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A Postcolonial Critique of Industrial Design:

A critical evaluation of the relationship of culture and hegemony to design

practice and education since the late 20th Century

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DECLARATION

This work has not been previously accepted in any substance for any degree and is not concurrently submitted in candidature for any degree.

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This thesis is the result of my own investigations, except where otherwise stated. Other sources are acknowledged by footnotes giving explicit references.

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Date

TITLE

A postcolonial critique of industrial design: A critical evaluation of the relationship of

culture and hegemony to design practice and education since the late 20th century.

QUESTION

How does industrial design education and professional design praxis with its

technological artefacts embody culturally hegemonic assumptions and what can be done

to counter this?

TASLIMA BEGUM

A postcolonial critique of industrial design: A critical evaluation of the relationship of culture and hegemony to design practice and education since the late 20th century.

ABSTRACT

This thesis specifically focuses on the professional practices and training of Western industrial designers using postcolonial theory to inform working practices in a complex global ecology. It investigates the culturally hegemonic construction of design solutions in man-made products. By adopting key ideas from postcolonial and cultural studies as a lens to evaluate fields of industrial design discourse, practice and pedagogy, the work proceeds from the premise that design is not intrinsic to a product but the result of a myriad different forces and factors acting on it externally including hegemonic potencies. By reinterpreting technological formations in light of research emerging from post-colonial studies, it attempts to broaden our intellectual understanding of how product design in theory, practice and education can often rely upon western [hegemonic] aesthetic and deep cultural archetypes. The purpose of this enquiry is to highlight the potentials that exist to explore a synergy between east and west in industrial design with a prospective vision for global, trans-cultural design.

The research claims that current design practice often leads to culturally determined - rather than universal - conceptions in design and it attempts to re-conceptualise design as practice within a necessarily hegemonic culture. This hegemony needs to be acknowledged and redressed via increased awareness and changes to the intellectual heritage and autonomy of West European and American industrial design, in its dialogue, practice and education. As an epistemological project to identify knowledge within this discourse, it suggests new methodological and strategic approaches to engage with the crisis the discipline faces in light of globalisation so as to open up future discussions in design discourse and give a voice to the many silences that make up the noise of the world. It attempts to:

- Further understand the trajectory of hegemony and globalisation in relation to design,

technology and culture.

- Critically engage with cross- and trans-cultural, global and social design implications.

- Address the discrepancies between designers' culture and users' culture, to expose the necessity for more culturally-cognizant design practice and pedagogic provision.

The research was initiated by identifying a number of questions that designers and users may consciously or subconsciously confront when faced with products that problematise the imagined universal values of designed products in terms of gender and culture. It explores how certain design solutions produced and developed in the west and their diffusion into global, international markets and foreign cultures could affect those cultures by asking in what ways the usability, aesthetic and symbolic characteristics of these artefacts often unwittingly contribute to the privilege or marginalisation of people from particular socio-cultural backgrounds. The thesis intervention is that product designers are neither explicitly trained to comprehend nor surmount their respective cultural constraints and design education both nationally and internationally is not sufficiently equipped with the tools to acknowledge and confront this. The key arguments presented in this thesis are:

1. Products can often be deconstructed to identify cultural connotations or omissions in their design.

2. Global, a-cultural design and universal usability are fallacies that frequently deny the existence of an underlying cultural hegemony at play.

3. Mass-produced products can gradually homogenise and eradicate cultural diversity contributing to the negative effects of colonialist attitudes and/or globalisation.

4. Academia and educational institutions have the potential to extend awareness in this field to inform and train future designers and graduates to better advance design obligations in global, trans-cultural [1], cross-cultural [2] and multicultural [3] contexts.

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[1] Trans-cultural – embracing and extending through all human cultures.
[2] Cross-cultural – relating to different cultures or comparison between them.
[3] Multi-cultural – relating to or containing several different cultural or ethnic groups within a society.

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"Everyday things represent the most overlooked forms of knowledge.

These names are vital to your progress.

Quotidian things.

If they weren't important, we wouldn't use such a gorgeous Latinate word.

Say it," he said.

"*Quotidian*."

"An extraordinary word that suggests the depth and reach of the commonplace."

(De Lillo, 2007, p.542)

'The noise of the world is made out of many silences.'

(Zeldin, 2012, p.11)

Section I: Rationale and Methodology

Chapter One

Chapter One

1.1   Introduction

1.1.1   Rationale and the origins of the thesis

Initiated in the summer of 2004, this part-time study was a programme of progressive research designed to deal with a specific issue in industrial design. Its primary aim was to conduct a post-colonial [4] investigation into the cultural construction of design solutions in technological products. It considers if and how products and systems produced in the West [5] embody culturally hegemonic assumptions asking how cultural influences affect design history, theory, education and professional practices, why products and systems are designed the way they are and takes the view that design is not intrinsic to an object but an effect of an amalgamation of various different forces and factors. The goal is to arrive at an understanding of how product design relies upon western hegemonic aesthetic and deep cultural archetypes in light of research emerging from post-colonial studies.

The study attempts to suggest a route towards a trans-cultural [6] design method for critically evaluating industrial design products and practice from a postcolonial perspective, formulating a theoretic foundation of how to implement social and cultural factors into the design process given that scarce research has been conducted upon this subject; excluding a few associated studies that recognise the significance of culture to product design (Manzini and Susani, 1995; Gaver 2001, pp.51-57; Yang, 2003 and Norman, 2004).

As the dynamic of globalisation intensifies, many industrial design products by necessity are produced for and disseminated within increasingly global and trans-cultural

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[4] It is not my intention to discuss temporally or geographically located histories of colonialism or specific postcolonial struggles, but rather to adopt postcolonial discourse and its key deconstructive arguments as a methodological approach with which to critique specific phenomena within design discourse. Therefore, the research pivots around two thematic loci: postcolonial theory and industrial design.

[5] In the context of this research the west i.e. western – refers to developed, first world countries comprising Western Europe and North America. There are certain ideals associated with the west and there are many who consider western values to be universally superior. For example, the author Francis Fukuyama contends that Western values are destined to triumph over the entire world.

[6] Trans-cultural – meaning relating to or involving more than one culture; extending through all cultures; cross-cultural. Trans-culturality encompasses a broad understanding of cultures, their adaptations and interactions. The concept acknowledges the diversity induced by the confluence of various cultures including the innovative and hybrid cultural processes and forms that emerge as cultures transit through one another. This research is underpinned by an acknowledgement of the notion of trans-culturality as a relevant and significant context within which to locate contemporary design practice and education.

economies. Such products not only infiltrate different cultural settings, but also can only function optimally if there is a full recognition of the diversity of cultural difference. Design appears to have little training for this; in fact it appears to train itself to the contrary – to be short-sightedly hegemonic within its own culture. In this context, the thesis is an epistemological investigation into what a formula for practice may look like.

In effect the research becomes a method that could be used to target specific aspects of the practice and understanding of industrial design attempting to elucidate how we can better approach the design problems of products destined for trans-cultural use; but also identifying the deficit in the existing design paint-box - the various psychological and intellectual tools designers have at their disposal - employed by designers dealing with such problems. Postcolonial discourse and critical studies are examined solely to determine if they have a solution to offer design. The author hypothesises that one of the reasons for the restricted access designers have to problem-solving strategies is that they think within a colonial box. The importance of this subject has amplified much from the time when design was a local issue, in comparison to the technologies that have now become global. The research will be supported by exemplifying trans-cultural objects that present an 'interface' divide between cultures because their solution is culturally determined in an invisible, subtly inconspicuous manner.

