble and dismantle it, to where to store it. The owner needs to understand how to assemble it, oil it to prevent it from cracking, and dismantle it if it is not in use. This describes an innate experience between object and human as we experience the materials to use and keep it the way we want it to be, we no longer need directions to use the stool. Knockdown furniture is known for its short lifespan as the screws usually exhaust the connecting holes; thus, the stool wobbles as the screws loosen. However, because the system requires two pieces of plywood and no metal screws or the intervention of alien materials, the gap will not be exhausted no matter how much it has been dismantled or assembled. Dowels made from recycled wood act as an adhesive that fixes the seat to the two-piece slotted structure. This stool represents the ideal joinery for a knockdown stool that will not exhaust over time, with the simplicity of the mechanism and form well demonstrated.



Figure 102: Slotting the pieces

Stool 5: Multipurpose stool

In this bustling epoch, everyone struggles to fit and adapt to the advancement of technology and a rapid change of lifestyle while coping with the basic daily routine. Although routine is repetitive, it is not dogmatic as it fluctuates with our insatiable needs; hence, the ability to cope with change is necessary. This stool attempts to reconstitute the everyday routine by collecting and reshaping changes into something that is easy to cope with and understand. The stool attempts to address the simplification of our routine in one object, a stool. It is multifunctional as it can be a footstool, a side table and, self-evidently, a stool. These days, younger urban dwellers prefer to live in small dwellings such as apartments (or flats) rather than a terraced house due to price and location. Multipurpose furniture pieces are more suited to this trend, as they are usually compact and cost-effective. I observed three main activities taking place in a small dwelling: eating, sitting while watching television, and working or browsing the Internet using a laptop computer or iPad. These activities require four objects; a table and chair, a cosy couch, and a portable laptop table. Therefore, a multipurpose stool attempts to cater for the basic needs of these activities and simplify the complex tangles of redundant routine into something easy to understand.



Figure 103: Stool as table

The stool is easy to assemble; it comes with four legs, a screw, a table top/tray, and a seat base. As users, we are the curators of our own space, arranging our home objects according to our routine and needs. This stool requires users to understand and prioritise their activity so that they can use it accordingly. As a table, the base is routed 2 mm deeper so that the edges prevent any rolling pencils from falling off. It is also ideal as a breakfast side table, especially during a long weekend, while reading a favourite book; users can also place their favourite cereal bowl and coffee mug on the movable tabletop that can also become a food tray when not in use (see Figure 103).

As a footstool, its height works efficiently to rest our tired ankles. Presumably, users already possess their favourite sofa in the living room; the footstool enhances the relaxing experience. Currently, we rely on our laptop computers

for work as well as catching up on the latest episode of our favourite television series that we missed the other night. The stool functions brilliantly as a working station by replacing the heavy working desk; its simplicity and lightweight properties camouflage every corner of the interior, thus allowing it to be placed anywhere in the house.



Figure 104: Stool with tray

Today, as the world becomes dense with pollution, , we as designers are called to use material ethically and ensure it is sustainability sourced. This is therefore an important element our design considerations. Dieter Rams published an article outlining the 10 good design principles with which every designer should comply. One of these is, “Design makes an important contribution to the

preservation of the environment. It conserves resources and minimises physical and visual pollution throughout the lifecycle of the product” (Rams, 1980).¹⁴¹



Figure 105: Detail of the jointing stool

The stool is made of *Nyatuh* and utilises technological advances such as the CNC machine to make its parts. It was not finished with any coatings in a bid to highlight the truest properties of the wood. The multipurpose stool conserves the material resources by multiplying its function while at the same time minimising the use of chemical agents for the finish. This avoids chemical pollutions which, even though it is a small step, can in fact make a difference in the long run.

¹⁴¹ Rams, D. (1980), “Ten principles for good design”, available at: www.vitsoe.com/en/gb/about/dierrams/gooddesign (accessed 4 March 2019).



Figure 106: Multipurpose stool

Summary

In summary, the stool series demonstrates the utilisation of experiential components without undermining the importance of materiality components in objects. Experience acts as tool for designers to understand and articulate design outcomes, either through the reasoning process in the design activity or as a catalyst in the development of the design. The series of stools mediates the idea of manifesting experiential components in objects. Experience is unique and content dependent. It has great potential to be explored and can

expand our own holistic understanding of the designed object. As designers, we are used to the user centred design (UCD) approach, which advocates that designers should design solutions to cater for users' needs. The need to be immersed in user's problems and situations are critical if we, the designers, are to grasp the essence of the problem. We can sometimes be too focused to solve the problem and tend to neglect the experiential properties of the object; thus, we lose the connection between the object and the user. It is vital for us to see the designed object through the eyes of the users as this allows us to understand the familiarity, semiotics, perception, and many other experiential elements of the objects, enabling us to reinvent, redesign, and improve any design scenarios.

In terms of the bigger picture, these stools transform our spaces from those filled with redundant objects to those occupied by functional objects. These stools define our spatial zones and inscribe values to our interior spaces. They question functionalism and personalities and spark conversations about our inherent relationship with furniture. These objects have a shared existence; we use them because we need them to give meaning to our spaces, to enliven our atmosphere which would otherwise become empty rooms without purpose. We nominate functions to our furniture, and they act as vehicles to transport the functional message to the space. Outsiders or guests can experience the space through our selection of furniture. The furniture can be a blend of eclecticism composed of chrome vases, wooden stools, and a marble top table. This combination of physical materiality aided by experiential quality shapes the way we inscribe meanings into our interior space, thus defining who we are and

signalling our preferences, stance, and status to visitors. In short, these experiential objects speak for us.

6.3 Case Study: New crafts of Magno Design

In a remote area called Kandangan, Indonesia, surrounded by paddy fields, it is evident that agriculture is the main economic backbone for this area. However, a conversation with Singgih Kartono, the man behind Magno Design, reveals that the farming sector is deteriorating. Villagers are now moving to the city, lured by better wages and living conditions. Born and raised in Kandangan, Singgih ventured into craft to generate his own income and now his factory is the main economic source for the Kandangan community. As a connoisseur of craft, Singgih defines it as:

an alternative economic activity that has the potential to be developed and to grow in villages. It has characteristics that are suitable for villagers' living conditions and growth prospects. These characteristics are that it is labor intensive, requires low technology and investment and abundance of local material input.

(S. Kartono, personal communication, May 2015)

Equipped with woodworking skills and the background of a product designer, Singgih focuses on small wooden desk objects as his main products (see Figure 107).



Figure 107: Desk objects by Magno¹⁴²

His objects are unobtrusive but, if you own one, you can feel its presence.

These objects have a sense of pride such that, when we utilise them, we will experience the grain of the wood, the matte-finish of each side, the smell of thin fresh coating, and the smooth imperfectness of the objects, through which we infer that they are all hand-made.

Harnessing the spirit of the wood, Singgih's designed objects mainly use oil as their basic coating to respect the wood and enhance the truest property of the material. For example, he claims that:

In designing, I endeavour to recreate unperfect and uncompleted products through minimizing the unnecessary features. This un-perfectness is a conscious and deliberate creation that will hopefully allow the users of our products to be deeply involved with each of them.

(S. Kartono, personal communication, May 2015)

Singgih observes that many designers are now more blatant in using natural materials, therefore, to stay ahead of the game, they need to make an impact

¹⁴² Figure 100: Desk objects by Magno (Retrieved on 17th May 2015 from <http://fokal.com/magno-wooden-desk-accessories-by-singgih-kartono/>).

by producing larger objects such as big furniture. Such irresponsible consumption of timber will not only lead the scarcity of the material, it will also affect the ecosystem. In contrast, Magno aims to produce only desk objects. They are small but their utilities are important in our lives. Singgih asserts that it is unnecessary to waste such precious natural material just to make big-statement-furniture pieces.

Abiding by the sustainability ethos, for each piece of timber that Singgih cuts down, he will plant a new one to replace it. Although it takes time to grow timber, his efforts seem adequate in ensuring the timber supply is unceasing. His workers flock from the neighbouring village and cycle to work, thus maintaining a pollution-free environment. Furthermore, Singgih has adopted the New Craft principle as vehicle for the manufacturing process. New Craft advocates traditional craftsmanship as the way to manufacture objects and adopts new management techniques in organising its activities.

The approach of New Craft's method and concept has many benefits. With these approaches, we can set up a new craft manufacturing center in villages and communities with no craft background. It becomes the new, alternative source of income that can accommodate a surplus of manpower from declining agriculture. The new method can also be implemented to grow or revive existing crafts activities that are in decline. As a result, the New Craft method will produce high quality products that have the potential to compete in the export market.

(Singgih S. Kartono, May 2015)



Figure 108: worker in his element, cutting materials following Singgih's manual

Magno Design has sparked many discussions on positioning design in a smaller scale industry, and bridges crafts and design in object creation through the New Craft method. In other words, crafts can be industrially made, but with the right means, and, in this context, by adopting the New Craft philosophy. The distinctive flair of Magno that every designer should admire is the respect it has for the wood and how Singgih manages to foster awareness among the community about using timber responsibly as a matter of respect for the craft itself. Magno represents an image of sustainability at its best, from using the wood responsibly, re-planting the material to ensure an endless supply, managing labour efficiently, and thus sustaining the economic growth of the local community.

In addition, Singgih propagates the idea that users/owners should care for the objects that they have, stipulating that the owners are liable for the maintenance

of their own objects. Like nurturing the spirit of love towards the object, owners/users should build a relationship with the object by acknowledging the right treatment to adopt and understanding the environment that best fits the object. Designers should leave some room for improvisation in order to create a connection with the users/owners, as demonstrated by Magno Design. Therefore, Magno's objects are the perfect sustainable objects as they responsibly respond to the environment, labour management, scarce sources and, most importantly, they inscribe values to our desk life – the value of loving our ubiquitous desk object by treating and knowing our own desk mates.

More importantly, Magno's objects have been awarded the Japan Good Design Award¹⁴³. This prestigious award honours brands that promote the design of a wide variety of products that improve the quality of life and assist the further advancement of industrial activities. Magno is not just a brand that caters to consumers who particularly want to be associated with the New Craft tribe, it is one that also creates jobs and opportunities for local villagers, enabling them to explore their talent as well as giving up their time in order to generate income for Kandangan. When we own Magno objects, we are experiencing the craftsmanship engraved in the objects, and that thought alone inspires use to love and nurture the objects.

Another fascinating attribute of Magno that inspires me is the aspirational vision Singgih has for his brand; he not only designs an object, he considers the implications of his products. He determines the fate of his objects as he put his

¹⁴³ More awards information can be retrieved here: <http://www.magno-design.com/?id=awards>

trusts in the users to treat and “finish” the objects. The experience is almost like we are babysitting someone else’s baby in that we will become more attentive and vigilant. This transaction is unique and Magno delivers this experience to us through his humble objects.

6.4 Conclusion

In summary, this chapter has introduced us to a new way of seeing objects; in their material form and from an experience perspective. Theories are turned into practice by manifesting the understanding of materiality implicit in driftwoods. As transformable objects that honour understated dents and cracks, driftwoods could be anything that we want as we nominate functions according to their original form. There are times when drastic measures should be taken or a design activity should intervene in creating beautiful objects. However, in this case, driftwood is crafted by nature and is replete with memories, facts, and assumptions. Modifying the driftwood would be disrespectful to nature; thus, I opted to leave the driftwood pieces in their original elements and embrace them as designed objects when assigning relevant functions to the driftwood. This flexibility works perfectly in this case because, as a designer, it is inappropriate to omit these beautiful elements of driftwood for the sake of designing. We therefore appreciate this flexibility and experiment with the material components by turning them into functional objects such as paperweight and table lamps. Driftwood responds to these premises. It is categorised as a kitsch object

,especially for those who are tech-savvy, but it will be a keeper for those who appreciate nature inspired décor. It sparks conversations about where it came from and looping dialogues about its origin. It can be perceived as schlock, a kitsch object, or a paperweight; the perception is heavily influenced by the personality, experiences, and preferences of the perceiver. In essence, driftwood relies on the untold narrative that makes up its tactual concave surfaces. These not only invite questions, they also make us ponder its previous history.

The second part of the chapter introduced the stool series which focused on the experiential element of the objects. Experience, as defined in Chapter 5, is complex and consists of many layers. The stools explored the layers of experience and aimed to spark conversation about the mutual relationship between an object and a human. Stools are tied to an interior context; thus, I designed a stool that responds to common dwelling as well as devising a solution to my own phobia in one of the objects. The stool also highlights the idea of *qualia*, a condition when our perceptual experience is assembled by all senses that come together to fit tightly in the brain so that an image is born. This is akin to when we see red chillies, as we can anticipate that they are hot once eaten or tasted.

The Summer Stool series suggests both materiality and experience components. The rocking stool emphasises our qualia experience with the motion actuated by its form. The angle of the rocking chair does spark a kinesiophobic episode but, to others, it can be enjoyable and fun to sit on. The experience entirely relies on the physiological and psychological make-up of the

user. Thus, the stool illustrates the possibility of experiencing two different sensations, it is either exciting or stomach-churning simply by looking at its rocking motion.

The charred stool triggers our olfactory sense, smell. Smell evokes both memories and emotion. This stool explores our emotional experience from the smell of the charred wood and the physicality of the stool itself in that, when one caresses the charred surface, the scent becomes more vivid. Our olfaction recognises the scent of burning or charred wood as an unpleasant smell; an odour. Odour-cued memories are associated with older memories from the first decade of life. In an instant, we are transported back to the first family barbecue we had when we were on our summer school break. This stool combines the materiality and the emotional components that evoke our autobiographical memories.

The sturdy stool explores the contents of our visual experience, the hairpin jointing implies its sturdiness alongside the physical properties of the strong solid metal rod. The seat pan is designed to be slightly smaller to challenge our visual perception of the stability of the stool; however, the physicality of the metal rod surpasses our visual experience. The user can stand on it and even use it as a stepping stool for the narrow kitchen due to its slender size.

The knockdown stool responds to the space utilisation issue we are facing in this millennium. A slotting mechanism is the basic jointing for the knockdown; thus, it does not require any screws or adhesives to hold it together. The

knockdown stool suggests the physicality and narrative elements of materiality. It reflects the need for compact dwelling, low cost furniture and sustainable objects by addressing space concerns in its overall look. It iterates the space-time subject by replicating the shape of an hourglass as its silhouette.

The multi-purpose stool invites user to converse with it. It hosts a laptop, mugs or maybe a table lamp when not in use. It responds to the meaning making process, where it acts as companion to the user, as a table, a stool, a breakfast tray ,or a footstool. The basic shape of stool facilitates its unlimited functions. With time, the entelechy of its materiality acts as a documentation of the conversation. The coffee stains, mug rings, scratches and dents on the seat pan/tray are among the accessories that add another layer of materiality (narrative) to the fabric.

The chapter ends with the Magno Design case study, which was an eye opener as the brand not only responds to the environment responsibly, it also advocates equality as the workers are not underpaid and act to boost Kandangan's economy. It is instructive to see how one design brand can successfully transform many lives. The brand is not only humble but noble. Furthermore, Singgih's design objects are intriguing as they offer an adequate sense of contrast with the beautiful accent of ebonised wood combining with the lighter colour of wood to capture our attention. In addition, the tactility of the wood grain as well as the experience it offers is ineffable. It is inspirational to evidence the richness of Singgih's objects in terms of the material elements and

the experiential properties; all hand crafted, beautifully designed, and made systematically.

In this chapter, we have learnt that materiality and experience can be analysed as two different elements in an object; however, Singgih's objects manifest the blend of materiality and experience in his array of objects. Without materiality, an object cannot be experienced fully as it is not possible to engage its tactile properties or the olfactory senses. However, if we omit the experiential values of objects, this would make them characterless and worthless. Why would we even design an object if we cannot connect with it?

In Chapter 7, the final chapter, the researcher will highlight the potential of these findings in the design activity and creation of objects by decoding them in a more simplified and structured format. In addition, the researcher will present her thoughts on the potential of materiality and experience as tools for us to connect with objects, to untangle the relationship that we have with them, and to understand the implications of this for our lives.

Chapter 7: Conclusion

7.1 Concluding comments

This exploration began with an attempt to investigate our relationship with designed objects, hypothetically considering materiality and experience as a tool for designers to use in understanding their relationship with objects. The designer's task is not only to innovate and create new objects to improve people's lives, but also to rationalise the expansive typologies of objects that designers have created which keep multiplying, expanding and growing, thus making the world inhabitable. A new challenge for the designer is to think of exit policies for the unwanted, the unusable, and obsolete objects. When we design an object, do we consider the way it should be disposed of? Is the design self-explanatory, can it tell the user what to do with it when it is no longer functioning? What about the carbon footprint? Thus, there is one key question to ponder: are we making the world habitable? While we (the designers) are busy innovating and designing better objects for the mankind, do we respond to worldly problems such as the scarcity of material, increasing carbon emissions, and the seemingly endless issue of pollution?

The conundrum of objects is not dogmatic. New typologies of objects keep emerging, amongst which is the immaterial object. Immaterial objects such as visual artefacts have blended so seamlessly into our lives that we have unwittingly become heavily dependent on them, such as, for example, with the

Internet. We choose not to live without it. Social media platforms, an example of one of these virtual artefacts, provide an immense opportunity for us to expand the market for our designed objects. Regardless, the efficacy of these immaterial objects relies on the material bodies that act as a vehicle. The embodiment of the immaterial object has to be in the form of material bodies such as laptops, tablets, and mobile phones. Immaterial objects cannot exist without their material bodies (tangible).

Verbeek and Kocklekoren (1998) share an interesting insight into extending a product's lifespan, they assert that an object's meaning is inherently related to its materiality. Thus, the designer should focus on the physical appearance of the object such as its colour, weight, or scale rather than the symbol it may project. Crozier (1994, p. 161) reaffirms Verbeek and Kocklekoren by stating:

The object provides sensations of scale, weight, colour, density and mass. It can also convey information about the process by which it has been manufactured, about how it has been used. The user may have information about the history and significance of that object or of that class of objects, its psychological or economic values.

(Crozier, 1993, p. 161)

Crozier suggests that the designer should focus on accessorising and making designs that are more form-focused, rather than emphasising the meaning reflected in the objects. Nowadays consumers are well equipped with information. We are living in a ubiquitous information society, and this information is presented to us whether we acknowledge it or not. Thus, objects do not require a transparent representation, because consumers can relate to them in their own way. However, when considering immaterial objects from another perspective, this immaterial source, the Internet, offers a spectrum of

information that can present ideas we have never dreamt of. The problem with this is that, for the creative culture, this deluge of information has not just stripped away originality from the latest innovation, it has also limited the designer's imagination, of visualising something unthinkable because everything is internet-able.¹⁴⁴ We are now living in a time where we are perpetually confronted with a flood of information from different sources, and it can sometimes be too overwhelming to make sense of. New designers are heavily impacted by this. It limits their critical thinking skills and taking short-cuts deteriorates their ability to be a competent designer, although sometimes great designers excel in this internet-based epoch. Inspiration is vital for any designed object, but it also shuts the door to new ideas and encourages plagiarism.

The future of objects is unpredictable, but we can make sense of an object in terms of its essence, which is retained. From Alexander Graham Bell's 1876 telephone, to the Nokia 3310 and now the smartphone that has only one core button, we are still holding the receiver with our palm. Materiality and experience inherently resonate with the object and the form changes based on the time and context. This thesis presents several well-documented case studies of designed objects and sets of practices that address the potential of materiality and experience in order to understand objects, and thus connects the dots in our relationship with these objects. When investigating these objects in retrospect, or when designing new objects that address both notions, objects

¹⁴⁴ Internet-able refers to the culture that we are in, where everything is verified, attained and answered by tapping into our phone and searching the Internet. Internet-able is a term that our generation can relate to, because we are relying on the Internet more than we should be.

become present to us when we use and utilise them because they are perfectly tailored to our needs.

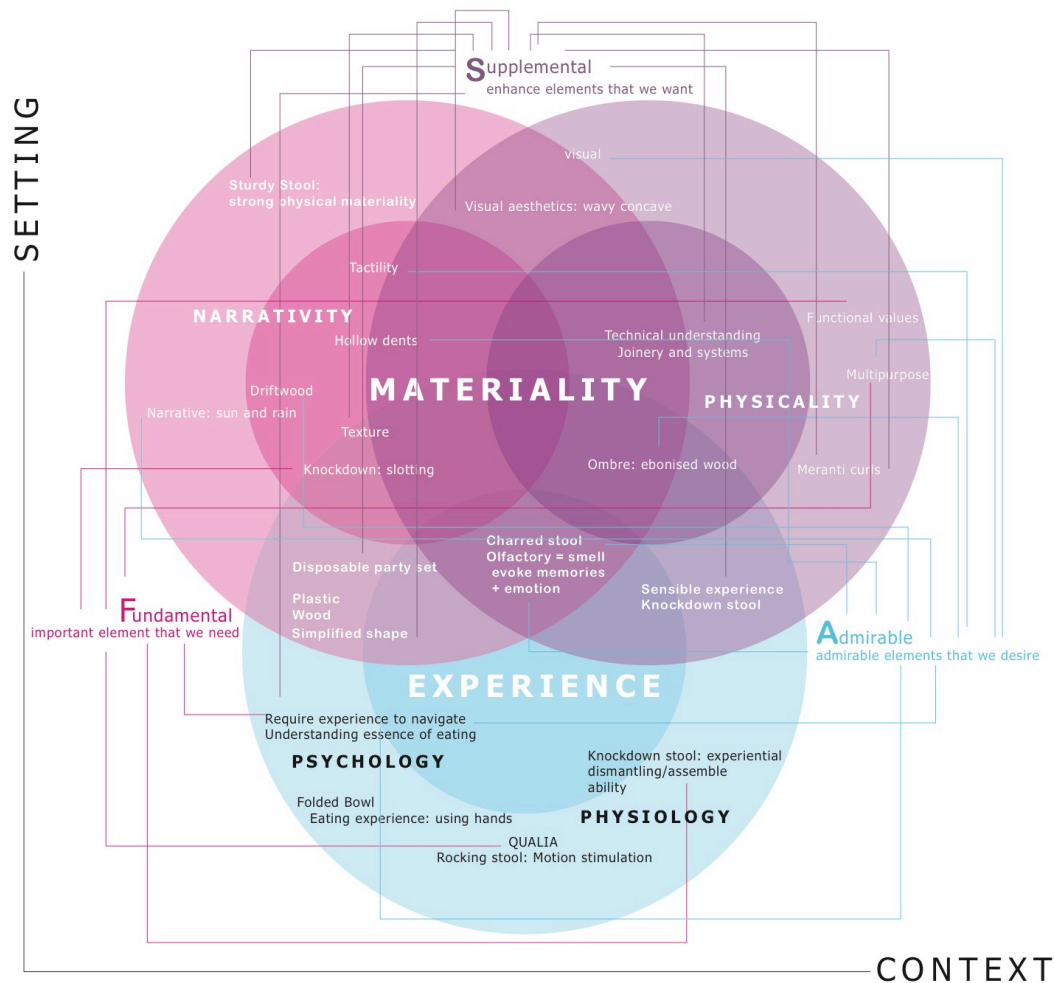


Figure 109: Materiality and experience components summary (See Appendix G for larger illustration)¹⁴⁵

Figure 109 summarises materiality and experience components that have been discussed throughout the dissertation. The practice elements are connected to the materiality and experience components. Materiality comprises the narrative and physical components. Narrativity explores the narrative possibilities of the objects which includes the components of content, meaning, stories, memories,

¹⁴⁵ Figure 109: Materiality and experience components summary (Researcher's collection, 2016)

representation, and symbols of the objects. Physicality informs the tactual, sensual, visible, tangible aspect of the object, while experience is more actuated and connected with us. Direct experience such as qualia and sensible experience are among the elements of this experience.

Some of our objects have become so familiar that they are concealed from our conscious attention. Thus, by investigating the relationship between these objects and the people who own them, another strand of investigation is opened up into what really drives the process of designing the object in the first place. The research aims to shift our focus from assessing objects through the embodiment of materiality to acknowledging the other concealed component of the object, experience. Relationships are complex, multi-layered, and dynamic. The actants are interchangeable. Materiality and experience act not only as a tool with which to probe the complex relationship but also to inform the taxonomy of the object it might belong to. The field of innovation gains most from this taxonomy. By expanding, combining, or separating the taxonomy of objects, manufacturers are able to see a gap for a new innovation that easily penetrates the market, and more importantly, is recognised by global consumers. In the case of the Tefal Airfryer, for example, the design team acknowledges the taxonomy the product belongs to (kitchen appliances) and the other relationships connected to it such as the health factor and also hygiene issues such as cleanliness. The *airfryer* has not only innovated the way to cook fries, it has also changed our diet. We can now eat fries guilt free.

This research has demonstrated that design is a multi-faceted discipline, positioned firmly in the socio-cultural sphere and touching almost every aspect of our everyday life. Thus, it has become evident that a critical investigation of objects offers invaluable insights into our understanding of designed objects. This investigation ends with a redefining of the term object itself. Do objects exist when they have a task? If it does not have a function, is it an object?

7.2 Contribution to knowledge

The knowledge contributed is beneficial for innovators and designers in helping them to view a designed object critically and in a different way. This dissertation offers new ways of seeing an object, not just in terms of the physicality and the embodiment of the abstract meaning, but in inherent components of the object such as the mechanism of its presence. During the PhD journey, a variety of research activities have been conducted and these have formed the basis for the development of FSA design tool. In addition to the development of the tools, the research journey has resulted in several contributions to the realm of design knowledge. Some are a direct consequence of answering the research questions and some have resulted from the research without being directly related to the research questions. The contributions to knowledge resulting from this PhD project are as follows:

i) The literature covered a number of dimensions describing the formal characters of objects, such as its tactility, physicality, narrative, and meaning. In

response to the first research question, “**How do we understand the object?**”, I have mapped the relevant characters of designed objects that will benefit future design researchers in understanding the conundrum of objects. It highlights the typology of designed objects in a vernacular of design greatly influenced by sociological and philosophical theories. Objects have always been under theorised in the design realm, and thus this formal character mapping will assist design researchers who wish to embark upon the study of object ontology.

This understanding of formal characters will expand our assessment designed objects. We will never simply say “this chair is low.” Instead, we will theorise that the chair’s height is 35 mm to mirror the Japanese root of humility. Prior to theorising about the chair, our body will embrace the chair with our senses and our sensible experience will tell us the height of the chair is different to the ones that we usually sit on. Our knowledge of the scrutinised topic, such as that of the Japanese plays an important role in shaping our perception about the chair.

ii) The FSA tool developed in the dissertation is targeted to novice designers, as one of its aims is to alleviate the time consumed in designing the client’s brief due to the uncertainties faced at the beginning of the design activity. The second research question, “**What are the approaches that critically inspect the relationship that we have with a designed object?**” was investigated in Chapter 3, researcher explained how the FSA was actually developed. The foundation of the FSA is the essence of the researcher’s own relationship with her surrounding objects. This interaction was documented, analysed and decoded using phenomenological methods, and FSA is a condensed and

critical tool designers can use to further understand the designed object. The tool offers endless opportunities for the exploration of ideas while at the same time framing our exploration into the pre-determined criteria that were set out at the beginning of the design activity.

iii) The dilemma of the waste maker was one of the central focuses of this research. Are we the waste makers? Given people's current purchasing powers, designers are more than happy to design products with a shorter lifespan, such as gadgets, which easily become outdated in a month.

The third question addressed in the dissertation, "**Why do we need to understand objects?**" implies the essence of the object. It is important for us to understand what makes an object an object, thus, in Chapters 5 and 6 I compiled objects that echo the essence of objects such as the understanding of ergonomics and culture (folded bowl), sensorial experience including the acoustic (picnic fun set) and olfactory (charred stool), qualia (rocking stool), the notion of spatial dimension (knockdown stool), interaction and sensitivity (multipurpose stool), and the content of visual experience (sturdy stool). To innovate, one should understand what to preserve and what to change in an object. This understanding is not necessarily limited to the specific keywords and envelop the trajectory of materiality and experiential taxonomy in the designed object.

Glossary of Terms

Auto-Ethnography

An approach to research and writing that seeks to describe and systematically analyse personal experience in order to understand one's own experience. It involves an analysis of the maker's own life story when analysing that of others through biography or ethnography.

BA Study

A study in which a defined group of people (the cohort) is followed over time to examine associations between different interventions received and subsequent outcomes.

Behavioural Design

This concerns the pleasure and effectiveness of use." Behavioural design is probably more often referred to as usability, but the two terms essentially refer to the practical and functional aspects of a product or anything we are capable of using in our environment

Bracketing

The three aspects of the phenomenological approach are bracketing, description, and horizontalism.

Bracketing (also referred to as epoché) is the process whereby the therapist attempts as far as possible to clear their mind of any distractions from the here and now with the client, and is a vital skill practiced within the HERD approach to EFPL. By putting aside notions of the therapist-as-expert, and any distractions, assumptions, or judgments we may have regarding what the client is saying or doing, we can be more present in the moment with them. Bracketing allow us to be aware of any preconceptions which may surface in our minds, and to consciously put them to one side as we work with our client. This allows us to be more present and available to the client in the here and now, and to ascertain what meaning is being constructed by the client and how he/she is responding to the situation in that moment.

Dasein

Dasein is one of the core terms in Being and Time. It can be simply defined as an entity that is conscious of the meaning of its own existence. In practical terms, this means the human being is Dasein as, arguably, no other life-forms on the planet are conscious of their own existence. Dasein operates out of a sense of “concern” for the world around. The world matters to us so our understanding of the use of tools is subordinate to our concern for the world. Knowledge is in regard to concerns or interests. A hammer can only manifest itself to us as a hammer when we use it.

Design

Design not only refers to things and spaces; it is also the process of planning, evaluating, and implementing a plan or answer to a problem. The first step in the design process is often to brainstorm possible solutions. This could take the form of words, sketches, or photographs that articulate the designer’s ideas. Once the ideas have been expressed, the designer chooses the best solution for the problem. Sometimes a designer will consult an engineer, who helps produce a prototype. The prototype is tested to ensure that the design is functionally and aesthetically viable.

Dialectic

Disputation or debate, especially when it is intended to resolve differences between two views rather than to establish one of them as true

Designed Object

A man-made object that is designed by a human (maker) that embodies functional, cultural, and aesthetic values to the end user (human).

Emotion

A strong feeling deriving from one's circumstances, mood, or relationships with others (designed objects).

Empathy

The ability to share and understand the emotions of others. Empathy helps designers set aside their own assumptions about the world in order to gain insight into users and their needs.

Entelechy

The realisation of potential, like a caterpillar turning into a butterfly, or small, hard corn kernels suddenly exploding into their more recognisable and edible state. In short, what we are coded to be.

Essence

Essence is the property or set of properties that make an entity or substance what it fundamentally is and which it has by necessity, without which it loses its purpose.

Experience

(The process of obtaining) knowledge or skill from doing, seeing, or feeling things

FSA Model

A design framework that aims to alleviate the uncertainty faced by designers at the early stage of designing. Fundamental-Supplemental-Admirable are values that need to be prioritised in this framework.

Goods

Domestic objects that i) we use up such as Colgate toothpaste and ii) objects that we use such as a laptop. Goods are entirely defined by how consumers perceive them; both goods and consumers are inseparable.

Hermeneutics

Heidegger calls "hermeneutics," the business of interpretation. As Heidegger asserts – my investigation will show that the meaning of phenomenological

description, as a method, lies in interpretation. It is therefore through hermeneutics, as a systematic approach to interpreting, that the authentic meaning of Being can be articulated. Language, in the form of words (logos), when it represents the phenomenology of Dasein, always has the character of hermeneutics.

KJ Method

A tool used to organise ideas and data. Similar to mind-mapping, except it uses nested clusters rather than a tree structure

Maker

The one who makes/plans the production of an object. It also refers to the one who makes an initial design and takes responsibility for its manufacture. The object can be a ceramic, book, graphics, furniture, or a product.

Making

A process of fabrication/making/visualisation of a design thought. It is a process that one needs to embark upon to ensure the completion a design idea.

Materiality

Understood as the physical substances from which objects are made, and the communication of these through colour, texture, size, weight. In short, it refers to the appearance of an object. However, a deeper analysis of materiality revealed that the narratives behind these appearances are counted as 'materiality', such as the root and history that can trace back the reasons for such an appearance. The materials are therefore carriers of communication, even though this is dependent on the cultural context and the environment of which the object is a part.

Meaning

A term that explicates an understanding of what objects mean to us. It encapsulates the importance and significance and also suggests what it is meant by an object indirectly.

Object

It exists *partes extra partes* and, consequently, it acknowledges between its parts, or between itself and other objects, only external and mechanical relationships, whether in the narrow sense of motion received and transmitted, or in the wider sense of the relation of function to variable.

Perceive

Become aware or conscious of (something) or notice someone/something using sight, sound, touch, taste, or smell.

Perception

Perception refers to the way sensory information is organised, interpreted, and consciously experienced. Although our sensory receptors are constantly collecting information from the environment, it is ultimately how we interpret that information that affects how we interact with the world. Our perceptions can also be affected by our beliefs, values, prejudices, expectations, and life experiences. Perception cannot occur without bodies to perceive and be perceived.

Phenomenology

A branch of philosophical thought concerned with the structures of experience and consciousness.

Photo Journal Study

A straightforward and very visual way to get a glimpse into how a person lives his or her life. It helps empower individuals to tell their own stories. The researcher gives the participant a camera and a list of prompts for taking photos.

Possessions

Everyday objects that one has at home, which are bought and kept for several reasons, either because of their useful function or due to their aesthetically pleasurable qualities.

Present-at-hand

Heidegger's term for something that exists. There are three types of presence-at-hand that have been identified:

- Presence-at-hand pertaining to entities within the world which is understood ontologically as a category.
- Presence-at-hand pertaining to Dasein (plural, that is, as pertaining to Being-in) and therefore understood ontologically as a 'quasi-object'. However, to see it in this way we must ignore the concept of Being-in.
- Presence-at-hand pertaining to a pre-ontological understanding of Dasein which a particular Dasein has. This is understood ontologically and does not ignore the concept of Being-in.

Qualia

Qualities or properties as perceived or experienced by a person.

The subjective or qualitative properties of experiences. What it feels like, experientially, hearing a musical note played by a cello and then hearing the same musical note played by a piano. The qualia of these experiences are what give each of them its characteristic "feel" and also what distinguishes them from one another.

Readiness-to-hand

The kind of Being which a tool possesses and the way in which it manifests itself. Heidegger calls this 'Readiness-to-Hand.' This does not merely occur in the act of using a tool as the tool is only manipulatable in the first place because it has this kind of 'Being, in itself'. However, the readiness-to-hand of an entity that leads us to consider it as a piece of equipment is only discovered by using it - never beforehand. This is the paradoxical nature of a tool, for no matter how long and diligently we stare at its outward appearance, we will never be able to discover anything ready-to-hand about a piece of equipment unless we in fact take it up and use it. For example, it is only when we take up a hammer in order to hammer that our primordial relationship to the hammer's utility becomes

apparent. The act of hammering itself (and the context in which this action occurs) is therefore what uncovers the specific 'manipulability' of the hammer.

The peculiarity of what is proximally ready-to-hand means that, in terms of an entity being a piece of equipment, its "thingness" must, as it were, withdraw in order for it to be ready-to-hand in an authentic way. The hammer, as a thing, becomes transparent in the hammering. In this sense, it is as if it becomes an extension of the human arm, for when hammering we can almost feel the nail and the resistance of the hammer.

Reflective Design

Considers the rationalisation and intellectualisation of a product. Can I tell a story about it? Does it appeal to my self-image, to my pride?" This is the highest level of emotional design; representing the conscious thought layer where we consciously approach a design; weighing up its pros and cons, judging it according to our more nuanced and rational side, and extracting information to determine what it means to us as an individual

Resonance

Refers to being able to evoke emotions or the condition of being full and deep in character

Semantic

Refers to Klaus Krippendorff's Semantic Turn, "the study of the symbolic qualities of man-made forms in the context of their use and the application of this knowledge to industrial design." By symbolic qualities, he is referring to the psychological, social and cultural context of a product, as opposed to only considering a product's physical and physiological functions.

Semiotic

Semiotics (also called semiotic studies) is the study of sign processes (semiosis). It includes the study of signs and sign processes, indication,

designation, likeness, analogy, allegory, metonymy, metaphor, symbolism, signification, and communication.

Sensible Quality

Considered the property of experience or a quality that one perceives, like roundness, motion, and sweetness. (To say that one 'perceives redness' when looking at a tomato is not to presuppose that the tomato is red.)

Sensory

Relating to sensation or the physical senses; transmitted or perceived by the senses. It covers five basic senses: touch, sight, hearing, smell, and taste

Symbol

Something recognisable that stands for or represents something else - an idea or concept, or a representation

Things

A 'thing' is an entity, being, matter or body. The presence-ness of the materiality of objects embodies the whole concept of 'things'. The mere physicality and materiality of the object is somehow in contrast with Heidegger's perspective on 'things'. Things are perceived from a sense of concern for the world.

Tools

These act as designed objects and as mediators to connect us with the environment. The meaning of tools is found in the space between one tool and another within the totality. Spaces are what is genuinely experienced. They can be either equipment or artefacts, but they have to be in use. A tool conceals itself when it is ready-to-hand. The tool must withdraw from our explicit attention. Tools must be absent otherwise they are present-at-hand. Beings are both present and absent according to Heidegger. Meaning is found through tool use. Cognition puts readiness-to-hand out of play.

Visceral Design

A visceral level of design refers to the first impression of a design, both in terms of how the user perceives the product and how it makes the user feel.

Visual Analysis

A tool for the critical analysis of different keywords; themes in a form of mapping that invite the researcher to explore techniques and the aesthetics of the data.

Visual analysis decodes keywords and is aimed at reducing the complexity of the data.

Waste Makers

Designers, through their work, can be responsible for the obsolescence (waste) that we experience in our society. Companies are using designers to be dishonest to the consumer, forcing them to believe in advertising messages, to buy, and to contribute to the economy of obsolescence.

References

- Almkov, P. G. (2005) . Radio – eller noen tanker om persepsjon, tanke og kultur. [Web log]. Retrieved from <http://www.apertura.ntnu.no/petter/skriverier.htm>
- Anderson, M., Deely, J., Krampen, M., Ransdell, J., Sebeok, T. A., & Von Uexküll, T. (1984) . A semiotic perspective on the sciences: Steps toward a new paradigm. *Essential Readings in Biosemiotics*, 377.
- Anderson, L. (2006) . Analytic autoethnography. *Journal of Contemporary Ethnography*, 35(4), 373-395.
- Antonelli, P. (2003) . *Objects of design from the Museum of Modern Art*. The Museum of Modern Art.
- Antonelli, P. (2005) . *Humble masterpieces: Everyday marvels of design*. Harper Collins.
- Archer, L. B. (1981) . A view of the nature of the design research. In R. Jacques, & J. A. (Powell, Eds.), *Design Science: Method* (pp. 30-47). Guilford, Surrey: IPC Business Press Ltd.
- Arnheim, R. (1974) . *Art and visual perception*. Berkeley: University of California Press.
- Aspelund, K. (2014) . *The design process*. Bloomsbury Publishing.
- Bachelard, G. (1994) . *The Poetics of Space*. (M. Jolas, Trans) Boston: Beacon Press.
- Baecker, D., Hartung, M., Wiebke, L., & Schwartz-Clauss, M. (2010). *The essence of things*. Germany: Vitra Design Museum.
- Balaam, M. (2011) . An Authoethnographical Design: Using authoethnographic methods to understand and portray experience through design. In *Workshop Paper. Culture Lab, Newcastle University. Newcastle, NE1 7RU*.
- Barthes, R. (1975) . *Mythologies*. (L. Annette Lavers, Trans.) New York: Hill and Wang. (Original work published 1957)
- Barthes, R. (1985) . *The responsibility of forms: critical essays on music, art, and representation*. (H.Richard, Trans.) New York: Hill and Wang.
- Baudrillard, J. (1968) . *The system of objects*. London: Verso.
- Baudrillard, J. (1994) . The system of collecting. In J. Elsner & R. Carnidal (Eds.), *The cultures of collecting* (pp. 7-24). London: Reaktion Books.
- Baudrillard, J. (2005) . *The Consumer Society*. London: Sage.
- Bayazit, N. (2004) . Investigating design: A review of forty years of design research. *Design issues*, 20(1), 16-29.
- Bennet, J. (2010) . *Vibrant Matter*. Durham, NC and London: Duke University Press.
- Berger, J. (1972) . *Ways of seeing*. London: BBC.
- Blumer, H. (1986) . *Symbolic interactionism: Perspective and method*. University of California Press.
- Boradkar, P. (2010) . *Designing things: A critical introduction to the culture of*

- objects*. Berg Publishers.
- Boulding, K. E. (1956) . General systems theory—the skeleton of science. *Management science*, 2(3), 197-208.
- Bramen, L. (2009, Aug 5) . The history of chopsticks. [Web log comment] Retrieved from <http://www.smithsonianmag.com/arts-culture/the-history-of-chopsticks-64935342/>
- Braud, W., & Anderson, R. (1998) . *Transpersonal research methods for the social sciences: Honoring human experience*. Sage.
- Brown, B. (2001) . Thing theory. *Critical Inquiries*, 28(1), 1-22
- Brown, B. (2004) . *Things*. Chicago, Illinois: The University of Chicago Press.
- Brown, T. (2009) . Change by design. *How design thinking transforms organizations and inspires innovation*. London: Harper Collins
- Bryant, L. R. (2013) . *The democracy of objects*. Open Humanities Press.
- Buchanan, R., & Margolin, V. (1995) . *Discovering design: explorations in design studies*. University of Chicago Press.
- Buchanan, R., Doordan, D. P., & Margolin, V. (2010) . *The designed world: images, objects, environments*. Berg Publishers.
- Burdek, B. E., (2009) . Objects: In between language and meaning. *Objets & communication*, (30-31), 41.
- Bürdek, B. E. (2005) . *Design: History, theory and practice of product design*. Walter de Gruyter.
- Butler, S. (2013, Mar 8) . A brief history of chopsticks. [Web log comment] Retrieved from <http://www.history.com/news/hungry-history/a-brief-history-of-chopsticks>
- Calkins, E. E., (1932) . What consumer engineering really is. In R. Sheldon & E. Arens (Eds.), *Consumer engineering: A new technique for prosperity* (pp. 1–14). New York: Harper & Brothers.
- Callary, B., Rathwell, S., & Young, B. W. (2015) . Insights on the process of using interpretive phenomenological analysis in a sport coaching research project. *The Qualitative Report*, 20(2), 63-75.
- Caula, R. (2014, Feb. 19) . OTOTO PCB synthesizer for creating DIY musical instruments by dentaku. [Web log comment]. Retrieved from <http://www.designboom.com/technology/create-diy-musical-instruments-with-ototo-by-dentaku-10-10-2013/>
- Chandler, D. (1994) . Semiotics for beginners. [Web log comment] Retrieved from <http://s3.amazonaws.com/szmanuals/bb72b1382e20b6b75c87d297342dabd7>
- Chandler, D. (2017) . *Semiotics: the basics*. Routledge.
- Chang, H. (2007). Autoethnography: Raising cultural consciousness of self and others. In *Methodological developments in ethnography* (pp. 207-221) . Emerald Group Publishing Limited.
- Chapman, J. (2009) . Design

for (emotional) durability. *Design Issues*, 25(4), 29-35.