Situated within the innovative synergy between postcolonialism, design practice and education, this research does not intend to make a direct intervention in post-colonial discourse but caters for a lacuna in our documented philosophical and cultural understanding of design as a problem-solving practice, obviating the drift towards globally homogenised culture. This research intervention has been brought about by the advent of designing for the immaterial [7]. Designing for the immaterial often entails inventing novel cultural traditions or perspectives or modelling on established ones. For the purpose of analysis the research focuses almost exclusively on industrial design, as it is understood in the west. By exposing the relationship between, canonical, postcolonial theoretical studies and product design process, the research

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[7] Designing for the immaterial allows us to revisit materiality and survey its social and cultural implications. Although the research focuses particularly on technological products that exist on the utilitarian threshold between materiality and immateriality it is recognised that design is a process that deals with both tangible, material products as well as their intangible, social or metaphysical qualities and this research will necessarily deal with such aspects.

then seeks to productively ask 'what potential exists to explore a synergy between east and west in industrial design?'

Preliminary research has shown that the two discourses have not previously been bridged with this approach. This void outlines a conspicuous indigence. Due to the lack of an existing body of literature that deals with a direct relationship between the two disciplines, this research as a necessity draws on literature from both distinct spheres outlining the potential overlaps. By providing a novel link of relevance and outlining key connections it is suggested that it may be a useful coupling for design as a discourse and intellectual endeavour in order to reinvigorate contexts of design practice and curricula design. Additionally, from a design ethics stance, it is crucial to outline how our contemporary practices and worldview have and may yet continue to be shaped by colonial and imperialist cultural assumptions through products, whether as a conscious or unconscious mechanism.

The origins of the thesis

Having been born in Bangladesh and brought up in the U.K, it was during my stints in Bangladesh, a developing country rife with grassroots innovation, that certain provokingly cross-cultural design issues became apparent to me. Observations on my travels provoked my curiosity on this subject and this intrigue has continually developed with the lived experience (Van Manen, 1990) of controversial products and intriguing socially and technologically mediated cross-cultural practices.

Bangladesh can be unbearably sweltering in the tropical summer with temperatures soaring up to 40 degrees Celsius. With this in mind I purchased a stainless steel drinking flask in the UK to keep myself from dehydrating and it travelled with me. Its double walled construction effectively kept water icy for most of the day, however, there was one problem that began to emerge that was not initially apparent in the cultural climate of the UK. The shape, form and muted black aesthetic of the seemingly innocuous flask, by association, symbolically denoted a bottle of alcohol. With Bangladesh being a primarily Muslim country this posed a

substantial socio-cultural impasse. I initially carried the flask on a train journey to Cox Bazaar in the south coast and each time I took a sip of water to quench my thirst against the heat I could sense complete strangers looking on with disdain and clearly perceiving it as a *swig*. As a Muslim woman the cultural connotations were undoubtedly significant. Extended family and friends ribbed me about what it held and people who didn't know me muttered under their breath to each other, I presume about my seeming lack of respectability, decorum and faith.

The product posed a very basic example of how socio-cultural, postcolonial and ethnographic enquiry could aid in averting designing products that do not cross socio-cultural, religious or global boundaries well. Innumerable similar examples exist of products designed, manufactured and distributed even within the country of origin that tether on the brink of failure due to design teams not asking the right questions or relegating vital cultural issues.

For example, many Hindu women organise their kitchens as essentially holy places but this has not been accounted for in kitchen design in the west as of yet, despite countries becoming increasingly multicultural. Washing machines designed in the west for multi-cultural markets do not account for the fact many Asian women wear sarees with alternative materials which has resulted in many women facing the despair of finding their sarees destroyed and shredded by the use of inept settings for the range of fabric. Already some designers are seeing the potentials and opportunities that cultural difference often facilitates and are successfully honing in on this by designing for various markets such as Islamic or halal cosmetics, electronic and consumer products, tally counters and yet others are glocalising and completely adapting already existing products to fit novel markets such as the motorcycle helmet that is aesthetically designed to look like a hijab; Muslim skullcap, Jewish kippah, or Sikh turban.

Product design processes need cultural insight and sensitivity imbedded within their practice as vital components to avoid disasters. Although user-centered design has achieved much to alter how designers collectively undertake their innovative practices, it is posited that design discourse is profoundly in need of bringing postcolonial and cultural studies analysis into the discussion as an intellectual move to help evolve and shape a conversational philosophy for

the design community to better relate their work to globally inclusive and ethical practices and inform critical training and understanding. Diluted ethnographic and anthropological methods can to an extent address this issue but it is argued in this thesis that far more needs to be done and alternative methods developed to negotiate how we account for cultural difference in our practices. The authors drive for this thesis is a firm belief that esoteric theoretical constructs can indeed be translated in such a way that they productively infuse design process and practice considering that even within design consultancies, firms, and organisations commercial expediency often draws from seemingly abstract concepts, ideas, ethos and scholarship.

1.1.2 **Background research:** Contextualising the research and its significance

In cultural theory, postcolonial refers to an approach that attempts to 'de-centre' white, metropolitan, European cultures so as to valorize the margin against the metropolis, the periphery against the centre. As an umbrella-term postcolonialism includes concepts taken from critical practices such as feminism, poststructuralism, psychoanalysis, Marxism and linguistics. As a movement that aims to expose and struggle against the influence of hegemonic culture [8] on marginalised cultures it acts as a tool to dismantle hegemonic modes of thought. It battles dominance through ideas and culture with a determination to analyse unjust power relationships as manifested in the cultural products of a given society through a reformulation of the imperial centre to the colonial periphery. Therefore, in the context of this research the term is utilised to signify a position against imperialism and Euro-centrism.

Postcolonial studies became part of the critical and theoretical toolbox in the 1970's. Tending to primarily focus on colonial texts and the rather reductive dichotomy between the orient and the occident, it asserted that culture, like gender, is a constructed, sociogenic concept with no definitive essence and began to expose the realities of cultural hegemony. This research endeavours to further design knowledge by asking whether culturally hegemonic assumptions influence or are subliminally imbedded into western design processes and the awareness of this issue in training received by professional designers in formal higher education. As a postcolonial field of inquiry it attempts to reveal the inaccuracies of a number of assumptions about the relationship between designers, culture, globalisation, design process, training and education. This is achieved by undertaking primary field research with designers and design educators and critically analysing a combination of technological solutions along with industrial design's constituent historical and theoretical body of data.

The literature survey critiques classical and more recent works by philosophers of technology such as Donald Norman, Don Ihde and Victor Margolin and brings in ideas by postcolonial writers such as Gayatri Spivak and Stuart Hall. It contends that what may be

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[8] Hegemonic culture is often interpreted as associated with large, rich nations, usually European and North American.

argued as western values (such as individuality and capitalism) are often impregnated into its technological developments whilst the rest of the world adopts and mimics these paradigms without necessarily being aware of their presence.

Any exposition of socio-cultural structure naturally suggests power hierarchies. This research project highlights how globalisation, representation and hegemonic ideals can be unconsciously combined into technological artefacts and design processes in the West to create paradigms that are subsequently reproduced the world over via the mechanism of false consciousness [9]. Products from the design realm should therefore be critically analysed within their cultural contexts. In the past, there has been a cultural divide between the nominal east and nominal west; however there also exists a cultural cohesion allied to the industrial revolution, which is necessarily taken into account in a section on glocalisation (chapter four, section 4.5). From the basic inference that dominant culture can be something intrinsic to the formation of design solutions, this investigation endeavours to identify the impact issues such as cultural hegemony; representation, multiculturalism, and hybridity may have on design.