- Chaplin, E. (2011). The photo diary as an autoethnographic method. *The Sage handbook of visual research methods*, 241-262.
- Chapman, E., & Smith, J. A. (2002). Interpretative phenomenological analysis and the new genetics. *Journal of health psychology*, 7(2), pp. 125-130.
- Clarke, A. J. (2010). *Design anthropology*. Actar, New York.
- Clarke, A. J. (2011). *Design anthropology: Object culture in the 21st century*. Springer.
- Collins, K. (2014, Apr 30). 3D-printing Lix pens crafted for design pros. [Web log comment]. Retrieved from <http://www.wired.co.uk/article/lix-3d-printing-pen>
- Colin, K. & Hecht, S. (2011). *Usefulness in small things*. United States: Rizzoli
- Cresswell, J. W. (2009). *Research design: Qualitative, quantitative and mixed-methods approaches*. London: Sage.
- Crilly, N., Moultrie, J., & Clarkson, P. J. (2004). Seeing things: consumer response to the visual domain in product design. *Design studies*, 25(6), 547-577.
- Critchley, S. (2009). *Being and Time, part 1: Why Heidegger matters*. The Guardian
- Cross, J. (2013). The 100th object: Solar lighting technology and humanitarian goods. *Journal of Material Culture*, 18(4), 367-387.
- Cross, N., Dorst, K., & Christiaans, H. (1996). *Analysing design activity*. Wiley.
- Crozier, R. (1994). *Manufactured pleasures: psychological responses to design*. Manchester University Press.
- Csikszentmihalyi, M., & Halton, E. (1981). *The meaning of things: Domestic symbols and the self*. Cambridge University Press.
- Csikszentmihalyi, M. (1991). Design and order in everyday life. *Design issues*, 8(1), 26-34.
- Csikszentmihalyi, M. (2002). *Flow: The classic work on how to achieve happiness*. Random House.
- Custer, D. (2014). Autoethnography as a transformative research method. *The Qualitative Report*, 19(37), 1-13.
- Dapot, I. (2005). The Force of Things. [Web log comment]. Retrieved from <http://www.visualcomplexity.com/vc/project.cfm?id=534>
- Das, K., & Mullick, P. D. (2015). Autoethnography: An introduction to the art of representing the author's voice and experience in social research. *IJAR*, 1(7), 265-267.
- Daston, L. (2004). *Things that talk: Object lessons from art and science*. New York: Zone Books.
- David, M., & Sutton, C. D. (2004). *Social research: The basics*. Sage.
- De Lucchi, M. (2011) The meaning behind objects [Online article]. Retrieved

from <https://www.theplan.it/eng/magazine/the-plan-053-10-2011/the-meaning-behind-the-object#sthash.m6tZCMbX.dpbs>

- De Michelis, G. (2014). What design tells us about objects and things. *Design and Culture*, 6(2), 187-202.
- De Saussure, F. (1916) . *Course in general linguistics* (R Harris Trans.). London: Duckworth.
- Demir, E., Desmet, P. M., & Hekkert, P. (2009) . Appraisal patterns of emotions in human-product interaction. *International Journal of Design*, 3(2).
- Demirbilek, O., & Sener, B. (2001, June) . A design language for products: designing for happiness. In *Proceedings of the International Conference on Affective Human Factors Design* (pp. 19-24).
- Demirbilek, O., & Sener, B. (2003) . Product design, semantics and emotional response. *Ergonomics*, 46(13-14), 1346-1360.
- Denzin, N. (1989) . *Interpretive biography*. Newbury Park, CA: Sage.
- Denzin, N. (1997) . *Interpretive ethnography: Ethnographic practices for the 21st century*. London: Sage.
- Denzin, N., & Lincoln, Y. S. (2000) . *Introduction: The discipline and practice of qualitative research*. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 1-28). London: Sage.
- Denzin, N., & Lincoln, Y. (2005) . *Handbook of Qualitative Research*, (3rd Ed.) Thousand Oaks: Sage
- Denzin, N., (2006) . Analytic autoethnography, or déjà vu all over again. *Journal of contemporary ethnography*, 35(4), 419-428.
- Derrida, J. (1976) . The supplement of copula: Philosophy before linguistics. *The Georgia Review*, 30(3), pp. 527-564.
- Desmet, P., & Hekkert, P. (2007) . Framework of product experience. *International journal of design*, 1(1).
- Dewey, J. (2005). *Art as experience*. Penguin.
- Doop, M., Mohr, C., Folley, B., Brewer, W., & Park, S. (2006) . Olfaction and memory. *Olfaction and the brain*, 65-82.
- Dorst, K., & Cross, N. (2001). Creativity in the design process: co-evolution of problem–solution. *Design studies*, 22(5), 425-437.
- Driesch, H. (1914) . *The history & theory of vitalism*. Macmillan and Company, Limited.
- Dunne, A. (1999) . *Hertzian tales: Electronic products, aesthetic experience and critical design*. Art Books International Ltd.
- Dunne, A., & Raby, F. (2013) . *Speculative everything: design, fiction, and social dreaming*. MIT Press.
- Dyson, M. (2007) . My story in a profession of stories: Auto Ethnography – an empowering methodology for educators. *Australian Journal of Teacher Education*, 32(1), 36-48.
- Eco, U. (1975) . *Looking for a Logic of Culture* (Vol. 1). Humanities Press

International.

- Ellis, C., & Bochner, A. P. (2000) . Autoethnography, personal narrative, reflexivity: Researcher as subject. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research* (pp. 733-768). London: Sage.
- Ellis, C., Adams, T. E., & Bochner, A. P. (2011) . Autoethnography: an overview. *Historical Social Research/Historische Sozialforschung*, 273-290.
- Figueiredo, J. F., & Coelho, D. A. (2010) . Semiotic Analysis in Perspective: A Frame of Reference to Inform Industrial Design Practice. *Design Principles & Practice: An International Journal*, 4(1), 333-346
- Flanagan, J. R., Wing, A. M., Allison, S., & Spenceley, A. (1995) . Effects of surface texture on weight perception when lifting objects with a precision grip. *Perception & Psychophysics*, 57(3), 282-290.
- Forlizzi, J., & Ford, S. (2000, August) . The building blocks of experience: an early framework for interaction designers. In *Proceedings of the 3rd conference on Designing interactive systems: processes, practices, methods, and techniques* (pp. 419-423). ACM.
- Francesco (2013, Dec 19) . Rassen chopsticks by Japan's Nendo and Hashikura Matsukan [Web log]. Retrieved from <http://www.thenestway.com/2013/12/rassen-chopsticks-japans-nendo-hashikura-matsukan/>
- Frayling, C. (1993) . Research in Art and Design. *Royal College of Art Research Papers* 1(1), 1-5
- Friedman, K. (2008) . Research into, by and for design. *Journal of Visual Art Practice*, 7(2), 153-160.
- Frijda, N. H., Kuipers, P., & Ter Schure, E. (1989) . Relations among emotion, appraisal, and emotional action readiness. *Journal of personality and social psychology*, 57(2), 212.
- Gallagher, S. (2010) . Merleau-Ponty's phenomenology of perception. *Topoi*, 29(2), 183-185.
- Gell, A. (1998) . *Art and agency: an anthropological theory*. Clarendon Press.
- Goel, V. (1995) . *Sketches of thought*. MIT Press.
- Golsby-Smith, T. (1996) . Fourth Order Design: A Practical Perspective Tony Golsby-Smith. *Design Issues*, 12(1), 5-25.
- Gorlée, D. L. (1994) . *Semiotics and the problem of translation: With special reference to the semiotics of Charles S. Peirce* (Vol. 12). Rodopi.
- Grassby, R. (2005) .Material Culture and Cultural History. *The Journal of Interdisciplinary History*, 35(4), pp. 591-603
- Grebici, K., Wynn, D. C., & Clarkson, P. J. (2008, October) . Modelling the relationship between uncertainty levels in design descriptions and design process duration. In *Proceedings of the International Conference on Integrated Design and Manufacturing in Mechanical Engineering. Beijing, China*.

- Groenewald, T. (2004) . A phenomenological research design illustrated. *International journal of qualitative methods*, 3(1), 42-55.
- Gros, J. (1984) . Reporting progress through product language. *Innovation, The Journal of the Industrial Designers Society of America*, 10-11.
- Hackleman, E. M. (2017, Jan. 31) . Stomp makes music out of everyday objects. [News]. Retrieved from <http://www.caller.com/story/entertainment/2017/01/31/stomp-makes-music-out-everyday-objects/97137468/>
- Hammersley, M., & Atkinson, P. (2007) . *Ethnography: Principles in practice*. Routledge.
- Hapiz, H. (2016) . Mediating emotion through objects: the understanding of designed objects as an assistive tool for designers in the early stages of design activity. In *DS 83: Proceedings of the 18th International Conference on Engineering and Product Design Education (E&PDE16), Design Education: Collaboration and Cross-Disciplinarity, Aalborg, Denmark, 8th-9th September 2016*.
- Hara, K. (2007) . *Designing design*. Lars Muller Publishers.
- Hara, K. (2010) . *White*. Lars Muller Publishers.
- Harman, G. (2005) . *Guerrilla metaphysics: Phenomenology and the carpentry of Things*. Chicago: Open Court.
- Harman, G. (2010) . *Towards speculative realism: Essays and lectures*. John Hunt Publishing.
- Harman, G. (2011) . *The quadruple object*. University of Minnesota Press.
- Harman, G. (2011) . *Tool-being: Heidegger and the metaphysics of objects*. Open Court Publishing
- Harp, C. (2009, Jan. 29) . Three principles of good architecture. [Web log comment]. Retrieved from <http://clinicalarchitecture.com/general-architecture/>
- Hartshorne, C., Weiss, P., & Burks, A. (1997) . *Collected Papers of Charles Sanders Peirce. 1931-1958, Vol. 1-8*. Cambridge, Massachusetts: Harvard University Press.
- Hebdige, D. (2004) . Object as image. *Material Culture: Critical Concepts in the Social Sciences*, 2, 121.
- Hegel. (1977) . *The phenomenology of spirit*. Oxford: Clarendon Press.
- Heidegger, M. (1962) . *Being and time*, (J. Macquarrie & E. Robinson Trans). New York: Harper & Row.
- Heidegger, M. (1982 [1927]) . *Basic Problems of Phenomenology*. Bloomington: Indiana University Press.
- Heidegger, M. (1988) . *The basic problems of phenomenology* (Vol. 478). Indiana University Press.
- Heidegger, M. (1999) . *Contributions to philosophy: From enowning*. Indiana University Press.
- Heisler Y. (2012, Aug 3) . How Apple conducts Market Research and keeps

- iOS source code locked down [Web log]. Retrieved from <http://www.networkworld.com/article/2222892/wireless/how-apple-conducts-market-research-and-keeps-ios-source-code-locked-down.html>
- Hekkert, P. (2006) . Design aesthetics: principles of pleasure in design. *Psychology science*, 48(2), 157.
- Hekkert, P., & Schifferstein, H. N. (2008) . Introducing product experience. *Product experience*, 1-8.
- Hekkert, P., & Leder, H. (2008) . Product aesthetics. *Product experience*, pp. 259-285.
- Henare, A., Holbraad, M., & Wastell, S. (2007) . *Thinking through things: Theorising artefacts ethnographically*. Routledge.
- Herbert A. S. (1996). *The sciences of the artificial (3rd ed.)*, Cambridge, Massachusetts: MIT Press.
- Heskett, J. (2002). *Design: A very short introduction* (Vol. 136). Oxford University Press.
- Hesse, C., Schenk, T., & Deubel, H. (2012) . Attention is needed for action control: further evidence from grasping. *Vision research*, 71, 37-43.
- Hjelm, S. I. (2002) . *Semiotics in Product Design. Report Number CID-175, from the Centre for User Oriented IT Design, Royal Institute of Technology, Stockholm*. Retrieved from <http://cid.nada.kth.se/en/publicat/all.html>.
- Huemer, M. (2001) . *Skepticism and the Veil of Perception*. Oxford: Rowman and Littlefield Publishers, Inc.
- Hussain, S. & Keitsch, M. (2010) . Cultural semiotics, quality, and user perceptions in product development. In S. Vihma (Ed.), *Design semiotics in use*. Helsinki: Aalto University of Art and Design, 144-158.
- Husserl, E., (1900) . *Logical investigations.*(J.N. Findlay Trans). Routledge & P Kegan. London: Routledge & K. Paul.
- Husserl, E. (1969) . *Formal and transcendental logic*. Springer Science & Business Media.
- Husserl, E. (2001) . *Phenomenology and the foundations of the sciences* (Vol. 3). Springer Science & Business Media.
- Hustwit, G. (Producer & Director). (2009) . *Objectified*. [Motion picture] United States: Swiss Dots Production.
- Idun (2010, March 22) . Heidegger – The Thing. [Web log]. Retrieved from <https://itherin.wordpress.com/2010/03/22/heidegger-the-thing/>
- Ingold, T. (2011) *Being Alive: Essays on Movement, Knowledge and Description*. Abingdon: Routledge
- Ingold, T. (2012) . Toward an ecology of materials. *Annual review of anthropology*, 41, 427-442.
- Jakobson, R. (1960) . Closing statement: Linguistics and poetics. In T. Sebeok

- (Ed.), *Style in language* (pp. 350-377). Cambridge: MIT Press.
- Johns, C. (2004) . *Becoming a reflective practitioner*. Wiley-Blackwell.
- Julier, G. (2013) . *The culture of design*. Sage.
- Kartono, S. (n.d.) . Magno. [Web log].
Retrieved from <http://www.magno-design.com/?id=concept>
- Kawakita, J. (1991) . The original KJ method. *Tokyo: Kawakita Research Institute*.
- Kealy-Morris, E. (2013). the artist book: Making as visual method. *Journal of Writing in Creative Practice*, 6(2), 247-275.
- Klatzky, R. L., Lederman, S. J., & Metzger, V. A. (1985) . Identifying objects by touch: An "expert system". *Attention, Perception, & Psychophysics*, 37(4), 299-302.
- Klein, A. V. (2016, Mar. 29) . The Gucci Pre-Fall Campaign Takes a Turn for the Tropical. [Web blog]. Retrieved from <https://fashionista.com/2016/03/gucci-pre-fall-2016-campaign>
- Knappett, C. (2011) . *Thinking through material culture: An interdisciplinary perspective*. University of Pennsylvania Press.
- Knappett, C., & Malafouris, L. (Eds.). (2008). *Material agency: towards a non-anthropocentric approach*. Springer Science & Business Media.
- Kozel, N. (2013) . *Design: the groundbreaking moments*. Prestel UK.
- Krippendorff, K. (1989) . On the essential contexts of artifacts or on the proposition that " design is making sense (of things)". *Design issues*, 5(2), 9-39.
- Krippendorff, K. (1989) . *Product semantics: A triangulation and four design theories*. In S. Vakeva, (ed) *Product Semantics '89. Proceeding from the Semantics '89 Conference*, University of Industrial Arts, Helsinki, Finland. (pp. 3 -23)
- Krippendorff, K. (1995) . Redesigning design. In P. Tahkokallio, and S. Vihma, (Eds.), *Design Pleasure or Responsibility?* Helsinki, Finland: University of Art and Design
- Krippendorff, K. (2006) . *The semantic turn, a new foundation for design*, New York: CRC Press
- Lacruz-Rengel, R. (2008) . *A theory of reference for product design: The semantics of product ideation* (Doctoral dissertation, Birmingham City University).
- Lamb, J. (2011). *The things things say*. Princeton University Press.
- Langer, S. (1967) . *Symbolic logic* (3rd ed.). Massachusetts: Harvard University Press.
- Lanir, L. (2012) . *Charles Sanders Peirce's semiotics - The triadic model*, Retrieved from <http://www.decodedscience.org/charles-sanders-peirces-semiotics-the-triadic-mode1/22974>.
- Larsson, C., Hansson, E. E., Sundquist, K., & Jakobsson, U. (2016) .

- Kinesiophobia and its relation to pain characteristics and cognitive affective variables in older adults with chronic pain. *Biomedical Central Geriatrics*, 16(1), 128.
- Latour, B. (2000) . When things strike back: a possible contribution of 'science studies' to the social sciences. *The British Journal of Sociology*, 51(1), 107-123.
- Latour, B. (2005) . *Reassembling the social: An introduction to actor-network-theory*. Oxford University Press.
- Lebovitz, D. (2008, Feb. 3) . Saying no to disposable chopsticks. [Web log comment]. Retrieved from <http://www.davidlebovitz.com/saying-non-to-d/>
- Lechner, I. (2017, Apr. 27) . The 'Player's Pflute' features a collection of mouthpieces that turn ordinary produce into a range of instruments. [Web log comment]. Retrieved from <https://www.psfk.com/2017/04/these-mouthpieces-turn-ordinary-fruits-and-veggies-into-musical-instruments.html>
- Lee, H. K. (2017) . The political economy of 'creative industries'. *Media, Culture & Society*, DOI: 0163443717692739.
- Lima, M. (2005) . Visual complexity [Web log comment]. Retrieved from <http://www.mslima.com/myhome.cfm>
- Lima, M. (2013). *Visual complexity: mapping patterns of information*. Princeton Architectural Press.
- López-Mesa, B., Thompson, G., & Williander, M. (2002). Managing uncertainty in the design and development process by appropriate methods selection. In *DS 30: Proceedings of DESIGN 2002, the 7th International Design Conference, Dubrovnik*.
- Louridas, P. (1999). Design as bricolage: anthropology meets design thinking. *Design Studies*, 20(6), 517-535.
- MacKenzie, D. (2009) . *Material markets: How economic agents are constructed*. Oxford University Press on Demand.
- Magnusson, J. (2013, Mar 11) . Objects vs. Things [Web log comment]. Retrieved from <https://philosophiesresarc.net/2013/03/11/objects-vs-things/>
- Malafouris, L. (2008) . At the potter's wheel: An argument for material agency. In C. Knappet, and L. Malafouris, (Eds.), *Material Agency*, 19-36. Springer Science & Business Media
- Margolin, V. (1989). Design Discourse: History, Theory. *Criticism*, 233-43.
- Margolin, V., & Buchanan, R. (1995) . *The idea of design*. MIT press.
- Margolin, V. (2002) . *The politics of the artificial: Essays on design and design studies*. University of Chicago press.
- Margolin, V. (2007) . Design, the future and the human spirit. *Design Issues*, 23(3), 4-15.
- Mattelmäki, T., Vaajakallio, K., & Koskinen, I. (2014). What happened to

- empathic design?. *Design issues*, 30(1), 67-77.
- McClamrock, R. (1990) . Notes on the introduction of phenomenology of perception. [Web log comment]. Retrieved from <http://www.albany.edu/~ron/papers/mp-intro.html>
- McCracken, G. D. (2005) . *Culture and consumption*. Indiana University Press.
- McDonagh, D., Hekkert, P., & Van Erp, J. (2004). *Design and emotion: The experience of everyday things*. CRC.
- McIlveen, P. (2008) . Autoethnography as a Method for Reflexive Research and Practice in Vocational Psychology. *Australian Journal of Career Development* 17(2), 13-20
- McLeod, S. (2008) . Likert Scale. [Web blogpost]. Retrieved from <https://www.simplypsychology.org/likert-scale.html>
- Mead, G.H. (1934) . *Mind, Self and Society*. Chicago: University of Chicago Press.
- Mead, G.H. (1938) . *The Philosophy of the Act*. Chicago: University of Chicago Press.
- Méndez, M. (2013) . Autoethnography as a research method: Advantages, limitations and criticisms. *Colombian Applied Linguistics Journal*, 15(2), 279-287.
- Merjian, A. H. (2014) . EP Vol. 1: The Italian Avant-Garde: 1968–1976. *Journal of Design History* 27(2), 95-197.
- Merleau-Ponty, M. (1962) . *Phenomenology of perception*. Routledge & Kegan Paul.
- Merleau-Ponty, M. (2012). *Phenomenology of perception* (DA Landes, Trans.). Hoboken: Taylor and Francis.
- Miller, D. (2005) . *Materiality*. Duke University Press.
- Miller, K. (2008) . Thing and object. *Acta Analytica*, 23(1), 69-89.
- Molotch, H. (2011) . Objects in sociology. In Clarke, A. J. (Eds.), *Design anthropology* (pp. 100-116). Vienna: Springer
- Morris, C. W. (1971) . *Writings on the general theory of signs*. The Hague : Moton & Co Publishers.
- Moustakas, C. (1994) . *Phenomenological research methods*. Sage
- Mullet, K., & Sano, D. (1994) . *Designing visual interfaces: Communication oriented techniques*. Prentice Hall.
- Nendo (2013) . *Nendo 10/10*. Gestalten.
- Newman, D. (2010, Jul) . The squiggle of design. [Web log comment]. Retrieved from <http://cargocollective.com/central/filter/The-Squiggle/The-Design-Squiggle>
- Nimkulrat, N. (2013) . Situating creative artifacts in art and design research. *Form Akademisk-Research Journal of Design and Design Education*, 6(2).
- Norman, D. (2013) . *The design of everyday things: Revised and expanded*

- edition. New York: Basic Books (AZ).
- Norman, D. A. (2004) . *Emotional design: Why we love (or hate) everyday things*. Basic Civitas Books.
- Norman, D. A. (2004) . Emotional design. *Ubiquity*, 4(45), 1
- Nöth, W. (1995) . *Handbook of semiotics*. Indiana University Press.
- Opperud, A. (2004) . Semiotic product analysis. *About: Design and emotion*, 137-141.
- Pace, S. (2012) . Writing the self into research: Using grounded theory analytic strategies in autoethnography. *TEXT Special Issue Website Series*, 13.
- Packard, V. O. (1960) . *The Waste Makers*. New York: D. McKay Co.
- Peirce, C. S. (1998) . *The essential Peirce: selected philosophical writings* (Vol. 2). Indiana University Press.
- Peirce, C. S. (1931-58) . *Collected Writings (8 Vols.)*. (Ed. Charles Hartshorne, Paul Weiss & Arthur W Burks). Cambridge, MA: Harvard University Press.
- Penn, R. (2015) . *The Man Who Made Things Out of Trees*. London : Penguin UK.
- Pettinger, T. (2011, Oct 20) . Different types of goods – Inferior, Notmal Luxury [Web log]. Retrieved from <http://www.economicshelp.org/blog/790/economics/different-types-of-goods-inferior-normal-luxury/>
- Pietkiewicz, I., & Smith, J. A. (2014) . A practical guide to using interpretative phenomenological analysis in qualitative research psychology. *Psychological Journal*, 20(1), 7-14.
- Pine, B. J. II & Gilmore, J. H. (2011) . *The experience economy*. Massachusetts: Harvard Business Review Press.
- Popper, K. (1959) . *The Logic of Scientific Discovery*. New York: Basic Books
- Popper, K. (1979) . *Three worlds*. Ann Arbor,: University of Michigan..
- Proto Labs. (n.d.) . Design Guidelines: CNC Milling. [Web log]. Retrieved from <https://www.protolabs.co.uk/services/cnc-machining/cnc-milling/design-guidelines/>
- Rams, D. (1980), "Ten principles for good design".Retrieved from www.vitsoe.com/en/gb/about/dieterams/gooddesign (accessed 4 March 2019).
- Rams, D. (1984) . Omit the unimportant. *Design Issues*, 24-26.
- Ransdell, J. (1982) . On the Padadigm of Experience Appropriate for Semiotics. In *Semiotics 1980*. US: Springer. (pp. 427-437).
- Redfield, P. (2012). Bioexpectations: Life technologies as humanitarian goods. *Public Culture*, 24(1 66), 157-184.
- Reed-Danahay, D. E. (1997) . Introduction. In D. E. Reed-Danahay (Ed.), *Auto/ethnography: Rewriting the self and the social* (pp. 1-17). Oxford: Berg.
- Reinmoeller, P. (2002) . Emergence of pleasure: Communities of interest

- and new luxury products. In W. S. Green & P. W. Jordan (Eds.), *Pleasure with products: Beyond usability* (pp. 125-134). London: Taylor & Francis.
- Return to order. (n.d.) *In Tate Museum art term*. Retrieved from <http://www.tate.org.uk/art/art-terms/r/return-order>
- Robinson, M. (2015, Mar 18) . Designed for Everyday Use – Japanese Designer Gen Suzuki for Industryplus. [Web log]. Retrieved from <http://the189.com/design/designed-for-everyday-use-gen-suzuki-for-industryplus/>
- Rosenfield, K. (2012, Jan. 9) . Dieter Rams 10 Principles of “Good Design”. [Web log]. Retrieved from <http://www.archdaily.com/198583/dieter-rams-10-principles-of-%25e2%2580%259cgood-design%25e2%2580%259d>
- Sadala M. L. A., & Adorno R. D. C. F. (2001) . Phenomenology as a method to investigate the experiences lived: A perspective from Husserl and Merleau-Ponty's thought. *Journal of Advanced Nursing*, 37(3), pp. 282–293.
- Salvador, T., Bell, G., & Anderson, K. (1999) . Design Ethnography. *Design Management Journal*. 10(4), 35-41.
- Schon, D. (1983) . *The reflective practitioner*. New York: Basic Books.
- Schudson, M. (1991) . Delectable Materialism *The American Prospect*. 2(5), 26-35.
- Schulze, G. (2005) . *The experience society*. Sage.
- Scott, A., (2002) . Merleau-Ponty's Phenomenology of Perception. [Web log comment]. Retrieved from <http://www.angelfire.com/md2/timewarp/merleauponty.html>
- Scupin, R. (1997) . The KJ method: A technique for analyzing data derived from Japanese ethnology. *Human organization*, 56(2), 233-237.
- Self, J. (2012, Aug. 6) . To design is to understand uncertainty. [Web log comment]. Retrieved from <http://www.core77.com/posts/22969/to-design-is-to-understand-uncertainty-by-james-self-22969>
- Senda, S. (2017, Apr. 25) . LEXUS design award 2017: pixel by hiroto yoshizoe winner of grand prix. [Web log comment]. Retrieved from <http://www.designboom.com/design/lexus-design-award-2017-pixel-hiroto-yoshizoe-grand-prix-04-25-2017/>
- Siegel, S. (2011) . *The contents of visual experience*. Oxford University Press.
- Simon, M. K., & Goes, J. (2011) . What is phenomenological research (Doctoral dissertation, Dissertation and Scholarly Research: Recipes for Success). Chicago
- Singh, S. (2006) . Impact of color on marketing. *Management decision*, 44(6), 783-789.
- Smith, C. A., & Pope, L. K. (1992) . Appraisal and Emotion. *Review of Personality and Social Psychology*, 13, 32-62.

- Smith, J. & Osborn, M. (2003) . Interpretive phenomenological analysis. In J.A. Smith (Ed.) *Qualitative psychology: A practical guide to research methods* (pp.51-80). London: Sage.
- Smith, J. A. (2004) . Reflecting on the development of interpretive phenomenological analysis and its contribution to qualitative research in psychology. *Qualitative research in psychology*, 1(1), 39-54.
- Smith, J. A., & Osborn, M. (2007) . Pain as an assault on the self: An interpretive phenomenological analysis of the psychological impact of chronic benign low back pain. *Psychology and health*, 22(5), 517-534.
- Snyder, B. (2000) . *Music and memory: An introduction*. MIT press.
- Sokolowski, R. (1968) . The Logic of Parts and Wholes in Husserl's Investigations. *Philosophy and Phenomenological Research*, 28(4), pp. 537-553.
- Sonneveld, M. H., & Schifferstein, H. N. J. (2008) . The tactual experience of objects. In H. N. J. Schifferstein & P. Hekkert (Eds.), *Product experience* (pp. 41–67). Amsterdam: Elsevier.
- Spillers, F. (2004) . Emotion as a cognitive artifact and the design implications for products that are perceived as pleasurable. *Experience Dynamics*.
- Spurling, L. (1977) . *Phenomenology and the Social World*, London: Henley.
- Starks, H., & Brown Trinidad, S. (2007). Choose your method: A comparison of phenomenology, discourse analysis, and grounded theory. *Qualitative health research*, 17(10), 1372-1380.
- Steffen, D. (2010) . Design semantics of innovation. *Product language as a reflection on technical innovation and socio-cultural change*, Department of Art and Design History, Bergische Universität Wuppertal, Germany.
- Steffen, D. (2010) . Design Semantics of Innovation. In S. Vihma, (Ed.), *Design Semiotics In Use*. Publication Series A100. Aalto University School of Art and Design, Helsinki.
- Sternberg, R. J. (1999) . *Handbook of creativity*. Cambridge University Press.
- Stone, A. (2012) . *Petrified intelligence: nature in Hegel's philosophy*. SUNY Press.
- Straus, E. (1966) . *Phenomenological Psychology*. New York: Basic Books.
- Strawson, P.F. (1979) . Perception and its Objects. In G. Macdonald (Ed.), *Perception and Identity: Essays Presented to A.J. Ayer with His Replies*. London: Macmillan.
- Strawson, P. F., (1992) . *Analysis and metaphysics: An introduction to philosophy*. Oxford: Oxford University Press.
DOI:10.1093/acprof:oso/9780198751182.003.0005
- Strong, T., Pyle, N. R., Devries, C., Johnston, D. N., & Foskett, A. J. (2008) . Meaning-making lenses in counselling: Discursive, hermeneutic-phenomenological, and autoethnographic perspectives. *Canadian Journal of Counselling*, 42(2), 117.

- Sturgeon, S. (1994) . The epistemic view of subjectivity. *The Journal of Philosophy*, 91(5), 221-235.
- Sturgeon, S. (1998) . Visual Experience. *Proceedings of the Aristotelian Society*, 98, 179-200.
- Sturgeon, S. (2000) . *Matters of Mind: Consciousness, reason and nature*. Psychology Press.
- Sudjic, D. (2008) . *The language of things: understanding the world of desirable objects*. WW Norton & Company.
- Sudjic, D. (2014) . *B is for Bauhaus: An AZ of the Modern World*. United Kingdom: Penguin Books.
- Sundbo, J. (2008) . The Exposure Society: Experience as a new aspect of social status. In Cultural Production and Experience Strategies, Design and Everyday Life (conference) Roskilde University, Roskilde.
- Sundbo, J. (2010) . The Exposure Society: Experience as a New Aspect of Social Status. Center for Service Studies, Roskilde University.
- Suri, J. F. (2011) . Poetic observation: What designers make of what they see. In Clarke, A. J. (Ed.), *Design anthropology*. Springer Vienna, 16-32
- Tao, F., Cheng, Y., Zhang, L., & Nee, A. Y. (2017) . Advanced manufacturing systems: socialization characteristics and trends. *Journal of Intelligent Manufacturing*, 28(5), 1079-1094.
- Tilley, C., Keane, W., Küchler, S., Rowlands, M., & Spyer, P. (2006) . *Handbook of material culture*. Sage.
- Tiryakian, E. A. (1968) . Typologies. *International encyclopedia of the social sciences*, 16, 177-186.
- Tomes, A., Oates, C., & Armstrong, P. (1998) . Talking design: negotiating the verbal–visual translation. *Design Studies*, 19(2), 127-142.
- Tsutsumi, M. (2007) . *The poetics of everyday objects: a theoretical and practical investigation into the materiality and embodiment of meaning in designed objects, with special reference to furniture and product design practice after 1988* (Doctoral dissertation, Kingston University).
- Turkle, S. (1984) . *The Second Self: Computers and the Human Spirit*. New York: Simon & Schuster.
- Turkle, S. (1995) . *Life on the Screen*. New York: Simon & Schuster.
- Unsworth, R. (2012) . Materials and materiality. [Web log comment]. Retrieved from <http://unmakingthings.rca.ac.uk/2013/materials-materiality-intro/>
- Utensil. (n.d.) . In *Oxford Dictionaries online*. Retrieved from <https://en.oxforddictionaries.com/definition/utensil>
- Valkenburg, R., & Dorst, K. (1998) . The reflective practice of design teams. *Design studies*, 19(3), 249-271
- Verbeek, P. P., & Kockelkoren, P. (1998) . The things that matter. *Design Issues*, 14(3), 28-42.
- Verbeek, P. P. (2011) . *Moralizing technology: Understanding and designing the morality of things*. University of Chicago Press.

- Walker, J. A. (1989) . *Design history and the history of design*. United Kingdom: Pluto Press
- Wasson, C. (2004) . The paradoxical language of enterprise. *Critical Discourse Studies*, 1(2), 175-199.
- Watkins, H. (2003) . Reviews. *Journal Of Historical Geography*, 29(3), 480-483.
- Whitlock, M., (2011, Mar. 3) . The priority of the ready-to-hand. [Web log]. Retrieved from <https://arigiddesignator.wordpress.com/2011/03/03/the-priority-of-the-ready-to-hand/>
- Williamson, C. (2016, Apr. 18) . Plumen x wool and the gang diy macrame lampshade. [Web log comment]. Retrieved from <http://design-milk.com/plumen-x-wool-gang-diy-macrame-lampshade/>
- Woodward, I. (2001) . Domestic objects and the taste epiphany: A resource for consumption methodology, *Journal of Material Culture* 6(2), 115-316.
- Wyatt, J. (2006) . Psychic distance, consent, and other ethical issues. *Qualitative Inquiry*, 12, 813-818.
- Xenakis, I., & Arnellos, A. (2013) . The relation between interaction aesthetics and affordances. *Design Studies*, 34(1), 57-73.
- Zahavi, D. (2001) . Beyond empathy. Phenomenological approaches to intersubjectivity. *Journal of Consciousness Studies*, 8(5-6), 151-167.

APPENDIX B: TOOTHBRUSH TASK INFORMATION SHEET

RESEARCH DEGREES WITH PLYMOUTH UNIVERSITY

'Our relationship with and to man-made objects'

The potential role that new understandings of materiality and experience can play in creating a tool for a critical investigation into our relationship with designed objects.

RESEARCH INFORMATION SHEET

Background

This research is part of a PhD project. It is conducted by Hana Hapiz under the supervision of Dr Peter Davis, Prof. Roberto Fraquelli and Prof. Alex Aurigi from Plymouth University Design Knowledge Group.

Research Aims

This study aims to investigate responses from novel designers (Year 3 Product Design students) regarding the FSA methods.

Research Methods

The study will take place at the studio classroom for two weeks. Respondents are required to submit their responses in written format.

The studies

Pre-FSA study required two hours of the participants' time, while post-FSA required three hours of their time. The first study (i) pre-FSA will be carried out on Monday (To be confirmed) Week One, and the second study (ii) post-FSA in comparison to the will be conducted in the next following Monday, Week Two. Hence, there was a week's gap between the two studies, which is essential in order to allow the participants to reflect, recollect and refresh their thoughts about the previous study.

Pre-FSA

For Week One, participants will be given a situation by the researcher. In their own setting, their own studio, the participants will be asked to design a new toothbrush, and they needed to submit their design brief within an hour. The instruction was generic, without any specific requirement provided by the researcher in order to allow participants to expand their creativity in articulating their design needs. However, participants are allowed to ask for guidance on the requirements.

Post-FSA

For this exercise, an 30 minutes are needed to complete the questionnaires at the end of the exercise. For Week Two exercise, participants will be given the same design situation by the researcher, which is to design a toothbrush. However, this time, the researcher will the briefing by introducing the FSA tool, including its potential and

application, with samples of application and information sheet pertaining to the FSA provided. Then, the participants will given one hour and 30 minutes to complete and submit the design brief to the stakeholder.

Informed Consent

Participation in the study is voluntary. You have the right not to participate or to withdraw at any stage before May 2016.

Confidentiality

The results from this research will be treated confidentially. All data from this research will be stored securely for a period of 10 years, from the completion of the study, in accordance with the Plymouth University ethics policy.

Feedback

If you would like an update on the progress of this study, or if you have any questions about the research, please contact Hana Hapiz (hana.hapiz@plymouth.ac.uk) or Dr Pete Davis (pete.davis@plymouth.ac.uk).

Information Letter and Consent Form for Invitation to be Interviewed

Date :

Dear **participant**,

This letter is an invitation to consider participating in a study I am conducting as part of my Doctoral degree in the Department of 3D Design at the Plymouth University under the supervision of **Dr. Pete Davis**. I would like to provide you with more information about this project and what your involvement would entail if you decide to take part.

The studies

Pre-FSA study required two hours of the participants' time, while post-FSA required three hours of their time. The first study (i) pre-FSA will be carried out on Monday (To be confirmed) Week One, and the second study (ii) post-FSA in comparison to the will be conducted in the next following Monday, Week Two. Hence, there was a week's gap between the two studies, which is essential in order to allow the participants to reflect, recollect and refresh their thoughts about the previous study.

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Post-FSA

For this exercise, an 30 minutes are needed to complete the questionnaires at the end of the exercise. For Week Two exercise, participants will be given the same design situation by the researcher, which is to design a toothbrush. However, this time, the researcher will the briefing by introducing the FSA tool, including its potential and application, with samples of application and information sheet pertaining to the FSA provided. Then, the participants will given one hour and 30 minutes to complete and submit the design brief to the stakeholder.

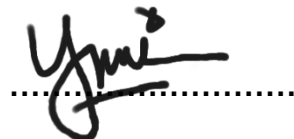
Participation in this study is voluntary. It will involve a design activity of approximately 180 minutes in length to take place in a mutually agreed upon location (studio). Further, you may decide to withdraw from this study at any time without any negative consequences by advising the researcher. With your permission, there responses will be kept to facilitate collection of information, and later transcribed for analysis. All information you provide will be appeared in my thesis, documentary and research reports. Your name will be appeared in all the formats mentioned above. There are no known or anticipated risks to you as a participant in this study.

If you have any questions regarding this study, or would like additional information to assist you in reaching a decision about participation, please contact me at **44 07821372049** or by e-mail at hana.hapiz@plymouth.ac.uk. You can also contact my supervisor, **Dr Pete Davis** by email pete.davis@plymouth.ac.uk.

I would like to assure you that this study has been reviewed and received ethics clearance through **the Faculty Research Ethics Committee (FREC)** at Plymouth University. However, the final decision about participation is yours. If you have any comments or concerns resulting from your participation in this study, please contact the chair of the FREC, **Dr. Roberta Mock** by email roberta.mock@plymouth.ac.uk.

I very much look forward to speaking with you and thank you in advance for your assistance in this project.

Sincerely,

A handwritten signature in black ink, appearing to read 'Hana Hapiz', written over a horizontal dotted line.