As the variety and sheer magnitude of designed products and systems that continue to proliferate into the 21st century are beyond the scope of this research, this investigation primarily concentrates on exploring products destined for global or/and cross/multi-cultural use. Over the past century, affluent nations of Western Europe and North America have seen design emerge as an ubiquitous component of everyday life. As an aspect of material culture, it encompasses how objects are conceived, manufactured, exchanged and utilised. What is significant is not always observable; therefore the research specifically considers the role of ubiquitous design products or quotidian things – the everyday and commonplace artefacts – to highlight their role on the formation of hierarchical cultural identities. This is explored through the analysis of the dynamic relationship between individuals, society and designed, technological entities as networked systems.

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[9] In Marxist theory, a failure to identify the instruments of one's exploitation or oppression as one's own creation, as when constituents of an oppressed class unwittingly adopt views of the oppressor class.

1.1.3 **Foundations:** Acknowledgment of previous work being built on

Adopting postcolonial and cultural studies as a lens, key ideas derived from these disciplines were employed and where relevant used to evaluate the theoretical and historical discourse of industrial design in an attempt to illuminate inherent lacunae within contemporary western design literature, education and practice. The literature survey has been done by philosophically drawing from and extending on ideas in industrial design theory and cultural theory works proceeding from the canonical work of technological philosophers and writers such as Donald Norman, Don Ihde and Albert Borgmann in design theory and the established literary orthodoxy of postcolonial discourse as embodied by the works of Edward Said, Stuart Hall and Bill Ashcroft in postcolonial studies. On a wider context, some concepts in critical theory have also been filtered through and will be taken into account in the on-going work to determine if there are any adjuncts to postcolonialism that may be valuable to solve the design issue outlined in the rationale.

As a literary stratagem to illustrate the design issue, band-aids or sticking plasters are a good example. Historically in the 1950`s band-aids for everyone including non-whites, black, brown, and tan individuals were pastel pink or nude in colour, which although didn't aesthetically reflect anyone's skin tone very accurately, did however affirm a subconscious view of the world aiding the phenomenon of 'white privilege'. Assumedly the band-aids were coloured in this way so they wouldn't be conspicuous or be noticed – unless of course you were dark-skinned, in which case they unwittingly had the adverse effect. Band-aids for what was considered 'normal' skin was designed based on a myopic social perception and an inadvertently prejudiced marketing plan. Prior to this they were a generic polar-white in colour. Although no-ones skin colour or pigmentation actually matches the conceived 'flesh-tone' colour used, and despite its advent during and after the age of desegregation, such a simple design would have sent subconscious messages to African Americans, Asians, tanned people and non-whites about their colour being one of the 'Other' thereby continuingly reinforcing the supremacist view of what is deemed 'normal'. It is entirely probable that working class white people may have also imagined there was something abnormal about them too since it didn't

accurately camouflage their skin, but what is of particular concern here is how asian or black people would have instinctively felt due to the greater contrast.

From a postcolonial perspective, there ideally could have been an assortment of hues ranging from black, darker tan, yellowy and reddish band-aids for different skin-tone colours available which provided a more holistic, inclusive approach, just as chameleon/mood band-aids that assume the colour and texture of the wearers skin may've been an alternative. Another occluded solution may have been the transparent band-aid, which are widely prevalent now or patterned designs that evade the skin tone controversy entirely. Although this has long since been rectified the question remains how the pink colour found its way onto the plaster in the first instance. It is not suggested that the designer or artist responsible was racially motivated, nor that it was a white supremacist act – far from this – it is viewed by the author - as a particular short sightedness and oversight towards the reality that these products will be utilised by a variety of people with varying cultural and racial backgrounds and a possible focus towards cost-effectiveness for the manufacturers. Part of the reason for such tunnel vision emerges from the historical reality that it was primarily white, middle class males who worked as designers in the industry. It could also be strongly argued that a prejudiced or colonial subconscious can manifest itself into design process, decisions and outcomes only to become apparent to us in retrospect as we become increasingly aware of them. It is necessary to at least recognise this can be the case if we are to challenge disparities in the status quo and even up the direction of privilege that benefit one race over another in all hegemonic societies.

What psychologists label as normative cues, are subtle and blatant social cues in society that indicate what 'normal' is. Such biased cues often go unnoticed but can have a lasting subconscious effect on those they marginalise. Subsequently, as a counteracting design, a selection of Pride brand sticking plasters were later produced which were brown and had a picture of a confident African American child on the packaging. In 2010, a brand named Stickyskin brought out a range of fabric plasters designed to match the skin-tone of people who are not white, in dark, light and mixed-race brown skin-tones. They are now stocked in eighty chemists in London (Russell, 2010). It is hoped this simplistic example of design's gradual evolution towards cultural sensitivity illustrates the thesis topic in investigation and its

significance in terms of design practice and education in the increasingly cross/multi-cultural, migrational, and inclusive world we live in.

1.1.4 **Thesis Scope:** Outline of research undertaken

This research has involved:

- An evaluation of industrial designs selected historical and theoretical literature and postcolonial discourse and its key concepts to identify key positions in critical theoretical studies, to see what might lead us to better deal with design products destined for trans-cultural markets.

- A philosophical discursive outline of connections between the disciplines.

- A mixed methods sequential research design undertaking:

  1. Quantitative research and analysis of data collated on the cultural processes, preferences and assumptions both conscious and unconscious, that designers' work with and whether they are formally trained to acknowledge these exist.

  2. Qualitative research on the cultural cognizance of design educators and practitioners via an analysis of design training by comparing the syllabi and methods used in examples from a number of countries.

In terms of approach, it could be logically argued that the inherent socio-cultural and metaphysical properties of any technology reside parallel to their corporeal, material nature, and can in turn affect the social and political structures within a given society. Therefore, it is only by jointly analysing a combination of the physical and metaphysical qualities of technology that we can gain a more holistic picture of its effects on society, culture and the human psyche. As we ourselves inhabit a single holistic universe with it's interconnected possibilities and unbordered nature this approach is deemed appropriate.

1.1.5   A postcolonial approach, the West and global, transcultural products

In *Post-Colonial Drama: Theory, Practice, Politics* (1996), Helen Gilbert and Joanne Tompkins

clarified the denotational functions, among which:

> The term post-colonialism - according to a too-rigid etymology - is frequently misunderstood as a temporal concept, meaning the time after colonialism has ceased, or the time following the politically determined Independence Day on which a country breaks away from its governance by another state. Not a naïve teleological sequence, which supersedes colonialism, post-colonialism is, rather, an engagement with, and contestation of, colonialisms discourses, power structures, and social hierarchies . . . A theory of post-colonialism must, then, respond to more than the merely chronological construction of post-independence, and to more than just the discursive experience of imperialism. (Gilbert and Tompkins, 1996)

Although critics deplore its imprecision and lack of historical and material particularity,

research in postcolonial studies is rising as postcolonial critique enables wide-ranging analysis

into power relations in diverse contexts. Postcolonial enquiry has obvious weaknesses as terms

such as 'postcolonial' are always open-ended in that they are never answers, and they never end

a discussion; they commence it and situate it within a category of issues under discussion. It

allows us to ask a whole series of pertinent questions. The purpose of using postcolonial as a

description is that it enables a feasible, convenient means of discussing issues that are pertinent

to society. Theories of style and genre, assumptions about the universal qualities of product

epistemologies and value systems can be profoundly interrogated by the engagement of

postcolonial writing.   There is a growing currency within the academy of the term

'postcolonial', which dissuades taking a polemic position and can seek to uncover historical

amnesia in narrativised [design] histories.   The term is used generically throughout this

research.

In design history and design studies, Victor Margolin argued that there remains 'the

critical need for doctoral-level investigations into design and culture' (2002, p.219). More than

a decade since, this appears to still have resonance within the intellectual design community and

its literature. Accordingly, this research in particular argues how culturally hegemonic myths

can infect design and be, as if in a continuum, perpetually reproduced throughout history

emerging as a palimpsest where previous accounts leave behind an ethereal residue affecting the

manner in which new conceptualisations and innovations are formulated and overwritten. This seemingly results in a straitjacketing conformity with design conceptualisations inevitably aligned to western zeitgeist paradigms. The thesis expands on these ideas injecting insights and illustrative examples. To avoid a reductive approach the research necessarily considers the subtle complexities, collisions and convergences between technology and culture and outlines how the very annexation of technological products by groups from diverse cultural backgrounds - as a conscious or unconscious counter movement to technological hegemony - can also be viewed as post-colonial.

Historically and in many societies, women too have been relegated as the 'other' and have had to construct a language of their own just as postcolonial people in the world have. Both groups have been powerless, exploited, marginalised and have oft held a subordinate position in society as remains true to this day. Postcolonial and feminist discourses are similar in that they equally seek to reinstate the marginalised by confronting the discourse of the dominant. Early feminist theory sought to invert the structures of domination but contemporary feminist criticism now questions forms and modes. Despite its critics and the various subsets existing of each, both feminist and postcolonial discourse are orientated towards the future and oppose Marxism and hegemonic ideas that secure the power of the ruling class (i.e. Europe and men) against the working class (i.e. postcolonialism and feminism).

The terms 'postcolonial' and 'feminist' are thereby primarily utilised in this thesis to refer to the critique of oppressive cultural practices as an approach rather than as complex discourses with their specific histories, concerns and tensions. This enables the formation of a lens and perspective informed by postcolonial literary theory that facilitates a critique of design issues otherwise not possible. As an approach it is hoped it may help key stakeholders such as design educators and practitioners to reflect on their own process, practice and contexts from a trans-cultural, global perspective and consider the limitations, potentials, responsibilities and subconscious elements of their work to potentially curb design faux pas and make design process more culturally cognizant, inclusive and sensitive.

It is argued that a postcolonial approach has many useful applications to design, namely:

1. It has the potential to produce further cross-cultural, anthropological knowledge that could have a crucial bearing on product design process and practice.

2. It could help support co-operative and adaptive design methods towards user empowerment and design democratization by breaking down hegemonic, hierarchical relationships between designers and end-users.

3. It is believed that postcolonial concepts and ideas oscillating hybridity, breakdown of power structures, deconstruction, globalisation and glocalisation etc. can be usefully applied in design product analysis and education.

4. The thesis argues postcolonial theory and cultural studies can provide design with additional tools of cultural, philosophical and political analysis and future intellectual impetus and development.

In order to examine how form follows culture and adopt an approach that embraces the act of 'de-colonising the mind', it is imperative to scrutinise the interaction between product and culture from alternative perspectives. Through a multi-faceted literary and textual analysis it is possible to begin to break down some of the complexities of postcolonial discourse and map out which ideas can be usefully applied to the design discipline. A postcolonial analytical lens as a philosophical and critical tool is therefore, situated around concepts such as the following which are explored either explicitly or implicitly in the discussion of the thesis:

- Globalisation and glocalisation

- Power and hegemony

- Multiculturalism and hybridity

- Postcolonial feminism

- Historicism and historiography

- Fluidity and pluralism of identity and culture

- Deconstruction [10]

Cultural critic, Edward Said developed the denotations and connotations of the term Orientalism to describe the binary social relation Western Europe intellectually divided the world into. Cultural representations are social constructs and mutually constitutive and cannot exist independent of one another as each exists on account of the 'Other'. The 'west' created the cultural concept of the 'East' reducing the non-western world into a homogenous cultural identity.

Philosopher and theoretician Gayatri Spivak defines the term subaltern stating that: 'In postcolonial terms, everything that has limited or no access to the cultural imperialism is subaltern—a space of difference' (Spivak, 1992, p.11). Spivak cautioned against ignoring subaltern peoples as 'cultural Other', and said that the West could progress beyond the colonial perspective by means of introspective self-criticism of basic ideals.

The term hybridity has previously been associated with the work Homi Bhabha, whose analysis of colonizer/colonized relations outlines their interdependence and the mutual construction of their subjectivities. Bhabha contends that all cultural statements and systems are constructed in a space that he calls the 'third space of enunciation' (2004, p.95). He states a need to recognise an empowering hybridity within which cultural difference may operate. Hybridity has frequently been used in post-colonial discourse to mean cross-cultural 'exchange' but this use has been widely criticised as negating and neglecting the imbalance and inequality of the power relations it references (Young in Ashcroft et al, 2009). This idea is reflected in how design products cross political, cultural and economic boundaries and are often subverted, adapted or updated by the people they are sold to depending on their cultural needs and desires which acts as an affront to hegemonic culture.

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[10] Derrida used this tool to deconstruct texts rather than artifacts but it is argued that design discourse can benefit from an approach of material deconstruction - to be transferred between disciplines - as design has lacked extensive means of critiquing. As a methodological approach for design this has been previously practiced and successfully adopted by Barbara Stafford in *Visual Analogy* (2001).

Additional postcolonial concepts that drove, cross-pollinated and informed this research in a tacit manner included the reality of the social struggle for ethnic, cultural, and political autonomy nationally and internationally and a growing awareness in the west of cultural overlap and hybridity in addition to the following ideas:

- **Alterity:** 'the state of being other or different'; the political, cultural, linguistic, or religious other. The study of the ways in which one group makes themselves different from others.

- **Hegemony:** the power of the ruling class to convince other classes that their interests are the interests of all, often not only through means of economic and political control but more subtly through the control of education and media.

- **Colonial education:** with education being an ideological state apparatus, the process by which a colonizing power assimilates either a subaltern native elite or a larger population to its way of thinking and seeing the world.

- **Hybridity:** new trans-cultural forms that arise from cross-cultural exchange. Hybridity can be social, political, linguistic, religious, etc. It is not necessarily a peaceful mixture, for it can be contentious and disruptive in its experience.

- **Identity:** the way in which an individual and/or group defines itself. Identity is important to self-concept, social mores, and national understanding. It often involves both essentialism and othering.

- **Ideology:** A system of values, beliefs, or ideas shared by some social group and often taken for granted as natural or inherently true.

- **Mimicry:** the means by which the colonized adapt the culture of the colonizer but always in the process changing it in important ways. Such an approach always contains it in the ambivalence of hybridity.

- **Other:** the social and/or psychological ways in which one group excludes or marginalizes another group. By declaring someone 'Other', persons tend to stress what makes them dissimilar from or opposite of another, and this carries over into the way they represent others, especially through stereotypical images (Ashcroft et al, 2008).

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These key concepts and the complex arguments that form them act as the postcolonial lens through which a re-envisioning of prevailing design education, process and practice becomes executable.