Hana Hapiz
Ph.D researcher
Department of 3D Design
School of Architecture, Design and Environment
Faculty of Arts

CONSENT FORM

I have read the information presented in the information letter about a study being conducted by **Hana Hapiz** of the **Department of 3D Design at Plymouth University**. I have had the opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and any additional details I wanted.

I am aware that I have the option of allowing my responses to be kept to ensure an accurate analysis of my responses.

I am also aware that excerpts from the study may be included in the dissertation and/or publications to come from this research.

I was informed that I may withdraw my consent at any time without penalty by advising the researcher.

This project had been reviewed by, and received ethics clearance through, the **Faculty Research Ethics Committee (FREC)** at **Plymouth University**. I was informed that if I have any comments or concerns resulting from my participation in her study, I may contact the Chair of the Faculty Research Ethics at roberta.mock@plymouth.ac.uk

With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

YES NO

I agree to have my interview recorded.

YES NO

I agree to the use of anonymous quotations in any thesis or publication that comes of this research.

YES NO

Participant's Name :

Participant's Signature :

Date:

Researcher's name: Hana Hapiz

Researcher's Signature: Yumi

Date: _____

Researcher's Title: 'Our relationship with and to man-made objects'
The potential role that new understandings of materiality and experience can play in creating a tool for a critical investigation into our relationship with designed objects.

Department: Department of 3D Design

Director of Studies (DOS) : Dr. Pete Davis

DOS Signature: _____

Date: _____

Title: _____

Department: _____

PROJECT TASK: TOOTHBRUSH DESIGN

Toothbrush-design task

Designing a toothbrush is seemingly a superfluous task and redundant, however researcher chose this specific object to spark critical thinking side of the participants due to the complex articulation involved. Utility object is known for its ubiquitous-ness and common-ness. Due to its common traits, it adheres to the semiotics study that postulates the common toothbrush's attributes; shape, function, colour and even the way we brush our teeth. Are there any innovation gaps to be filled in this task?

That is one of the challenges faced by the designers – to redesign or improve the element of the toothbrush, which is challenging as participants need to design a toothbrush that is recognisable by users yet innovative at the same time. For this task, participants are challenged with the capacity of giving new forms to the toothbrush, multiplying the existing function of the toothbrush and shaping the new ergonomics definition, which relies on the demographics of the chosen target users. The newly designed toothbrush should encompass the unseen character, function, shape or function, which then will lead to an innovative yet inventive toothbrush design.

This task allows participants to freely choose their target users, infant to the elderly, and propose their function of the toothbrush depending on their target groups.

Background Information

Name:

Year:

Age:

Gender:

Design Task:

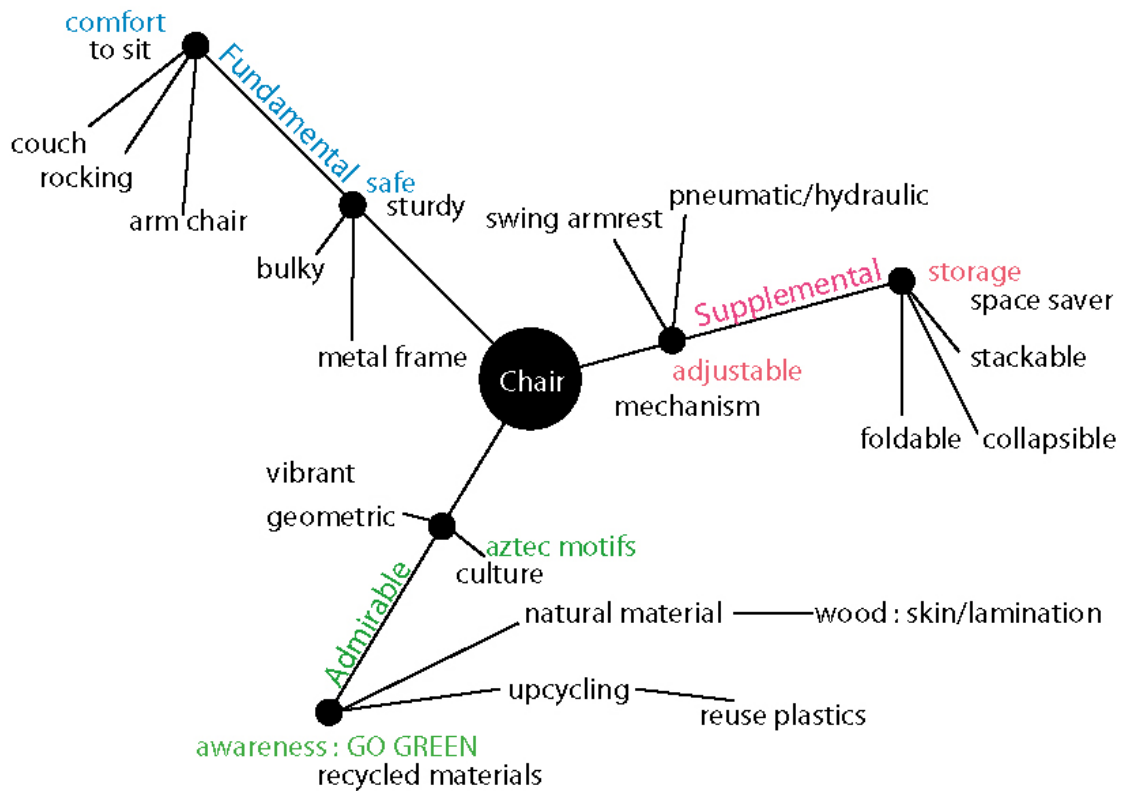
A client requires you to design a toothbrush for his new product. He does not have any specific target market, thus it is entirely up to you to decide to whom the toothbrush for and the kind of toothbrush for the new product.

On an A4 paper given, jot down the criteria for the toothbrush task and design your own design brief for the new product.

Mark (X) where applicable.

Question	(1) Strongly Disagree	(2) Disagree	(3) Neutral	(4) Agree	(5) Strongly Agree
1. The tool helps me to alleviate uncertainty at the beginning of the project.					
2. The tool helps me to understand my project better.					
3. The tool plays important role for my design criterion trajectory.					
4. The tool helps me to prioritise my design criterion.					
5. The tool helps me to articulate my design criterion in shorter time.					

INFORMATION SHEET : FSA APPLICATION



FUNDAMENTAL : This value refers to the importance of an object. This attribute acts as self-image, it portrays the main intention of the object and most of all it presents the solution for the design problem. This value is generally related to functional, pleasant, and secure comfort experiences. This category has the potential to be developed as one of general criterion for objects, as 'fundamental' holds values that every object should have, 'important-ness'. The essential-ness of these objects has greatly influenced the researcher's emotional experience whilst owning or admiring the objects. Without these objects, she would feel incomplete and burdened by chores.

SUPPLEMENTAL: Supplemental value makes life easier; it simplifies our chores and ensures our life is more enjoyable. This value includes the elements of pleasantness, aesthetics and pleasure; it offers added value to our life whilst resonating with the fundamental value embedded in the object. Supplemental objects are usually associated with the aesthetic appeal of an object as this trait evokes the aesthetic experience of the object.

ADMIRABLE: Admirable value comprises of elements of amazement, wonder and exquisiteness that allows the designed object to set itself apart from other more mediocre objects; and becomes somewhat unique. While the object will not be liked by everyone, it will be adored by some. This object can be a novel invention, which inspires interest in onlookers. Often admirable objects use some form of technological advancement.

APPENDIX C: Pre and Post FSA Analysis

BEFORE	AFTER	BEFORE	AFTER
flexible, thin bristle to reach unreachable spot, soft bristle, brushes that will not harm the gum for elderly material choices	soft brushes, adjustable, different type of brushes, undisposable, (toothbrush that can change heads), only buy a holder	modern, lightweight, easy to use	cultural design, easy to use, portable, plastic material, safe, futuristic, recycle materials, modern, without holder, geometric, puzzle concept, ergonomic, mechanism, save energy, sensors, foldable, cheap
material scale	usability (safe, and easy to hold), easy to clean, plastic material, heritage (ornament) embellishment for decoration, spacesaver, stickable		
	easy to use, to carry, vibrate, nature, grip, multitasking, attachable, split and combine, comes with many brush heads (medium, strong, hard)	none	small size, easy to use, ergonomic, lightweight, flexible, safe to use, thin bristle, attractive colours, can customise colour, easy to store, adjustable, foldable
for sensitive teeth soft brushes reach unreachable spot light will light up when you brush too hard	comfortable to hold, many designs, two brushes (soft and hard), changeable heads, longlasting (6months), comes with light, voice activation, brushing tongue, changeable holder grip, easy to carry, chargeable	ergonomic shape colour posture function	ergonomic, appropriate size with Malaysian, easy to use, rubber grip for the holder, easy to hold, portable, comes with own case, use recycle plastics, with cultural characteristics
easy to use cost effective functional	safety, space saver, long lasting, no need to put toothpaste, soft bristle, clean inside out, theme (patterns), comes with toothpick feature	none	toothbrush for ulcers soft brush, easy to hold, grip, ergonomic, separate brush heads, foldable, material :plastics, geometric shape and puzzle, theme : rock and roll
using common material shape user-friendly	comfortable for both genders, ergonomically design, can use both hands, mechanism plastic, comes with toothpaste, both function (auto/manual), for the fake teeth, energy saver, safe for elderly, suitable material for mouth, plastics, charcoal		
ergonomic water resistant material	brush size, suitability with users, safe, comfort, brush protector cover, easy to keep, easy to use, colour, modern, rubber grip	toothbrush with paste multifunctional rubber material easy to hold easy storage bendable for adults traveller easy to carry	for travellers, small in size, multifunctional, pattern of the body, colourful design, rubber natural, medium texture, easy to hold, space saver, foldable, collapsible, ergonomic
	none	none	material, flexibility, safety, organic shape, futuristic, long lasting, grip
	none	toothbrush with paste space to keep toothpaste	plastic material, ergonomic, size according to palm, colour, grip holder, storage for paste, mechanical
	none	teeth fixing component	shape of the toothbrush, adjustable (longer/shorter), comfort safe
	none	colour (white with blue line) material (plastic), target market (over 40 yrs old), ergonomically designed, futuristic	bulky for elder grip, longlasting, colour for elderly easy to see, easy to use, comfortable, mechanical soft brush, safe materials, not edgy, sleek design ergonomic, futuristic
people with artificial tooth useful safe to use soft brush	soft, flexible, safe materials, hygienic, easy to grip, odourless, foldable, lightweight, easy cleaning, changeable grip	none	comfort to hold, smooth, durable, suitable size, safe, foldable, multifunctional, mechanical, colourful, unique design, covered, futuristic

APPENDIX D: Bowl making process



Appendix E: Mermaid Stool

for Tanggam

THE STORY

In Murakami's Kafka on Shore, fishes fall from the sky, cloud sings and together, organisms create a wonderful system of ecology to the mankind. Fictional and yet, if one juxtaposes the magical land with the concrete jungle that we are dwelling now, the irony does make sense. Magic is something extraordinary that extends our own imagination of real thing. For Mermaid stool, a profound element of fish which is the scale has magnified the design as the neat array of scales has created a visually aesthetic experience. Like magic, as it defies the simple logic, scales, a small feature of fish has greatly altered user's experience while admiring the Mermaid stool.



MERMAID STOOL

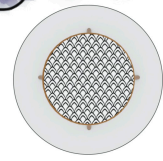
The magical Mermaid does not end there, the stool is purposely proposed to be made of discarded wood materials such as tropical plywood. Plywood has been abundantly used in construction for supporting materials. Each year around 3 million hectares of forest has been cut down to cater our industrial manufacturing needs. Most discarded plywoods are not heavily damaged hence, its properties suffice a visual aesthetic function, the scale.



TECHNICAL STATEMENT

Mermaid comes with four layers of scales which each plywood is slotted up to the base of the seat. Each scale is press molded to achieve desired curve. The stool features an upholstered seat to aid comfort and the four legged lathed wood are the strong pillars to support the seating system.

Mermaid is best displayed in series as the upholstery can be changed according to the type of discarded plywood and its lightweightly allow users to diversify its function to side table, foot stool or step stool.

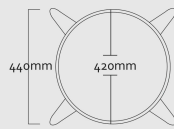


Top Elevation

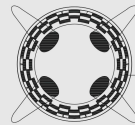


Front Elevation

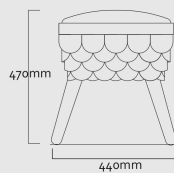
TECHNICAL DRAWING



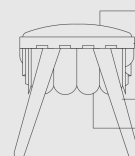
TOP ELEVATION



Slotting gap for the scales



SIDE ELEVATION



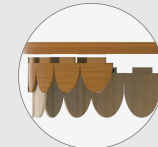
Foam filled upholstery

Laminated plywood (rimmed) : to hold the seat base

Fourth layer : press molded plywood slot into the seat base



Side Elevation



Slotting Mechanism



Objects



Remo, 2010
Fadeout Chair

Justification

At glimpse, it floats.
Enthusiastic to try to sit on it.
Fun design.
Illusioned by the gradual disappearance of the leg.
Love the colour - wood
Paralleled to its name, fadeout, the leg seemed fading out.

Reflection

After analyzing the object visually, it imprinted a brainy manipulation of common material into something fun and magic like.
Material - acrylic, pain such wood grain - common material.
Not comfortable to sit for long time as it made of acrylic.

Objects



Luis Extevo, 2006
Face to Face

Justification

Love the shape and the overlapping texture.
Looked very tactile.
Light penetrates the material and produce such incandescence

Reflection

The material that he used was Velcro, amazing how he could think of ways to design lighting made of Velcro as main material.
The shape which is hemisphere = organic makes it more appealing to look at.
Lighting height somehow make it impossible for users to experience the facility of the Velcro.

Objects



Bill Stumpf & Don Chadwick
For Herman Miller, 1994
Aeron Chair

Justification

Sturdy armrest and comfortable for long office hours
Corporate look
Ergonomic concerned - tilted seat, lumbar and back support.
The image = herman miller's

Reflection

The design exhibits the strengths of the material.
Comfort comes from the material itself; pellicle.
The colour is almost like any other office chairs; black however the material upheaves Aeron from being on shelf with the other typical office chairs.
I've sat on it and the experience was remarkable, the pellicle seemed to hug me and the seat pan tilted angle was just right for me.
Lumbar support was magnificent.

Objects



Alvar Aalto, 1929
Paimio Chair

Justification

The reason behind the design - TB
Rationales of every segments were being justified; right angles, material considerations
Sleek design - continuous and organic
Timeless

Reflection

Paimio acknowledges "form follows function" as the design derived from the TB sitting position facing sun but how Aalto adapted material culture and medical understanding in Paimio amazed me. Paimio has all timeless attributes as the chair never expired even it was designed last 83 years.

Objects



Felag Design, 2011*
Key Pete

Justification

Humorous and function
Tacky colour
Problem solver for people who always lose keys
Magnetic attachment to hold keys
Human figure – metaphor which is somehow connected to human behaviour

Reflection

Practical and the selection colour allowed users to remember the place to hold the keys. Posture of key pete is like "wall climbing", semantically indicating the directions of use / where to mount the product.
Cons: only a set of keys can be mounted

Objects



Kenneth Cobonpue,
La Luna

Justification

Rattan is used for the main material.
Cobonpue manifested truth to material by exhibiting the potential flexibility properties for the seating structure.
Natural colour = earth hues.
Soothing + Relaxing furniture
La Luna – resembles the crescent moon shape

Reflection

Form – organic and free (relax and non structured)
Bulky but yet not conventional
Wicker technique applied at the bottom which also creates visual appealing impact.
Tactile

Objects



Sherwood Forbes, 2010
Speaker

Justification

Simple form but effectively defined the meaning of speaker = literally by using the dialog bubble at the metaphor
Basic colour = white & black which usually associated with tech products
Fun design

Reflection

Looks handy and lightweight
Fun design
Contrary to any typical speakers, the sleek and basic shape makes tech products are not boring.
Easily associate the function (speaker) with the shape (dialogue bubble)

Objects



Gimpel Studio for Cappellini, 2012
Superheroes

Justification

Strong cultural values in terms of visual patterns, the making techniques and colour selection.
Huge affection on the illustration on the fabric
Almost like many Asian conventional floor seating but the visual drawn the difference.
It looks comfy too.

Reflection

Very tactile – create excitement
Contra colour – orange on black /blue on black
A coherent combination of traditional Vietnamese thread technique with Swedish inspired illustration motifs.

Objects



Constance Gussert, 2012
Sol

Justification

Amused by the selection colour of yellow on white and blue on red. - vibrant
Unusual form for a rocking chair.
Unsymmetrical left and right armrest - playful and fun

Reflection

Airy chair as many hollows void,
Rocking chair but yet not conventional anatomy of rocking chair
Playful - rock and vibrant colour

Objects



Polaroid, 1990's
Polaroid 600

Justification

Instant photo
Bring back my childhood memory.
Happiness
The outcome of the snap is unpredictable - artistic values.
Vintage collection.
The design itself = bulky and sturdy
Colour: baby blue - associated with electronic products

Reflection

Colour - promote high tech product
All in one - photo and camera
However, the quality of the photo is unpredictable.
Fun purpose - spontaneous photography
Bulky and big - not handy compared to current instant camera

Objects



Apple, 2010
iPhone 4

Justification

Sleek design-clean lines
0 lagging - touch screen
Many downloadable apps
Sturdy and user friendly
Black colour = simplistic, back to basic
Huge screen

Reflection

The form - filleted rectangle which is anti-rigid but still in the basic form discipline (rectangle)
Not really fit into everybody's palm.
No gripping attributes.
The flat/sleek design somehow makes it easier to slide off hands.

Objects



Kamkari, 2012
Dressed up stool

Justification

Playful design with using the cartoon-like character which formed a basic stool.
The selection of upholstery differentiates the design.
The seat looks fluffy and comfy.
Colour selection: pastel, blend with the wood colour

Reflection

It looks sturdy - 4 legs and balanced.
Basic stool but the manifestation of fabric for seat cover ensures its visual appealing.
Fun and playful design.

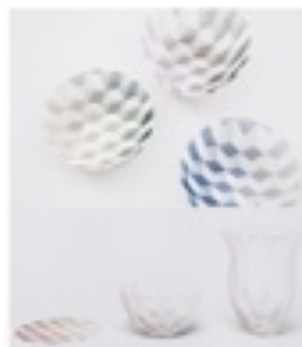
Objects	Justification	Reflection
 <p>Peter Janart, 2006 Louis J Chair</p>	<p>Eccentric but eye candy. Retrospective of the famous French Louis chair. Vibrant colour against the norm (classic wood colour) Instead damask/floral motifs fabric, vinyl is used for the upholstery.</p>	<p>Same colour for solid chair to show its boldness. Renowned chair but re-modeled it with new dimension of colour : neon and vinyl as the material = glossy but leathery effect. Old is new.</p>

Objects	Justification	Reflection
 <p>Ferruccio Laviani, 2003 Bourgie Table Lamp</p>	<p>Advocates strong classical reference. Material selection : PC Modern material to blend in with the classical form Chic design Timeless</p>	<p>Create amazing refraction when light penetrates through the shade. Excellent choice of material in conveying the classic reference in modern material manifestation.</p>

Objects	Justification	Reflection
 <p>KRUPF Resolute Dolce Gusto</p>	<p>For coffee junkie, this machine is practical. Colour - titanium is rhymed with the drink. The form is unconventional and organic. Ideal for brewing for small crowds. Portable</p>	<p>The design is somehow direct and user-friendly. Comes handy and portable for coffee maker. Colour is associated with machinery and coffee.</p>

Objects	Justification	Reflection
 <p>Monika Mulder JAZZ Stockholm Fruit Bowl</p>	<p>Floral motifs captivate me - intrigued my feminine side White/stainless steel finish. Functional ornament Happy and homey feeling</p>	<p>Steel = material for it to show sturdiness. Floral motifs - souls inside. Hollow spaces between petals which creates interesting tactile texture. Besides, when light hits the bowl, the organic shadows of the petals emerge.</p>

Objects



Torafu Architects, 2011
Airvase

Justification

Gradient effect and the cube pattern for the vase resemble the 3D motifs. Illusioned by the pattern, the vase is actually 3D. More towards the aesthetics, as it is airy and made of paper. Colour and the selection of material amazed me.

Reflection

Basic shape for bowls/ vase but the construction technique which is expanding the flat paper in making it 3D fascinates me. Solely aesthetics and function as decoration but not as a vase. Gradient colour with the basic cube patterns are fundamental but designer deliver it in the smartest way ; fold

Objects



Verner Panton, 1973
Verner Panton System 1-2-3

Justification

Sophisticated. From front, it looks bulky but the side profile shows that it is very sleek and slim. Timeless design as it also invokes timeless material; aluminium and leather. Colour: dark brown, not too exuberant but it matches well with the base.

Reflection

AL=matches well with the overall shape of the seat. Button textured for the seating ensures user to explore its tactility. The flow shape holds the psychedelic vision of the designer, illusion as the end of the seat rest at one point of the base.

Objects



Timoore, 2011
Fun

Justification

Fun and comfy. Pastel colour fits the kids. Eye-candy. Rocking chair – playful. And the lounge chair with huge bone structure = sturdiness. Happy design as the no sharp edges spotted.

Reflection

Invokes smile as it follows the organic shape, circular. Comfy and fluffy which will invite kids to sit on it. Wooden base (soft) = friendlier compared using steel finished (hard element)

Objects



D-Bros, 2009
Sticky pad - Kulememo

Justification

Playful – sticky pad. Like real fruits even the packaging. Apple and pears are usually favorite fruits, excellent choice of fruits for metaphor. New experience in commencing basic activity = writing notes.

Reflection

Revamp the dull and serious study mood. Fun and joyful design – fits for youths/teenage and even adults. A new way expressing fun design by deriving your design from food; fruits.

Objects



Ronan and Erwan Bouroullec, 2006
Vegetal

Justification

Colourful – fun
Interesting motifs –
irregular, free flow
lines, meshes
Not too edgy but yet
chic
Stackable = practical
for public usage

Reflection

Promotes fun interior
or happy/cheer mood
Not appropriate for
long hours sitting
Material – Polyamide
(suitable for exterior)
which will create
garden more lively with
the vibrant colours
The endless lines for
the whole seating
captivate my eyes

Objects



MIX, 2011
Bommelpouf

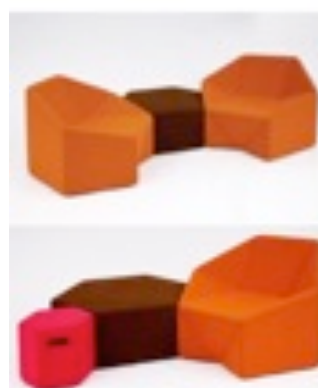
Justification

Vibrant pom pom balls
cover the pouf which
invokes more smile in
the interior.
Happy design and
playful.
Tactile as it has
textured cover.
Hemisphere form –
basic shape but the
pom pom balls elevates
excitement and joyful
mood.

Reflection

The selection of vibrant
colours for the
coverings make it
noticeable.
Different colours for the
pom pom make it more
tactile and inviting to
touch them.
Flamboyant and will
cheer up a space

Objects



Incorporated, 2009
Hex Chair

Justification

Geometrical inspired by
bolding few lines as the
structure
Colour – vibrant
Concept – modular and
open ended
Use fabrics based
material for coverings
which balanced the
sharp edges of
geometric form

Reflection

Hex- from hexagonal
shape: beehive concept
which can be
detachable
Excitement when look
at the colour and
playful with open ended
arrangement
Intimate – the furniture
attached to each other.
Best for family room

Objects



Moda, 2011
The Light Vintage Collection

Justification

Eccentric but a well
combination between
the form and fabrics.
Vintage and bold piece
White frame =
balanced up the patch
upholstery
The chair is vintage but
the selection of the
fabric upholstery make
it new and chic.
Blue on white gives an
eye catching impact

Reflection

Resemblance of Louis
conventional chair but
the upholstery blends
the modern scheme
besides the white
frame and blue hues.
Evoke homey + cozy
warmth by its comfort
padding and sturdy
structure.

Objects

Justification

Reflection



Dyson, 2009
Air Multiplier

Very high-tech and functional
Bladeless which is fantastic
The colour used is common for tech appliances but the fact it is bladeless makes it differ from any fans.
Basic shape = circle ring and cylinder for the base, a typical trait for fan but it is well simplified

Tech appliances with maximum tech (at that time) but seemed effortless
Makes people wonder about its function
Can be collectible item and yet smart + functional invention
Proud to show it off

Objects

Justification

Reflection



Benjamin Hubert, 2011
Maritime

Solid timber chair – sleek and exhibits the ship making technique : shell
Natural colour – soothe and appropriate for showroom and the elegant design intrigued the calming side of me.

Material : plywood for seat pan, people will slide off from chair easily
However, the natural material might balance up certain interior that has mixed colours furniture.
Minimalist and effortless

Objects

Justification

Reflection



Powder Blue
Edwardian Umbrella

Vintage and eye catcher as the design resembles the umbrella produced back in King Edward reign.
A show stopper as it is almost extinct
Revive the vintage chic trend.
The form is unconventional and eccentric.

Long tassel handle for easy handling
Even so, the shade is shallow so downpour still can hit me.
However, the form and the strong history reference that comes with it, make it an interesting umbrella to have.

Objects

Justification

Reflection



Gry Holmskov, 2012
The Angel

The shadow of the stool creates the angel penumbra.
The yellow colour bolds the slim steel rods which makes it more visible.
The shape which is half moon, which just nice for seat pan fits for minimalist audience.
Amusing.

Repetition of steel rods create such magnificent shadow.
It is like read between the lines, as the tangible stool does not resemble angel wing at all but somehow, the shadow showed the overall concept.
Interaction and consideration of lights and shadow have been taken seriously by Holmskov.
Feeling of wonder and amazement.

Objects

Justification

Reflection



Pilaye Design, 2011
Random

Colourful and playful gradient outcome when light penetrates the material.
Derived from diamond shape, the colour refraction on floor creates the joy ambient.
Strong border line to frame the material creates solid shadow; emphasized on the diamond hidden lines.

Smartest way to exhibit the strengths of plexiglass – colourful.
Not suitable to sit for long time.
More towards ornament aesthetics, however brilliant form blended with excellent choice of material in creating a new dimension of chair; lighting.

Objects

Justification

Reflection



Nooka, 2009
Nooka Zub Zor Watch

Functional and playful as I have to count the bubble to indicate the hour.
Sense of excitement.
Vibrant colour to attract youth.
Bold statement about having this watch ; reason why the watch is bulky

Excitement for the way it indicates the timing.
Showy as the colour is eye catching.
Functional and difficult to lost it as the bulky size and the neon colour.

Fundamental

Scarf

Cultural Attire
Feelings: *secure/completeness*
Desirability: *high*

Brooch

Relying on the scarf application.
Attach the look
Feelings: *completeness*
Desirability: *high*

Reading Glass

Eye defects.
Feelings: *sight gets better, confident and motivated*
Desirability: *medium*



Fundamental

Socks

Climate factor: *Cold/Dry*
Feelings: *warm/secure and comfy emotion*
Desirability: *high*





Fundamental

Yoko yoko

Need: Neck pain
Feelings: warm/secure and
comfy emotion
Desirability: medium



Fundamental

Jumper

Attire: keep warm/snuggle
Climate factor
Feelings: warm/secured
Desirability: high



Fundamental

Laptop

Essential tool :work/
networking
Invoke: work comes handy
Desirability: high



Fundamental

Communication

Mobile phone: call/sms/with
inevitable gadget : trend/
global fashion
Feelings: connected/
informed/social/positive
emotion
Desirability: high



Fundamental

Toothbrush

Hygiene purpose
Personality :clean
Feelings: clean/confident
Desirability: high

Mirror

Confidence
Feelings: confident/looking good/reflection of myself
Desirability: high



Fundamental

Time

Watch
Personality :tells time/being punctual (trait)
Feelings: secured/well informed
Desirability: high

Fundamental



Fundamental

Boots

Climate factor
Feelings: safe/warm
Desirability: high

Jeans

Climate factor
Feelings: safe/warm
Desirability: high

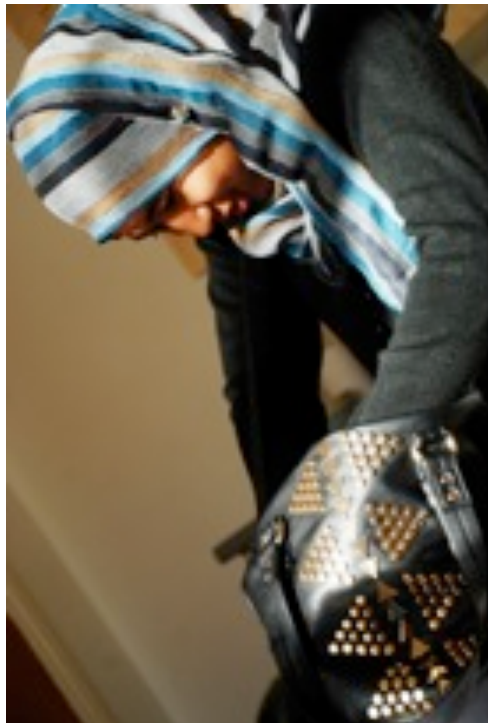


Bed lamp

Achluophobia
Feelings: safe/warm
Desirability: high

Duvet

Climate factor
Feelings: safe/warm
Desirability: high



Fundamental

Handbag

Store things/Attire
Feelings: *secure/completeness*
Desirability: *high*

Keys

Functional system/lock
Feelings: *security*
Desirability: *high*

Fundamental



Nail clipper

Hygienic purpose
Feelings: *clean*
Desirability: *medium*

Supplemental



Caramel Cookies

The taste : *joyful emotion*
Sugar : *invoke positive emotion*
Desirability: *high*

Supplemental



Hot Chocolate

Climate factor : *cold*
The taste : *warm/comfy emotion*
Warm : *invoke calmness/comfy feelings*
Desirability: *medium*

Supplemental

Vitamins : Calcium ,B Complex

Awareness: Health conscious

The taste : *assurance/ security/cautious emotion*
Desirability: *medium*



Supplemental

Kitchen Utensils

Personality: Cook healthy food

Feelings: *healthy/safe emotion*

Desirability: *medium*

Towels

Hygiene: keep things dry/clean

Feelings: *clean emotion*
Desirability: *low*



Supplemental

Perfume

Personality: Feeling good when put it on

Feelings: *confidence emotion*

Desirability: *high*



Supplemental

Pen

To write my thoughts

Feelings: *reminded*

Desirability: *medium*

Journal

Write things/reminder/important thoughts/documenting

Feelings: *reminded*

Desirability: *low*





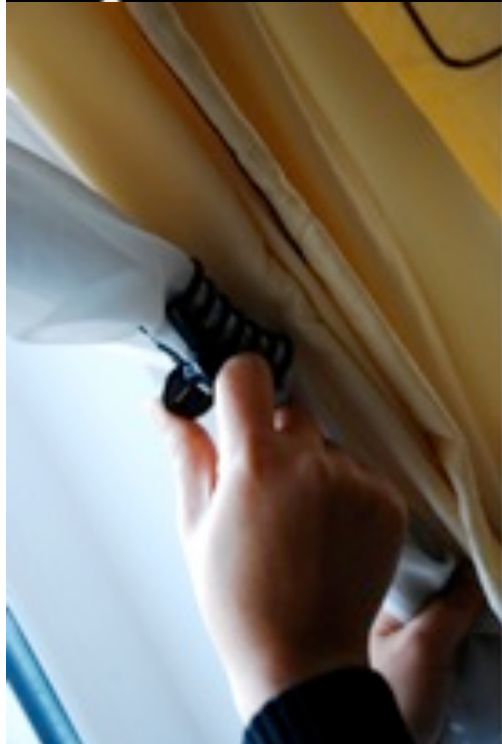
Supplemental

Internet

Networking
Feelings: **happy/informed**
emotion
Desirability: **high**

Tableware

Personality: Organised
Feelings: **equipped**
Desirability: **low**



Supplemental

Hair clip

Tie hair/self-comfort
Feelings: **security**
Desirability: **medium**



Supplemental

Grocery bag

Personality: Environment awareness
Feelings: **good/role model/**
useful/shop better
Desirability: **low**

PUBLICATIONS

The understanding of emotion as an assistive tool for designers in the early stages of design activity.

Abstract

This study aims to develop an understanding of the potential of everyday objects as tool to visualise uncertainties at the early stage of the design process. The discussion takes place within an existing design theory framework to alleviate the complex and often vague nature of these uncertainties. The paper will focus on objects in relation to the user and map the everyday object's role in formulaic object taxonomy. The taxonomy aims to provide a clear understanding of the objects-user/designer relationship, which could be helpful for designers especially when creating a clear design brief. The taxonomy postulates a watertight design framework that comprises the elements of designed objects that will be developed into design criteria, which will guide designers to understand the design problems or situations within their limited timeframe. Everyday objects are discreetly linked to users and designer's intention, purpose and pleasure that affect the interaction between designed objects and users. Therefore, this paper will explicate the relationship between everyday objects and the user and categorise the objects based on an established system within the design discipline, and develop the taxonomy as an assistive tool for designers. To consider the relationship between these objects, a map based on the Frame of Product Experience (Desmet & Hekkert, 2007) will provide a fundamental theory to support the taxonomy, as well as combining knowledge and insights from the keywords elicited from the user's emotional responses. This study will explore the potential of emotion elicited by the user towards everyday objects, and locate these emotions within the taxonomical structure, to create a better understanding of the object-user relationship. To better understand the specific qualities of the user experience in this object-user relationship. The implications for design are that the objects relationship taxonomy acts as an assistive tool for designers in alleviating uncertainties in the early stages of design activity.

Keywords: *Emotion, everyday objects, design activity*

1 Introduction

According to Damien Newman (who is known for his famous squiggle for IDEO), in design research especially, designers often face 'uncertainty' at the beginning of a design activity but towards the end, usually gain the clarity and focus that they require to complete the design task. Although it is quite common for designers to face this foggy situation at the beginning of a design task, often due to a restricted timescale, a working solution seems to be an unnecessary luxury. Brown (2009) explains that,

designers face problems at the preliminary stage of designing, which actually motivates them to move from the problem to find the answers. However in order to move from inspiration stage to ideation, good ideas are commonly generated from a well-informed design brief. Therefore, to establish a good design brief, a clear set of design criteria helps to communicate relevant solutions to other design teammates or stakeholders. Design criteria provides a transparent designed object specification, attributes that designers wish to embed and to enhance. In the event of uncertainty, design criteria are saviours as they are an aid to creative thinking because they focus the designer's mind on what the user needs and can be a spur to thinking of alternative, creative ways of meeting these needs. By taking into account that design criteria are essential to alleviate the uncertainty in the earlier stage of design activity, this paper will investigate the potential of the objects taxonomy as an assistive tool for designers to develop design criteria. This study proposes to construct a design tool which is developed by theorising relationship between everyday objects and their users (owners), and relate the significance that domestic objects with its meaning, and tabulate in visual map format. Visually, the map will provide layers of the objects' significances (in keywords) and create a taxonomy of objects that extrapolates the design criterion in design brief section.

2 Everyday objects

Objects invite inquiries, affect our emotion and serve its function satisfactorily and they have greatly influenced our lifestyle. Everyday objects are attached to the user as they posit emotional values that respond to the user discreetly. These objects elicit an unobtrusive element that is a representation of an extension of ourselves or a recollection of our past that we wish to remember. Csikszentmihalyi and Rochberg-Halton (cited by Margolin, 1989) summed that, "Objects that the owner keeps are reminders both of who he is and who he was," (Margolin, 1989; p. 9). Everyday objects like kettles, coffee mugs or a duvet elicit certain emotional responses to the user that could be either comforting (pleasure) or simplifying our daily chores like making tea (usability). Norman (2004) stipulates that it is the designer's job to communicate what an object can do and how a user can go about using the features. Cognitive approaches to designed objects are usually overlooked and the element of emotion from an understanding of the user experience is often not considered (Norman, 2004). Emotion, which is inexplicably linked to meaning, plays a significant role in the cognition of the designed object, and therefore can be suggested as a design tool. Emotion influences how we define the use of objects, the way in which we keep or display them and the consequences or after-effect of the object.

2.1 Theoretical framework

The field of user experience has evolved since the understanding of user experience denotes the importance of the designed object. Emotional responses are relational to the affective experience. The affective state is generally used to refer to all types of subjective experiences that involve a perceived goodness or badness, pleasantness or unpleasantness (Desmet & Hekkert, 2007). Objects affect the user inexplicably in many ways and vice versa. However, it is fair to evaluate the effects of the object to the user from the user standpoint. User elicits emotional responses that involve multifaceted phenomenon such as subjective feelings, behavioural reactions, expressive reactions, and physiological reactions. A performative object, or as referred to by Sudjic (2008), the good that we use, elicits certain levels of product experience. Hekkert (2006, p. 160)

has distinguished three levels of experiencing object: aesthetic pleasure, attribution of meaning, and emotional response.

"We thus define product experience as "the entire set of affects that is elicited by the interaction between a user and a product, including the degree to which all our senses are gratified (aesthetic experience), the meanings we attach to the product (experience of meaning) and the feelings and emotions that are elicited (emotional experience)."

Desmet and Hekkert (2007) have outlined the framework of product experience that distinguishes the affective product experience and the processes that underlie these experiences. Besides scrutinising from the cognitive perspective, object experience can be analysed from the understanding of the brain processing. Norman (2004) shared interesting insights on how our brain processing relates to why we hate or love our objects. He specified that there are three levels of the brain processing involved; they are (1) visceral level, the automatic and prewired layer, (2) behavioural level, the part that contains the brain processes that control everyday behaviour and (3) reflective levels, the contemplative part of the brain. These three levels can be represented to product characteristics as below:

1. Visceral design: Appearance
2. Behavioural design: The pleasure and effectiveness of use
3. Reflective design: Self-image, personal satisfaction and memories

3 Data collection

'Emotional responses' which are the pivotal variable in this study will be explored through an ethnomethodological approach. According to David and Sutton (2004), ethnomethodology focuses on the actions of participants in the interaction that requires an empirical focus upon the micro-processes of everyday life. Ethnomethodology as a method scrutinises the miniscule details of one's preference for instance, the attachment that one has for everyday objects. To unravel the personal bond between the user and the object, the study adopted the auto-ethnography method. Here, a set of instruments is used to analyse the findings using keyword coding and interpretative analysis. This reflexive method was later expanded to the exploration of data visualisation to elucidate the data findings in a visual format. The data visualisation will be contextualised based on the established theoretical framework of Desmet & Hekkert's product experience and Norman's three brain level processing theory. A set of themes will be developed that is based on the synthesis of emotional responses elicits from the participant, and then will be developed to be the parameter of generic design criteria.

3.1 Participant

The study adopted auto-ethnography method that utilises the autobiographic materials of the researcher as the primary data. Differing from other self-narrative writings such as autobiography and memoir, this auto-ethnography study emphasises the interpretation of the researcher's behaviours, thoughts and experiences (Chang, 2007). For this study, researcher acts as the sole participant as having a background as a designer, and also a user, the findings will have their own unique values and authenticity. The study will also explore a few research instruments to strengthen auto-ethnography method to ensure the relevancy of the findings.

3.2 Experimental procedure

The study investigates responses (interaction) towards selected everyday objects by examining emotional responses elicited by the participant in these two tasks. The tasks are to select (i) 30 domestic objects that she wishes to have and (ii) 30 domestic objects that she has at home which are important to her. Her responses are recorded using a photo journal approach; that allows the participant to justify and reflect her choice after revising her selection. The domestic objects are divided into two categories as in accordance to the task given; which are (i) admirable objects and (ii) possessions.

3.2.1 Task 1: Admirable objects

Admirable refers to the understanding of amazement, love, like, desire, attraction and all the positive impulses that drive us to buy things. Baudrillard (1968) pointed out that, everything that cannot be invested in human relationship is invested in objects. Objects that we want to own or we love are usually a representation of who are and who we want to be. The emotional connection towards an object is described by the Japanese term as *aichaku*, which means symbiotic love for an object that deserves affection not for what it does but for what it is (Schwartz-Clauss et al., 2010; p.39). By having *aichaku*, towards the objects of her admiration the participant, despite the fact she has never touched or seen these objects in real life has nevertheless gathered knowledge about the objects based on their visual aesthetics. For this task, the participant is required to choose 30 domestic objects that she admires from any possible sources such as magazine, catalogues, television or internet.

3.2.2 Task 2: Possessions

For this task, the participant needs to select domestic objects that are present at home that she could not live without or could not do without. Task 2 is more complex than Task 1 as it involves objects that are present at home, and these objects at home possess the elemental values and idiosyncrasies that enable them to dwell on the interior of the participant's space since to select only 30 objects would be a challenging task to do. Rob Walker (2009) asserts that that our possessions are the ones that hold meanings implied in our life and reflect the true story about ourselves.