The research demonstrates how industrial design is contingent relative to a network of determinates and by isolating and explicating some of these forces, it will contextually situate the study. It also highlights the pioneering nature of this research investigation, as design discourse and its constituent body of literature appear to be somewhat deficient in the foundational studies to build it on. Through this research it is apparent that there is evidence of design solutions, which are determined by, and are either symptomatic or expressive of culturally hegemonic belief. As discovered in critiques on gender and technology there exists evidence of this malfunction and disparity in terms of culture and design.

The scarce and fragmentary nature of the existing literature that deals with this issue meant that innovative philosophical and theoretical connections between the two disparate disciplines – industrial design discourse and postcolonial cultural theory – had to be formulated to drive its progression. Substantial research and cross-readings of theoretical texts has nevertheless allowed a complex but interesting relationship to emerge between the two disciplines and propelled the study to completion. The eclectic bibliographic literature, which has been reviewed through the duration of writing this thesis, has contributed in developing an argument that is supported through the use of philosophical enquiry, primary data collection and contextual expositions. Although the literature research identified that postcolonialism is by no means homogenous or unitary, it is argued to have an overarching agenda pertinent to the purpose of this research and therefore deemed as an applicable and useful methodological approach.

The West

In the context of this thesis, the West, or occident, includes the countries of (originally) Western Europe and (now including) North America. In a discussion by Raymond Williams, what is meant by the 'West' is clearly stipulated. In his 'Keywords: A Vocabulary of Culture and Society' (Williams, 1988, p.334) he states:

> The nature of this definition [post WW2] then permitted the extension of western or the west to free enterprise or capitalist societies, and especially to their political and military alliances. … The more obvious geographical difficulties, which result from these increasingly political definitions are sometimes recognised by such phrases as western-style or western-type.

It is suggested that countries like Japan are therefore included in the meaning as western-type countries even though there are significant cultural and religious differences between Western Europe and Japan. I also wish to acknowledge that utilising 'the west', as a phrase, is primarily useful in that it allows us to discuss and define what is hegemonic about western cultural and economic practices to progress the argument and for the lack of a more definitive phrase.

Global, transcultural products and postcolonial studies

Trans-culturality encompasses a broad understanding of cultures, their interactions and their adaptations. The concept of trans-culturality acknowledges the diversity presented by the confluence of cultures along with the innovative and hybrid cultural processes and forms that emerge as cultures transfer through each other. Trans-culturality is therefore a significant and relevant context within which to locate contemporary design practice.

So in terms of the design challenges posed by the transcultural experience, what does it mean to be a designer in a global, transcultural context? What are the challenges of applying the design processes and methods learned in one cultural environment to a different one? These are the questions this thesis explores. Just as colonialists invaded other countries and colonised peoples, products too invade and infiltrate foreign countries and cross cultural and geographical boundaries and can take with them inherent values and worldviews homogenising culture and eradicating diversity. Globalisation, like capitalism mostly operates in the interests of affluent countries to dominate world trade at the expense of developing countries and is also often cited as a threat to cultural diversity around the world.

We communicate our culture through trade and transporting products around the world in an increasingly global economy. As our interconnectedness develops through increased international trade, the free movement of goods, and cultural exchange, design plays a key role in shaping the values and cultural imperatives that are proliferated into foreign markets. Acknowledging the complexity of globalisation and both its positive and negative impacts, a sudden surge in globalisation in the last half-century means one of the challenges many professional designers now face is that of creating hybrid and innovative responsible design practices. One way this can be achieved is by blending the methods and processes of different cultural, economic and social contexts.

These initially tentative but insightful connections between postcolonial studies, design and globally disseminated products clearly indicate that the worldwide flow and interchange of our innovations require greater analysis and introspection by the designers who produce them in terms of their hegemonic impact. Additionally, it is evident from research findings in this thesis that formal training provision at higher education institutions in the West along with professional practice can benefit from postcolonial theory to better prepare future designers for their working practices in a complex cultural global ecology.

There are many constraints acting on designers, such as economical, material, gender-determined etc. The research argues that one of the reasons for the restricted access designers have to problem-solving strategies is that they think within a culturally hegemonic box. A consequence of the thesis in its implication is that it will open up an additional layer in the 'paint-box' for designers solving design problems. This can be seen as particularly important where designers are engaged with global products, which increasingly appear to be an issue new designers have to face. One of the questions raised by the argument is whether the designed object is a product of a particular mind-set (conscious or subconscious is arguable) and if it can be decoded to reveal that mind-set. A conceptual excavation of the designed object through illustrative expositions dotted throughout the thesis allows us to delve beneath the surface for significance and meaning. It facilitates the highlighting of inaccurate cultural assumptions, which would otherwise remain undiscovered. As industrial design is an applied art where the

usability and aesthetic qualities of products are developed and specified, key elements of design such as the overall shape of a product, colours, textures, location of details in relation to each other, issues concerning its use, ergonomics, and materials are critically scrutinised.

The thesis therefore, argues that although there are many possible restrictions affecting the development of design solutions; some of them being economic and material considerations; others also emerge from there being fewer female and/or non-white practitioners and theorists in industrial design, resulting in a mainly masculine, white, middle-class voice; which critics have argued has led to an insipient sexism along with a subconscious cultural hegemony within the discipline. Therefore, the research aims to specifically deal with a particular aspect – the hypothesis that designers often think within a colonial and gender stereotypical box and can unwittingly produce solutions that sometimes marginalise sections of the community. This has allegedly affected design solutions and society detrimentally and at times led to a particular understanding of technology that does not reflect or efficiently attend to the needs of the globalised, multicultural society we inhabit.

1.1.6   Thesis Roadmap: A sign-posted roadmap of what lies ahead

This thesis is presented as a structured academic argument taking the form of a discursive analysis with each chapter consecutively investigating significant theoretical strands of thought emerging from our developing understanding of the relationship between culture, products and design education. The thesis additionally attempts to philosophically explore and analyse the influence of technology on culture and culture on technological development and re-conceptualises design as practice imbedded in and reciprocal with culture.   The literature review endeavors to chart the development of ideas by writers in the field and investigates how many of these ideas have either been discarded, evolved, or have calcified as further research has brought more light to the matters pertaining to our understanding of the connections between design, technology, culture and globalisation.

A number of illustrative expositions throughout the thesis provide practical examples of a subconscious cultural hegemony in the 20th and 21st century western (European and north American) world, presenting products that seemingly reflect western zeitgeist paradigms. These examples consist of accounts of a product's genesis, development and examinations of the specific usability and aesthetic dimensions that cause issue. These are argued as examples of hegemonic conceptualisations and are critically examined in comparison to alternative cultural contexts and possibilities.

Although the literature search identified that the corpus of existing work on this subject was relatively small, mixed method research with surveys and interviews were subsequently undertaken to produce new data. This entailed the collection, examination, analysis and interpretation of primary research on this subject. These studies involved addressing the two-part hypotheses namely: 'Product designers are not explicitly trained to understand or overcome their respective cultural constraints', and 'Design education both nationally and internationally is not equipped with the tools to acknowledge and confront this'. The research examines these hypotheses by drawing on its findings from the data generated and collated. Administrative and analysis survey software was utilised to collect and analyse the data. In the second follow up phase, qualitative interviews were undertaken in order to uncover more in-depth opinions and insights which enabled some of the key themes and variables to be interrogated and explored further. Potential solutions were then outlined in the final chapter to address the design malaise.

1.2   Research design and methodological approach

1.2.1   Research theory

This section aims to outline the research design, process and its development as well as the theories, cultural protocols and ethics that informed the study.   The aims, objectives and hypotheses are followed by details of the data collection methods used and an argument on why they were chosen as the most suitable methods for this research. The section closes with the analysis techniques applied to the data collected in detail.   The limitations of the research are later discussed in the concluding chapter of the thesis.

Any type of research requires an awareness of the philosophical debates regarding research methodology and an understanding that theory and epistemology converge at the point of methodology. It is essential to note that the methodology shapes the research process (such as the questions asked and responses received). It also informs how we perceive and choose to investigate the social world we inhabit. The choice of methodology is then transmitted into method and is a political action that often privileges specific ways of knowing.

Given this, there are three perspectives that could be used to classify research that is performed: the application of the research study, the objective in undertaking the research and the type of information sought (Kumar, 1999). Please see figure 1.0 for a representation of these types of research. The approach taken was pure, mixed methods research with all four objectives used, using sets of qualitative and quantitative data collection and analysis procedures through the two phases of the study.

Types of research
from the view point of

Application — Objectives — Types of information sought

Pure research — Descriptive research — Exploratory research — Quantitative research

Applied research — Correlational research — Explanatory research — Qualitative research
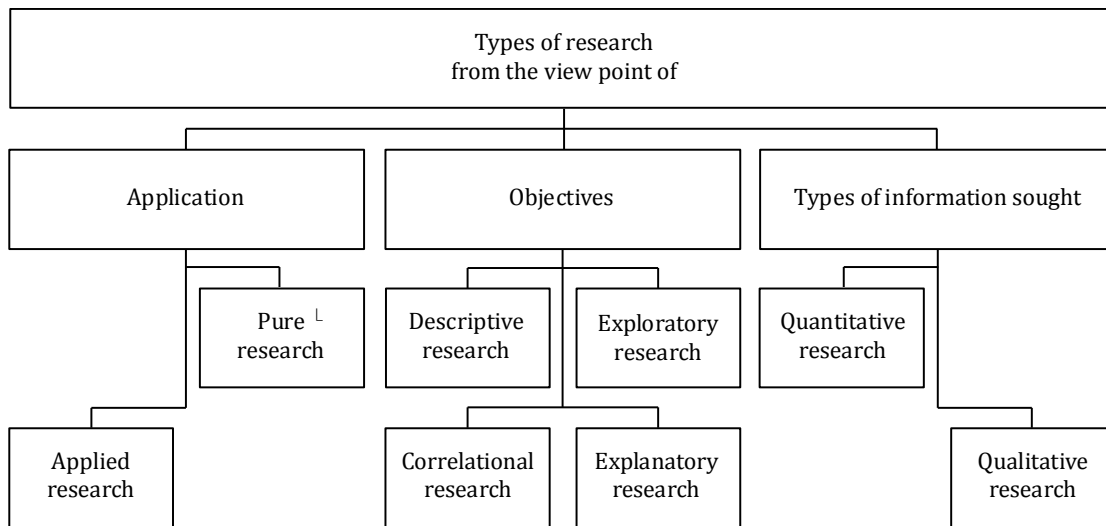
Figure 1.0 Types of research (Edited)
Source: Kumar, 1999, p.10.

Utilising a sequential mixed methods approach the first phase of this research utilises a survey and falls into the category of the exploratory approach to investigate the possibilities of undertaking a larger research study (Kumar, 1999) at phase two. The second phase of qualitative interviews is informed by this stage and systematically builds on this to undertake a more detailed and in-depth investigation of the research questions and findings from phase one.

Exploratory studies using surveys and questionnaires as in this case can be very helpful to 'find out what is happening and to seek new insights' as a means to identify general patterns (Robson, 2002, p.59). Subsequent explanatory studies of semi-structured interviews and self-report data were then used to better understand the relationships between variables.

Finn et al. (2000, p.14) argued that: 'Research needs theory as a framework for analysis and interpretation, and theory need research to constantly review; modify, and/or challenge theoretical details'. Theoretical frameworks often help guide the analysis and interpretation of the collected primary data (Finn, et al. 2000). Therefore, use has been made of the deductive approach for a pragmatist strategy rather than a positivist one. This means that the theory described in the following chapters has been used to deduct hypotheses before any primary research was performed (Finn et al, 2000).

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┌─────────────────────┐
│       Theory        │
└─────────────────────┘                  ┌──────────────────────┐
           │                             │      Deduction       │
           ▼                             └──────────────────────┘
┌─────────────────────┐
│     Hypothesis      │◄──┐
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│ Exploratory research│   │              ┌──────────────────────┐
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│ reject       │ │  Data collection   │
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                          │               │  Data interpretation │
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              ┌─────────────────────┐
              │  Research findings  │
              └─────────────────────┘
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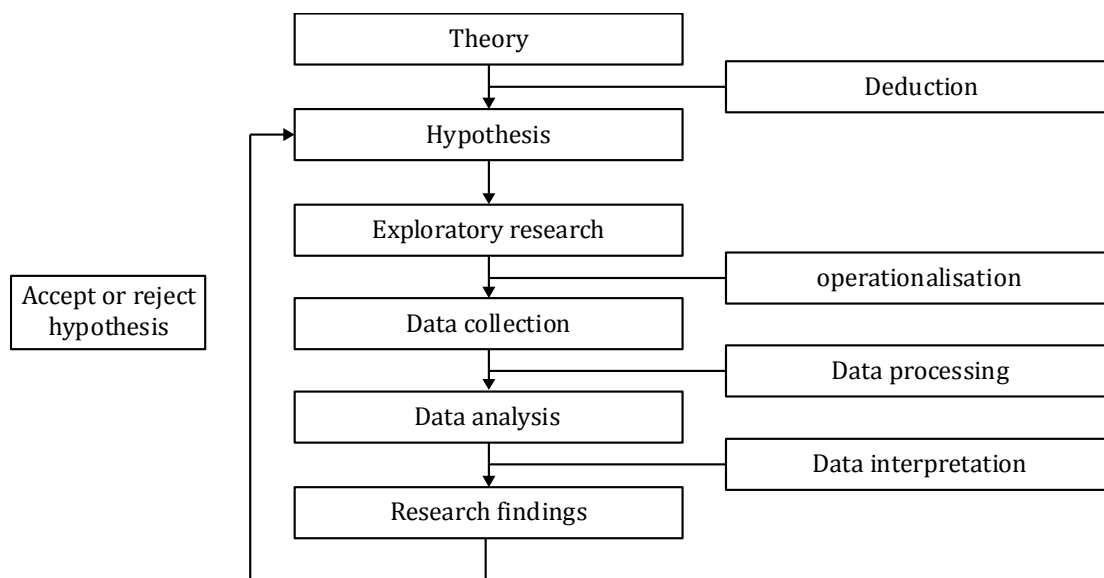
Figure 1.1 Place of research in hypothesis testing approach to research (Edited)
Source: Finn et al, 2000, p.14.

1.2.2   Primary research hypotheses, aims and objectives

The initial proposal outlined the need for divergent consideration of current design understanding and process. Therefore a postcolonial theory lens as an analytical approach was projected in order to pursue a new direction and attempt to bridge the two diverse disciplines. By bridging work done in postcolonial theory and design praxis, it is anticipated that novel material may be discovered that illuminates the latent connections between these two seemingly discrete disciplines. The general dialogues derived from literary theory texts on industrial design and postcolonial discourses converge in the form of survey and interview questions and their concluding findings to provide a theoretically informed insight into the experiences of the design process in postcolonial contexts.