3.3 Task trajectory

For both tasks, the participant is required to give reasons for her selection (justification) and synthesise the justification (reflection) by stating why these objects matter in a written format. There are two types of justifications that the exercise hopes to establish: explicit justification and implicit justification. Explicit justification is a direct justification that the participant can establish without having to think about the ideas behind the objects; rather, she can justify each selection based on the impression of the object. While implicit justification suggests the objects' inherent values, thus the participant needs to reflect on the indirect implication of her own selection and synthesise it according to previous knowledge about the object and articulate it in the form of implicit justification. Both justifications reflect Norman's three levels of brain processing, which are; (i) explicit justification relates to the (i) visceral design and (ii) behavioural design of the object, (ii) implicit justification comprises the element of (iii) reflective design of the object. In order to construct the findings in clear visual form, the (i) explicit justification is simplified to 'justification; and (ii) implicit justification is named as 'reflection'. Drawing on Desmet and Hekkert's research, the emotion elicited by the participant is thoroughly analysed using a product experience framework.

Emotion is subjective; therefore while the ‘justification’ and ‘reflection’ provide reasons for why each object has been selected for both tasks, the keywords are layered with the understanding gleaned from the literature. The literature acts as the metric system to measure the elicited emotional responses.

4 Analysis instruments

4.1 Photo journal study

Photo journal study is the approach used to document the objects selected by the participant. According to Walker and Attfield (1989), photo journal study requires participant to take pictures of their daily life’s product that elicits certain emotions. Participant then will explain why the objects elicited these emotions in a notebook. In general discussions, we reflect on the value of focusing on distinct emotions rather than generalized pleasant responses.

4.2 Typological approach

Walker and Attfield (1989) summed up that typology is defined as a form of bare analysis and generalisations according to groups and series of products, which is to determine its type. For both tasks, objects are coded according to their generic consumer categories such as chairs, cutlery and clothes. After coding, the inferences, interpretations and generalisation will be made according to the ‘justification’ and ‘reflection.’

4.3 Coding: KJ method

Objects are first coded according to type, and then the KJ Method is utilised for both tasks. The KJ method is useful as a way in which to bracket oneself as researcher and the studied subject as well. Random samples of people have contributed keywords for the heuristic findings, and the keywords given are based on the implicit and the explicit justifications. The technique synthesizes different individual perspectives and experiences into a keyword definition and gives different shape to the findings. There are two types of activity in KJ: understanding and completing the tasks. Understanding the tasks is getting each contributor to get a sense of the essence of the tasks; completing the tasks means encouraging all contributors to participate in suggesting relevant keywords. Figure 1 visualises the contributors’ keywords that are connected to the typed keywords that are given by the researcher. The findings are now nourished with others insights but without losing the essence of the participant’s emotional responses.

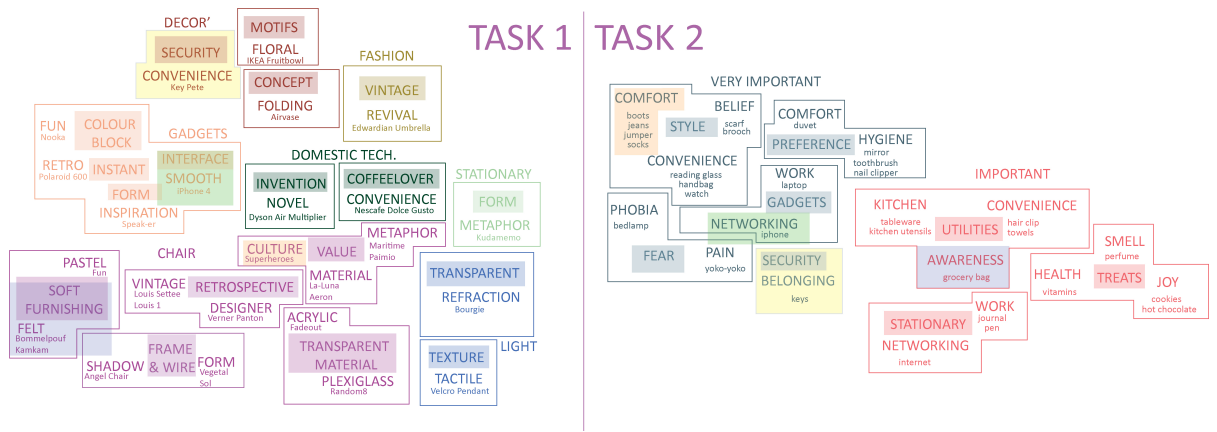


Figure 1. Keywords mapping

4.4 Visual mapping

Visual mapping is a critical step in information visualisation, where the data finally comes to life through a deliberate visual form. However, mapping requires several underlying components to ensure its reliability which are; theory, taxonomy, evaluation (Lima, 2011). Figure 2 shows the visual map of the relationship between the tasks' keywords and the theoretical framework that underlies the findings. The visual map is built based on Desmet and Hekkert's product experience theory.

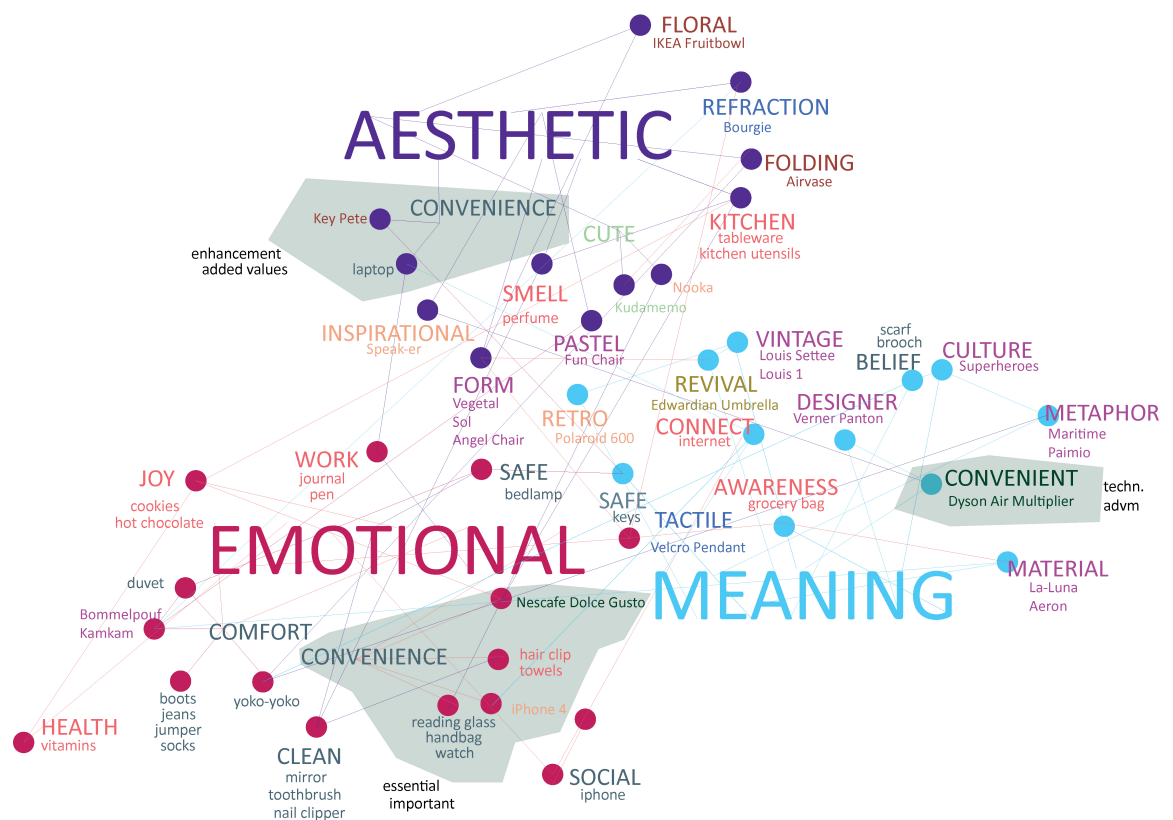


Figure 2. Visualisation of objects keywords based on Desmet and Hekkert's product experience theory

5 Analysis of resonance

The map has assisted the researcher to visualise the emotional responses elicited by the participant while admiring or owning the objects. While the objects are inanimate, they possess traits that provoke us to elicit emotion when we look or use them. The map has visualised resonances between the keywords of the objects (refer Figure 1); the shaded coloured shapes are representative of the resonances held by each keyword. The objects somehow interlaced with the keywords and formed similar emotional responses. Figure 2 shows the keyword 'convenience' that was frequently coded. The participant elicited this emotion when interacting, using, owning or admiring the chosen objects. 'Convenience' appeared to be coded in the overall three experiences. Despite the fact that the objects were varied, they triggered the same emotion: 'convenience'. The visual analyses from Figure 1 and Figure 2 have offered a more comprehensive understanding about emotions and objects in relation to 'convenience'. 'Convenience', in this context refers to functional ease experience that covers emotional, meaning and aesthetic experience that she finds in her possession or admirable objects. The experience is deduced to the three main values which are: (1) fundamental, (2) supplemental and (3) admirable attributes. These values are present in the overall experience and they are the impetuses to the emotions elicited. Therefore, the researcher has hypothesised a new taxonomy of everyday objects; it ought to consist of fundamental, supplemental and admirable values.

6 Discussion

The Fundamental, Supplemental and Admirable (FSA) model is a form of taxonomy of objects derived from the emotions elicited from the participant's interaction with the everyday objects. The 'convenience' emotion has transcended these emotional, meaning and aesthetic experiences suggested by Desmet and Hekkert while participant was using or admiring the objects. 'Convenience' is a representation of the emotion that any designer wants their user to feel as it combines the fundamental, supplemental and admirable values of designed objects. Reflecting the components of each emotion elicited by the participant, the experiences are relational with the emotions elicited. There are added elemental values that support each experience, for example, 'Essential' and 'Important' to equip emotional experience of the chosen objects. After dismantling the resonances, there are three identified attributes that the objects under the resonances shared which are (i) Fundamental, (ii) Supplemental and (iii) Admirable attributes. Therefore, the researcher has hypothesised a new taxonomy of the everyday objects that consist of the Fundamental, Supplemental and Admirable values in objects.

1) Fundamental: Value that suggests the importance of the object. This value or attribute acts as self-image, portrays the main intention of the design and most of all it is the solution for the design problem. This value is generally related to the pleasantness, security and comfort experience. The categories comprise objects that the participant feels she could not do or live without. Without them, she loses herself, daily chores will be incomplete and life will not be the same. As having these objects ensures the participant has a sense of security, comfort, safety and belief. This category has the potential to be developed as one of general criterion for objects, as 'fundamental' holds values that every object should have, important ness.

2) Supplemental: This value makes life easier; it simplifies our chores and ensures our life is more enjoyable. This value includes the elements of pleasantness, aesthetics and

technological advancement; it offers added value to our life. This value enhances the object whilst resonating with the fundamental value embedded in the object.

3) Admirable: This value comprises the element of amazement, wonder and exquisiteness. This value allows the designed object to set itself apart from other mediocre objects; it becomes somewhat unique. While the object will not be liked by everyone, it will be adored by some. This object can be a novel invention, which inspires interest in onlookers.

These values form part of the new taxonomy of objects that extrapolates the design criterion in establishing a well-informed design brief. Prioritisation is the task that any designer has to adhere to as part of the design process. Therefore, designers will be assisted to prioritise their design intentions through the FSA model. Hopefully this new taxonomy will alleviate the uncertainty faced by designers during the early design stage.

6.1 FSA model

The FSA values are subjective and content dependent. Dictating each value with specific types of objects is impossible as emotions are subjective and relative. The emotional reactions are essentially unstructured and comprise of various emotions. In the context of alleviating uncertainty in design activity, novice designers should be able to identify the main component of their design brief, and then develop the design criteria using the FSA model. Designers should know the fundamental values that need to be embedded into the design and articulate the supplemental and admirable values can enhance the design. Armed with knowledge about design and understanding of the user/client's profile, designers should know what to prioritise in their design solution. Golsby-Smith (as cited by Buchanan et al, 2010; p. 260) described that the essence of design is the nature of thinking it entails. "It is integrative, rather than merely analytical; visual rather than merely abstract; and humanistic rather than mechanistic." In the end, design is intuitive and irreducible to component steps, but still tantalizingly capable of description. The FSA model can only be assistive if the designers have understood the design problems and FSA model acts as initial framework that visualise design criteria in lucid to the various backgrounds of the stakeholders. Figure 3 illustrates a sample of project brief that was developed using the FSA model. In this brief, designer has identified main design criterion to be embedded in her design, which is comfort. The supporting elements such as storage and adjustable mechanism are among the enhancements for the design. The admirable value such as using recycled materials for the chair is clearly articulated for the third component of this design brief.

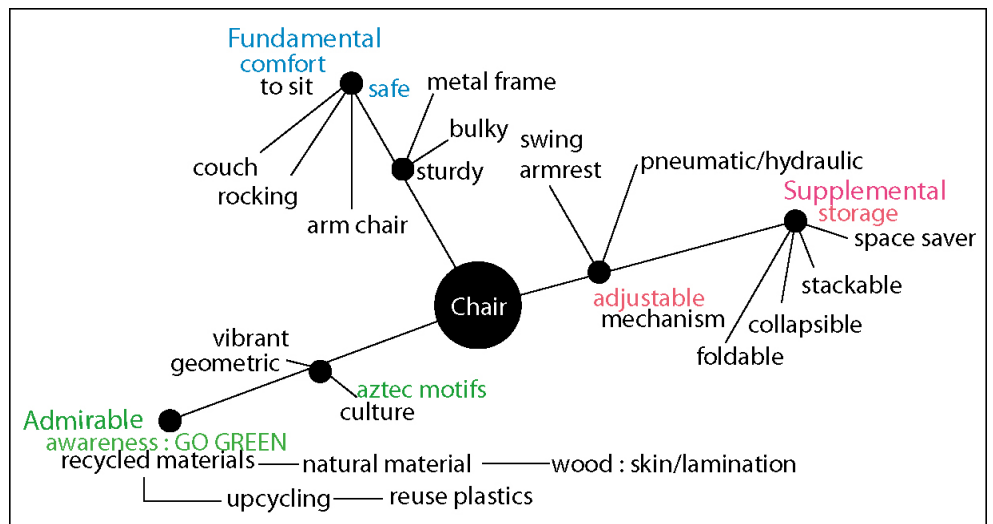


Figure 3. Application of FSA model

6.2 Implication of the model

The model suggests the values that can be prioritised in probing design direction in design activity. Designers have total control over the design direction as the design criteria are developed based on designers' (individual) prioritisation. The model will hopefully aid designers during the early stage of the design process while framing and scoping the problem. The understanding of fundamental, supplemental and admirable values will assist designers to identify the requirement of the brief in a shorter period of time.

6.3 Approach to date

Currently, there is ongoing evaluative study that concerns novice designers as the participant to evaluate the effectiveness of the FSA model. 21 beginner level designers have participated in the study and the findings are evaluated with quantitative researcher method. Designers were given a task, which was to design a toothbrush and they were required to submit their design brief in 30 minutes. There were two parts of the study, (i) before FSA model and (ii) after FSA model. For the first part (i) before FSA model, participants came up with their own design brief based on their existing design knowledge and in (ii) after FSA model part, participants established their design brief after being introduced to FSA model. Questionnaires with specific themes such as uncertainty, understanding, prioritise and time were distributed to the participants. This pre-test evaluation study should yield a concise result about the efficacy of the tool. 57.1% of the participants agreed that the FSA model alleviated their uncertainties while framing the design criteria and 47.6% of the participants strongly agreed that the model provided understanding about what they needed to highlight in their design solutions. 57.1% of the participants strongly agreed that FSA model has assisted them in prioritising values in constructing the design criteria and 66.7% of the participants agreed that the model has lessened the time consumed in brainstorming ideas and constructing the design briefs. This evaluation study provides the opportunity for the researcher to strengthen the FSA component and explicate its impact on the designers. The study is the beginning of series of experiments that will provide valid findings about the efficacy of the tool, and hopefully it will bring a shared understanding among

designers and engineers about the potential of communicating design solutions to the various backgrounds of stakeholders.

7 Conclusion

Designers and deadlines are inseparable. Therefore, design activity is all about making the right choices, especially where time is of essence (Aspelund, 2015). The FSA model proposed in this paper postulates a workable approach to defining ill design problems while also fostering creativity. Designers' preferences to solve problems are varied; the FSA model hopefully can alleviate the time consuming process of brainstorming ideas and defining problems. Although designing should be a way to discover marvel designs, in certain situations a workable solution is the sole dream. The FSA model stemmed from the researcher adopting the auto-ethnography approach to understand own arboretum objects that stimulated her emotional responses. As emotions are speculative, the analysis adopted Desmet and Hekkert's research to construct a trajectory of object-emotion taxonomy. Emotions were used to measure the importance of each object and the admiration that the participant/researcher held towards each object. The FSA model attempts to assist designers to develop design criteria in constructing a design brief. The model offers new perspectives to the design thinking process; it shows that uncertainty is possible to be alleviated by adopting a formulaic approach to design. It provides a new dimension of understanding of the object-human transaction, as well as the possibility of discovering new ethnographic methods to unravel the object's latent relationship with us. FSA model may have similarities with the Vitruvian design principles proposed by Vitruvius. Vitruvius proposed three elements of design which are *Firmitas* (Durability) , *Utilitas* (Function) and *Venustas* (Aesthetic) as the fundamental principles of architecture (Daston, 2004). These elements are linked to each other and cannot stand alone in a design. Vitruvian principles provide a holistic approach to architecture, while FSA is more flexible and it allows designers to explore his own design flair while compromising the client's need at the same time. Future research will further explore the potential of FSA model in assisting novice designers. In this study, researcher demonstrates the FSA application but only at the pre-test level. In the nearest future, a large participation of novice designer participating in the testing will undeniably enrich the findings and explicate the potential of FSA model in dealing real design situation.

References

- Aspelund, K. (2015). *Designing: An introduction*. A&C Black.
- Baudrillard, J. (1968). *The system of objects*. London: Verso.
- Brown, T. (2009). *Change by design: How design thinking transforms organizations and inspires innovation*. New York: Harper Collins.
- Buchanan, R., Doordan, D., & Margolin, V. (2010). *The designed world: images, objects, environments*. New York: Berg Publishers.
- Chang, H. 2007. Autoethnography: Raising cultural awareness of self and others, in Walford, G. (Eds), *Methodological developments in ethnography*, Oxford: Elsevier, pp. 207–222.
- Daston, L. (2004). *Things that talk: Object lessons from art and science*. Cambridge, Massasuchets: Zone Books.
- David, M., & Sutton, C. D. (2004). *Social research: The basics*. Sage.
- Desmet, P.M.A., & Hekkert, P. (2007). Framework of product experience. *International Journal Design, 1*, pp. 57–66.

- Hekkert, P. (2006). Design aesthetics: Principles of pleasure in product design. *Psychology Science*, 48(2), pp. 157-172.
- Lima, M. (2011). *Visual Complexity: Mapping patterns of information*. Princeton Architectural Press.
- López-Mesa, B., & Thompson, G., & Williander, M. (2002). Managing uncertainty in the design and development process by appropriate methods selection. *International Design Conference - Design 2002, Proceeding, Dubrovnik*.
- Margolin, V. (1989). *Design discourse: history, theory, criticism*. University of Chicago Press.
- Newman, D. (2009). That Squiggle of the Design Process. [Blog post] Retrieved from <http://tinyurl.com/plyoc6w>, (Accessed 7 October, 2015)
- Norman, D. A. (2004). *Emotional design: Why we love (or hate) everyday things*. Basic books.
- Schwartz-Clauss, M., Vegesack, A., & Baecker, D. (2010). *Die essenz der dinge*. Weil am Rhein: Vitra Design Museum.
- Scupin, R. (1997). The KJ method: A technique for analyzing data derived from Japanese ethnology. *Human organization*, 56(2), pp. 233-237.
- Sudjic, D. (2008). *The Language of Things*. London: Allen Lane
- Walker, J., & Attfield, J. (1989). *Design history and the history of design*. London: Pluto Press.

The 18th International Conference on Engineering and Product Design Education, c/o
The Institution of Engineering Designers, Courtleigh, Westbury Leigh, Westbury,
Wiltshire, BA13 3TA, UK

Mrs. Hana Hapiz
Plymouth University
Faculty of Arts
Flat 2, Torrington Court,
North Road East
Plymouth
PL4 6AX
United Kingdom

The 18th International Conference on Engineering and
Product Design Education
c/o The Institution of Engineering Designers
Courtleigh, Westbury Leigh
Westbury, Wiltshire
BA13 3TA
UK

Westbury, 13/Oct/2016

To Whom It May Concern

Dear Sir or Madam,

We confirm that **Mrs. Hana Hapiz** participated at Faculty of Engineering Technology of the University Aalborg, Denmark on 8th and 9th September 2016.