Key words

Design process, training, products, culture, trans- and cross-cultural design, globalisation.

Research question

What are the conscious and unconscious cultural processes; preferences and assumptions that designers work with and are they formally trained to acknowledge these exist?

Primary research hypotheses and aims

A. **Product designers are not explicitly trained to neither understand nor consider respective cultural variances.**

   Aim: To explore the effect of the product designers' cultural predilections formed within his or her individual contexts.

B. **Design education both nationally and internationally is not equipped with the tools to acknowledge and confront this.**

   Aim: To undertake an analysis of design training comparing the syllabi and methods used in examples from a number of countries in relation to cultural awareness.

The subsidiary aims of the thesis were as follows.

To:

1. Survey and challenge existing orthodoxies in industrial design discourse, to account for the current deficiency and absences in academic material on this topic and to open the canon of industrial design history and theory to reinterpretation.

2. Test the hypotheses emerging from the literature search by undertaking a programme of data collation and analyses using a sequential mixed method research approach that informs the research outcomes.

3. Appraise the value of the approach of employing postcolonial and cultural studies as a critical lens to evaluate professional design practice and formal higher education training provision.

4. Provide potential solutions to the design malaise identified by the thesis and suggesting solutions to these in the context of designing responsible and inclusive transcultural products in the global, transcultural world we inhabit.

These aims were achieved through the following objectives:

1. Identify a gap in design understanding.

Accomplished through a combination of a literature review evaluating design discourse and historiography and a mixed methods programme of sequential data collection and analysis.

2. Acknowledge design complexity, relative to the gap, as the context wherein this research is situated.

Accomplished by acknowledging the intricate complexities of the technology and culture relationship, interrogating design for hegemonic ideas and practices, and the existence of counter-hegemonic approaches and forces.

3. Discern the validity of the approach.

Accomplished by examining the extent to which postcolonial criticism is valid in the design context and developing a suitable discourse upon which the thesis can be founded.

4. Synthesise the subject of two discrete disciplines by undertaking primary empirical research to produce new socio-cultural data leading to new knowledge.

Accomplished by synthesising postcolonial and industrial design discourse into the development of new survey and interview tools to engage a wide variety of design practitioners and educators thereby bridging the disparate bibliographies with a cross-pollination of ideas.

5. Subject the thesis ideas to peer review both pre- and post-thesis completion.

Undertaken by presenting research updates to peers, supervisors and advisors; by publishing in web archives in order to locate the research in its wider context; and by providing reports on findings to research participants and stakeholders. Numerous potential opportunities also exist post-submission to present the research to academics with a view to teaching and applying the theories and evaluate outcomes further in terms of its possible impact on pedagogy.

1.2.3 Mixed methods research

A sequential mixed methods research approach was undertaken due to the complex nature of the research questions. Both quantitative and qualitative data collection techniques and analysis procedures were used in the research design. The quantitative data was analysed quantitatively and the qualitative data analysed qualitatively without combining them. Its purpose was to use qualitative results to assist in interpreting and explaining the findings of the quantitative study. Tashakkori and Teddlie (2003) argue that multiple methods are useful if they provide better opportunities for researchers to address their research questions and evaluate the whether the research findings can be trusted or if inferences can be made from them (Saunders, M. et al, 2009).

1.2.3.1 Quantitative data collection phase

Methodology strategy one: Survey design

Survey Monkey was used as a research tool. The research collection sought to capture statistical and qualitative information about design practices and views and to identify enabling or inhibiting factors in terms of the role of culture within it. The intention of this data collection was to explore aspects, seek an explanation, test the hypotheses and inform the development of the thesis. For this, a combination of social research methods was used for gathering primary data and evidence. These included designing, distributing and conducting an online survey: utilising multiple choice, Likert scale, closed, and open-ended questions. The themes and questions emerged from the theoretical foundations of the thesis and were grouped logically (Appendix D). Social science advisors and books on survey design were consulted accordingly.

Conducting the pilot survey

The survey was initially trialled informally and refined and modified to eradicate bias. It was deemed necessary to subsequently incorporate a final question seeking feedback from those being researched in the survey design. The pilot survey then indicated it was ready to be distributed more broadly to an appropriate survey group.

Response rate and sample size

In total, the survey comprised twenty nine questions and received one hundred and five individual responses over a period of fourteen days from across the globe encompassing a wide audience of local and international designers; design academics and educators; and trainee, student and graduate designers who reside in thirty three different countries globally, all of who kindly contributed to this research. This was perceived as an adequate response rate to enable conclusions to be reached. It was conducted electronically and remotely via random sampling, which was necessary to gather a broad cross section of opinions and views.

However, this meant there was less control on the age, gender, discipline, training or other background specifications of the potential participants. Individual responses were not taken as representative of the institutions or countries of training as there were many under-represented countries. Rather what was sought was an overall picture of where formally trained designers saw 'culture' as influencing their design practice and if this, in their opinion, could be related to institutional design training or otherwise. The purpose of the study was to compare views across countries of training. Although there were no set rules on how many questionnaires should be distributed or interviews undertaken, the aim was to acquire the range of responses that were as representative as possible to allow the fulfillment of the objectives of the study and to present answers to key questions (Bell, 2010).

1.2.3.2 Qualitative data collection phase

Methodology strategy two: Interview design

In continuation of the mixed methods research approach, six twenty-minute in-depth interviews were the subsequently undertaken using Skype and telephone. These involved contacting a combination of existing and new contacts. In order to conduct the interviews, ahead of the interviews a covering letter was circulated with a brief introduction, an interview framework outlining the themes and confirming requirements; a consent form; the purpose of the study, the researchers role, and assurance of confidentiality inclusive of an expression of gratitude.

These series of individual interviews were conducted focussing on uncovering insights and experiences of designers and educators. The interview techniques and questions were initially trialled informally and refined and modified subsequently to eradicate as much bias or ambiguity in the content as possible. This form of a qualitative approach enabled a greater insight – possibly not afforded by alternative approaches - into the crucial issues surrounding educational practices and experiences, international cross-cultural design experiences, the complicated nature of hegemonic models and the resistance or obliviousness to them across geographical locations of training. The topic of study and associated issues were probed to a deeper level, and insightful correlations and disparities found. In respect of this, established methods such as thematic content analysis on the primary data was undertaken to develop qualitative research outcomes in the form of a report documenting findings.

It is necessary to state that the research questions yielded a perspective on how they felt their training prepared them for cultural considerations in their individual design practices. Additional aims were to understand how designers and academics perceive and allow cultural factors to influence their design process and outcomes and the potential impact of this and whether cultural influences can consciously or unconsciously impact on their decision-making and work. (Appendix D). It is envisioned that the research could prove useful by perhaps

influencing educational practices or encouraging designers to reflect on their cultural assumptions.