With best regards,

EPDE'16 Organisers
c/o The Institution of Engineering Designers
Courtleigh, Westbury Leigh
Westbury, Wiltshire
BA13 3TA
UK

MEDIATING EMOTION THROUGH OBJECTS: THE UNDERSTANDING OF DESIGNED OBJECTS AS AN ASSISTIVE TOOL FOR DESIGNERS IN THE EARLY STAGES OF DESIGN ACTIVITY

ABSTRACT

This paper will explicate the relationship between everyday objects and the user, categorise the objects based on an established system within the design discipline and develop a taxonomy to assist novice designers. To consider the relationship between these objects, a map based on the frame of product experience (Desmet & Hekkert, 2007) will provide a fundamental theory to support the taxonomy. This study will explore the potential of emotion elicited by the user towards everyday objects, and locate these emotions within the taxonomical structure to create a better understanding of the object-user relationship. To better understand the specific qualities of the user experience in this object-user relationship, it is necessary to understand how designed objects trigger and mediate emotion and how these emotions act as a critical component in how we understand designed objects. By unravelling the object conundrum deductively, novice designers can understand the implication of existing designed objects and improve the design of objects in the future. The taxonomy developed as part of this research will be beneficial for the novice designers who face the uncertainties in the early stages of the design activity.

Keywords: Emotion, everyday objects, design activity, uncertainty

1 INTRODUCTION

Designers often face ‘uncertainty’ at the beginning of a design activity but towards the end, they usually gain the clarity and focus they require to complete the design task (Newman, 2009). Brown (2009) explains that designers face problems at the preliminary stage of designing, which actually motivates them to find the necessary answers. However in order to move to the ideation phase, good ideas are commonly generated from a well-informed client brief or what we call a design brief. Therefore, to establish a good design brief, a clear set of design criteria helps to communicate relevant solutions to other design colleagues or stakeholders. By taking into account that concise design criteria are essential to alleviate the uncertainty in the earlier stage of design activity, this paper will investigate the potential of the objects taxonomy as an assistive tool for novice designers to develop a framework for the design criteria.

2 EVERYDAY OBJECTS

Objects invite inquiries and affect our emotion; if they serve their function satisfactorily, they have the potential to greatly influence our lifestyle. Everyday objects are attached to the user as they posit emotional values that respond to the user. These objects elicit an unobtrusive element that is a representation of an extension of ourselves or a recollection of our past that we wish to remember (Margolin, 1989). Domestic objects like kettles, coffee mugs or a duvet elicit certain emotional responses in the user; they could be either illicit comfort or simplify their daily chores. Cognitive approaches to designed objects are usually overlooked and the element of emotion from an understanding of the user experience is often not considered (Norman, 2004). Emotion is connected to meaning as it plays a significant role in the cognition of the designed object; consequently it ought to be considered as part of the design process. Emotion influences how we define the use of objects, the way in which we keep or display them and suggests the consequences of the object in our lives.

2.1 Theoretical framework

The field of user experience has evolved since the term ‘user experience’ was brought to wider audience by Donald Norman in the mid 1990s. Emotional responses are relational to the affective experience. The affective state is generally used to refer to all types of subjective experiences that involve a perceived goodness or badness, pleasantness or unpleasantness (Desmet & Hekkert, 2007). Objects affect the user inexplicably in many ways. A ‘performative’ object, or as referred to by Sudjic (2008), the object that we use, elicits certain levels of product experience. Hekkert (2006) has distinguished three levels of experiencing object: aesthetic pleasure, attribution of meaning, and emotional response.

We thus define product experience as the entire set of affects that is elicited by the interaction between a user and a product, including the degree to which all our senses are gratified (aesthetic experience), the meanings we attach to the product (experience of meaning) and the feelings and emotions that are elicited (emotional experience) (p. 160).

Desmet and Hekkert (2007) have outlined the framework of product experience that distinguishes the affective product experience and the processes that underlie these experiences. Their analysis is based on the users’ behaviour and cognition to the users’ affective experience of the human-product interaction. These affective experiences are linked to the emotional responses elicited by the users.

3 DATA COLLECTION

Emotional responses, which are the pivotal variables in this study, are explored through an ethnomethodological approach. According to David and Sutton (2004), ethnomethodology focuses on the actions of participants in the interaction that requires an empirical focus upon the micro-processes of everyday life. Ethnomethodology is a method that scrutinises the miniscule details of one’s preference; for instance, the attachment that one has to everyday objects. To unravel the personal bond between the user and the object, the study adopts the auto-ethnography method, a method stemmed from the ethnomethodological approach. Here, a set of instruments is used to analyse the findings using keyword coding and interpretative analysis. This reflexive method has been expanded to the exploration of data visualisation to elucidate the data findings in a visual format. The data visualisation is contextualised based on the established theoretical framework of Desmet & Hekkert’s product experience. A set of themes is developed based on the synthesis of emotional responses elicited from the participant; these responses form the parameters of the generic design criteria.

3.1 Participant

The study adopts the auto-ethnography method that utilises the autobiographic materials of the researcher as the primary data. Differing from other self-narrative writings, such as autobiographies, this auto-ethnography study emphasises the interpretation of the researcher’s behaviours, thoughts and experiences (Chang, 2007). For this study, researcher acts as the sole participant as having a background as a designer, and also a user, the findings will have their own unique values and authenticity.

3.2 Experimental procedure

The study investigates responses (interaction) towards selected everyday objects by examining emotional responses elicited by the participant in these two tasks. The tasks are as follows: 1) the researcher selects 30 domestic objects that she wishes to possess; 2) the researcher identifies 30 domestic objects that she has at home which are important to her. Her responses are recorded using a photo journal approach; this allows the participant to justify her selection and offer a reflection on her choices. The selected objects are divided into two categories as in accordance with the task: (1) admirable objects and (2) possessions.

3.2.1 Task 1: Admirable objects

Objects that we want to own or we love are usually a representation of who we are and who we want to be (Baudrillard, 1968). The emotional connection towards an object is described by the Japanese term, *aichaku*, which means “symbiotic love for an object that deserves affection not for what it does but for what it is” (Schwartz-Clauss et al., 2010; p.39). By having *aichaku* towards the objects of her admiration, the participant has gathered knowledge about the objects based on their visual aesthetics despite the fact she has never touched or seen these objects in real life. For this task, the participant is required to choose 30 domestic objects that she admires from any possible sources such as magazines, catalogues, television or the Internet.

3.2.2 Task 2: Possessions

Rob Walker (2009), a design columnist, shares an interesting insight about possessions in a documentary named *Objectified*; he argues that real objects are the ones that hold meanings implied in our life and reflect a true story about who we are. For this task, the participant is required to select 30 objects from her home that she could not live without. Task 2 is more complex than the first, as it involves objects that are present at home; these objects possess the elemental values that enable them to dwell in the participant’s home.

3.3 Task trajectory

For both tasks, the participant is required to give reasons for her selection (justification) and synthesise the justification (reflection) by stating why these objects matter in a written format. There are two types of justifications that the exercise hopes to establish: explicit justification and implicit justification. Explicit justification is a direct justification that the participant can establish without having to think about the ideas behind the objects; rather, she can justify each selection based on the impression of the object. While implicit justification suggests the objects’ inherent values, thus the participant needs to reflect on the indirect implication of her own selection and synthesise it according to previous knowledge about the object and articulate it in the form of implicit justification. Drawing on Desmet and Hekkert’s research, the emotion elicited by the participant is thoroughly analysed using a product experience framework. Emotion is subjective; therefore while the ‘justification’ and ‘reflection’ provide reasons for why each object has been selected for both tasks, the keywords are layered with the understanding gleaned from the literature. The literature acts as the metric system to measure the elicited emotional responses.

4 ANALYSIS INSTRUMENTS

4.1 Photo journal study

Photo journal study is the approach used to document the objects selected by the participant. The participant is required to take pictures of the selected objects and then describe the emotions elicited by the objects in a notebook (Walker & Attfield, 1989).

4.2 Typological approach

Walker and Attfield (1989) argue that typology is defined as a form of bare analysis and generalisations according to groups and series of products. For both tasks, objects are coded according to their generic consumer categories such as chairs, cutlery and clothes. After coding, the inferences, interpretations and generalisation are made according to the ‘justification’ and ‘reflection’.

4.3 Coding: KJ method

Objects are first coded according to type; the KJ method is subsequently utilised for both tasks. The KJ method is useful as a way to bracket oneself as researcher and the studied subject as well. Random samples of people have contributed keywords for the findings; the keywords are based on the implicit and the explicit justifications. The technique synthesizes different individual perspectives and experiences into a keyword definition and gives different meaning to the findings. There are two types of activities in the KJ method: understanding and

completing the tasks. Figure 1 visualises the contributors' keywords that are connected to the typed keywords that are given by the researcher. The findings are now nourished with others insights without losing the essence of the participant's emotional responses.

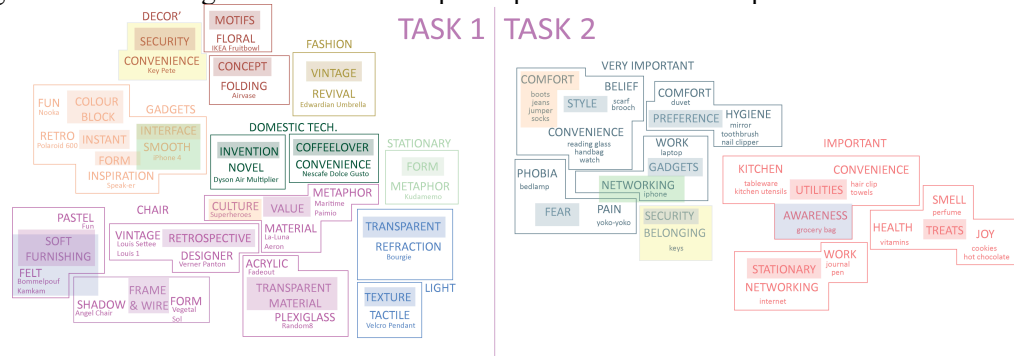


Figure 1. Keywords collected from KJ method

4.4 Visual mapping

Visual mapping is a critical step in information visualisation, where the data finally comes to life through a deliberate visual form. However, mapping requires the following underlying components to ensure its reliability: theory, taxonomy and evaluation (Lima, 2011). Figure 2 shows the visual map of the relationship between the tasks' keywords and the theoretical framework that underlies the findings. The visual map is built based on Desmet and Hekkert's product experience.

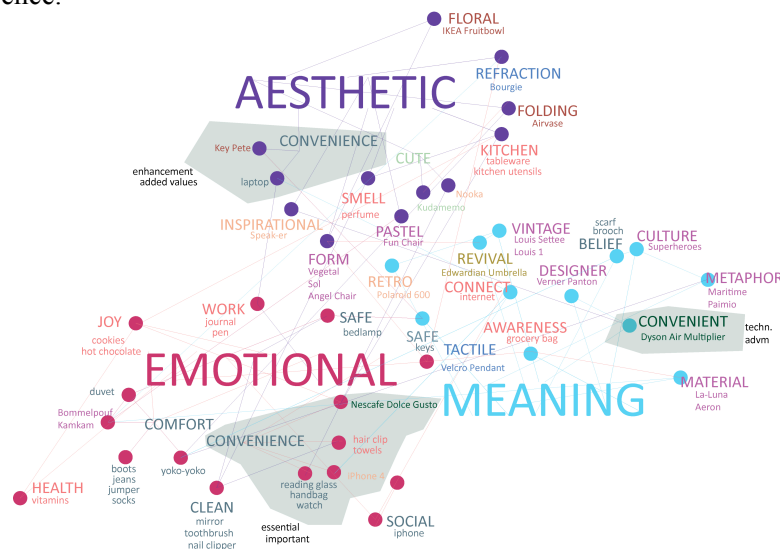


Figure 2. Visualisation of objects keywords based on Desmet and Hekkert's product experience theory

5 ANALYSIS OF RESONANCE

The map has assisted the researcher to visualise the emotional responses elicited by the participant while admiring or owning the objects. While the objects are inanimate, they possess traits that provoke us to elicit emotion when we look or use them. The map has visualised resonances between the keywords of the objects (refer Figure 1); the shaded coloured shapes are representative of the resonances held by each keyword. The objects somehow interlaced with the keywords and formed similar emotional responses. Figure 2 shows the keyword 'convenience' that was frequently coded. The participant elicited this emotion when interacting, using, owning or admiring the chosen objects. 'Convenience' appeared to be coded in the overall three experiences. Despite the fact that the objects were varied, they triggered the same emotion: 'convenience'. The visual analyses from Figure 1 and Figure 2 have offered a more comprehensive understanding about emotions and objects in relation to 'convenience'.

‘Convenience’, in this context refers to functional ease experience that covers emotional, meaning and aesthetic experience that she finds in her possession or admirable objects. The experience is deduced to the three main values which are: (1) fundamental, (2) supplemental and (3) admirable attributes. These values are present in the overall experience and they are the impetuses to the emotions elicited. Therefore, the researcher has hypothesised a new taxonomy of everyday objects; it ought to consist of fundamental, supplemental and admirable values.

6 DISCUSSION: FSA MODEL

The Fundamental, Supplemental and Admirable (FSA) model is a form of taxonomy of objects derived from the emotions elicited from the participant’s interaction with the everyday objects. The ‘convenience’ emotion has transcended these emotional, meaning and aesthetic experiences suggested by Desmet and Hekkert while participant was using or admiring the objects. ‘Convenience’ is a representation of the emotion that any designer wants their user to feel as it combines the fundamental, supplemental and admirable values of designed objects.

1) Fundamental: Value that suggests the importance of the object. This value or attribute acts as self-image, portrays the main intention of the design and most of all it is the solution for the design problem. This value is generally related to the pleasantness, security and comfort experience.

2) Supplemental: This value makes life easier; it simplifies our chores and ensures our life is more enjoyable. This value includes the elements of pleasantness, aesthetics and technological advancement; it offers added value to our life. This value enhances the object whilst resonating with the fundamental value embedded in the object.

3) Admirable: This value comprises the element of amazement, wonder and exquisiteness. This value allows the designed object to set itself apart from other mediocre objects; it becomes somewhat unique. While the object will not be liked by everyone, it will be adored by some. This object can be a novel invention, which inspires interest in onlookers.

These values form part of the new taxonomy of objects that extrapolates the design criterion in establishing a well-informed design brief. Prioritisation is the task that any designer has to adhere to as part of the design process. Therefore, designers will be assisted to prioritise their design intentions through the FSA model. Hopefully this new taxonomy will alleviate the uncertainty faced by designers during the early design stage.

6.1 Application of the FSA model

The FSA values are subjective and content dependent. Dictating each value with specific types of objects is impossible as emotions are subjective and relative. The emotional reactions are essentially unstructured and comprise of various emotions. In the context of alleviating uncertainty in design activity, novice designers should be able to identify the main component of their design brief, and then develop the design criteria using the FSA model. Designers should know the fundamental values that need to be embedded into the design and articulate the supplemental and admirable values can enhance the design. Armed with knowledge about design and understanding of the user/client’s profile, designers should know what to prioritise in their design solution. The FSA model can only be assistive if the designers have understood the design problems and FSA model acts as initial framework that visualise design criteria in lucid to the various backgrounds of the stakeholders. Figure 3 illustrates a sample of project brief that was developed using the FSA model. In this brief, designer has identified main design criterion to be embedded in her design, which is comfort. The supporting elements such as storage and adjustable mechanism are among the enhancements for the design. The admirable value such as using recycled materials for the chair is clearly articulated for the third component of this design brief.

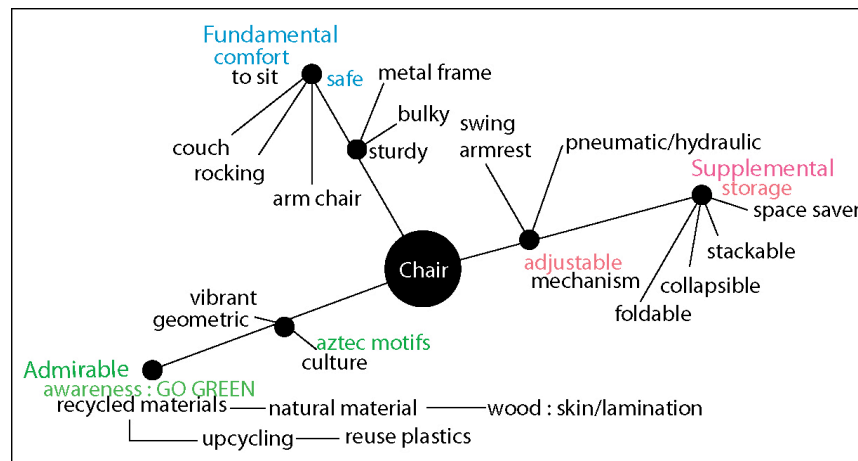


Figure 3. Application of the FSA model

6.2 Implications of the model

The model suggests the values that can be prioritised in probing design direction in design activity. Designers have total control over the design direction as the design criteria are developed based on designers' (individual) prioritisation. The model will hopefully aid designers during the early stage of the design process while framing and scoping the problem. The understanding of fundamental, supplemental and admirable values will assist designers to identify the requirement of the brief in a shorter period of time.

7 CONCLUSION AND FUTURE WORKS

Designers and deadlines are inseparable. Therefore, design activity is all about making the right choices, especially where time is of essence (Aspelund, 2015). The FSA model proposed in this paper postulates a workable approach to defining ill design problems while also fostering creativity. Designers' preferences to solve problems are varied; the FSA model hopefully can alleviate the time consuming process of brainstorming ideas and defining problems. Although designing should be a way to discover marvel designs, in certain situations a workable solution is the sole dream. The FSA model stemmed from the researcher adopting the auto-ethnography approach to understand own arboretum objects that stimulated her emotional responses. As emotions are speculative, the analysis adopted Desmet and Hekkert's research to construct a trajectory of object-emotion taxonomy. Emotions were used to measure the importance of each object and the admiration that the participant/researcher held towards each object. The FSA model attempts to assist designers to develop design criteria in constructing a design brief. The model offers new perspectives to the design thinking process; it shows that uncertainty is possible to be alleviated by adopting a formulaic approach to design. It provides a new dimension of understanding of the object-human transaction, as well as the possibility of discovering new ethnographic methods to unravel the object's latent relationship with us. Future research will further explore how FSA model assist the novice designers. In this study, researcher demonstrates the FSA application but only at pre-test level. In the nearest future, a large participation of novice designer participating in the testing will undeniably enrich the findings and explicate the potential of FSA model in dealing real design situation.

REFERENCES

- [1] Aspelund, K. (2015). *Designing: An Introduction*. A&C Black.
- [2] Baudrillard, J. (1968). *The system of objects*. London: Verso.
- [3] Brown, T. (2009). *Change by design: How design thinking transforms organizations and inspires innovation*. New York: Harper Collins.

- [4] Chang, H. 2007. Auto-ethnography: Raising cultural awareness of self and others, in Walford, G. (eds.), *Methodological developments in ethnography*, Oxford: Elsevier, pp. 207–222.
- [5] David, M., & Sutton, C. D. (2004). *Social research: The basics*. Sage.
- [6] Desmet, P.M.A., & Hekkert, P. 2007. Framework of product experience. *International Journal Design, 1*, pp. 57–66.
- [7] Hekkert, P. (2006). Design aesthetics: Principles of pleasure in product design. *Psychology Science*, 48(2), 157-172.
- [8] Lima, M. (2011). *Visual Complexity: Mapping patterns of information*. Princeton Architectural Press.
- [9] Margolin, V. (1989). *Design discourse: history, theory, criticism*. University of Chicago Press.
- [10] Newman, D. (2009). That Squiggle of the Design Process. [Blog post] Retrieved from <http://tinyurl.com/plyoc6w>, (Accessed 7 October, 2015)
- [11] Norman, D., A. (2004). *Emotional design: Why we love (or hate) everyday things*. Basic books.
- [12] Schwartz-Clauss, M., Vegesack, A., & Baecker, D. (2010). *Die essenzen der dinge*. Weil am Rhein: Vitra Design Museum.
- [13] Sudjic, D. (2008). *The Language of Things*. London: Allen Lane
- [14] Walker, J., & Attfield, J. (1989). *Design history and the history of design*. London: Pluto Press.