Interview selection and sample size

Phase one utilised standardised, interviewer-administered surveys and phase two utilised non-standardised, one-to-one, telephone and internet-mediated interviews. With a combination of purposive and convenience sampling non-standardised, semi-structured and in-depth interviews were used to gather data to be analysed qualitatively to reveal and understand the 'what', 'how' as well as explore the 'why' of phenomena. Figure 1.2 below depicts the types of interviews available and the methods selected in this study.
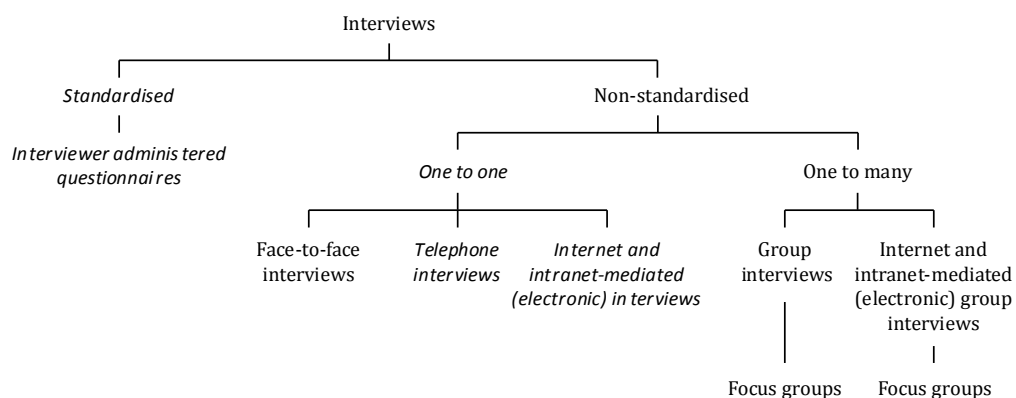
Figure 1.2 Forms of Interview (Edited)
Source: Saunders et al, 2009, p.321.

A well-balanced cross section of international designers, design academics and educators were solicited to partake electronically and remotely for the interviews. Interested individuals were shortlisted in order of geographical locations of training for variety and wider global dispersion. 6 interviewees trained in 6 different countries were sampled. These were namely China, USA, United Kingdom, Mauritius, Spain and India. Some were trained in more than one country. This was necessary to gather a varied sample of cross-cultural and geographical opinions and

views in terms of where they were trained. The interviews were with four men and two women at varying levels of seniority within differing disciplines of design and design education.

The semi-structured and in-depth interviews enabled the opportunity to 'probe' answers, where interviewees could explain, or build on, their responses adopting an interpretivist epistemology. Understanding the meanings that participants ascribe to various phenomena enables researchers to collect a rich and detailed set of data. Non-standardised (qualitative) research interviews re often implemented in the research design (Cooper and Schindler, 2008) of exploratory studies, or studies that involves an exploratory element in order to understand opinions and attitudes. Explanatory studies are similarly likely to involve interviews to infer causal relationships between variables.

1.2.3.3 Data analysis technique

Survey analysis

The objective of the survey was to use the answers to the questions to form the thematic terrain being investigated for phase two. It was possible to cross-reference the findings of the survey to open up and identify weak areas, which resulted in mapping questions for the subsequent interviews. The form of data anticipated was primarily statistical and quantitative. The objective of the analysis was to allow general observations to be made. Primary data was collated, grouped, compared and analysed so conclusions could be drawn on the research questions emerging from the thesis. Finally the data from both the primary and secondary research was compared and observations were made on the correspondence of the results. It was anticipated that a close rigorous analysis of primary data would permit direct application and testing of theory extrapolated within the thesis.

Types of research theory and themes – survey and interviews

Survey and interview questions were formed using a hypothesis driven and theoretically framed approach. The nature of this research project entailed a statistical and qualitative data collection enabling a descriptive, exploratory, explanatory and correlational analysis focussing on comparisons, groupings, and trends to draw significant and/or nominal assumptions based on these factors (figure 1.3). All data was analysed using a pragmatist and interpretivist epistemology approach to research. Thematic analysis allowed grouping themes and responses in such a way that a comparative analysis could be undertaken.
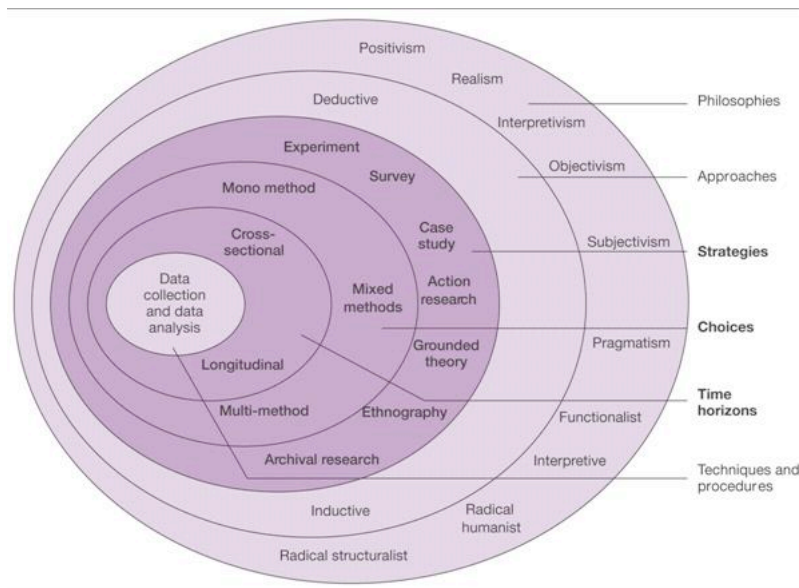
Figure 1.3 The research 'onion'.
Source: Saunders, M. et al, 2009, p.108.

Interviews analysis

Various themes, topics and concepts explored in the thesis are imbedded in the interview design (Appendix D).

The key themes explored and analysed were:

1. Type of training.

2. Prominent and conventional design concepts.

3. Products as change agents.

4. Subconscious or conscious decisions.

5. General views on product saleability, culture, values and co-design (where applicable).

Key points of analysis were uncovered via a cross comparison of responses and graphs, correlations and charts which summarised statistical data collected on syllabi and methods taught and impact on their design process. The aim of the descriptive technique was to examine important factors associated with the hypotheses such as demographic, socio-cultural issues, attitudes, experiences and knowledge to estimate specific parameters in that population and describe associations. The second analytical technique employed focussed on data analysis by looking at one set of variables on another, namely findings from the survey with findings from the interviews. The analysis, trends and findings are located in the report (chapter six).

Interpretative phenomenological analysis required only a few interviewees (less than 10) as a tightly described purposive research looking to answer a narrow question meant a smaller sample was adequate. Some studies have as few as five interviews (Creswell, 1998, p.64). The sample population selected was defined so the study findings may be considered representative of participants who would be included under the research question. It is argued that the lack of statistical input is irrelevant in an interview based qualitative study – intending to look to robustly describe the points that are important in the sample group in its entirety rather than evidence that this applies to almost anyone who meets the entry requirements of the

study. As a mixed methods research approach, this follow on qualitative study based upon the themes/codes from the quantitative survey results was viewed as sufficient for this 'proof'. During the analysis, interviews were transcribed and then manually coded, looking for themes, correlations and disparities and applied to the counting and excerpts collated.

Primary data and initial findings from surveys supported the hypothesis that cultural restraints inform designers' thinking though their awareness of this was dependant on their design experiences, and the majority were not trained to realise this in terms of explicit formal academic training.

Section II: Grounding the territory: The noises of the world

Chapter Two

Industrial design and its autonomies

Chapter Two

Industrial design and its autonomies

2.1   Design and its intellectual community

Design is an inherently complex term that is utilised in a divergent number of ways depending on the context, but often interpreted as a transformative process where any number of analytical design methodologies can be utilised by both industrial and product designers currently in professional practice. In our day-to-day lives we are surrounded by ubiquitous products of industry as a tangible essence of our lives and active agents in human affairs. They are the outcome of the creative process of individual designers and design teams. Design is simultaneously a verb and a noun and as such it describes the practice of devising and evolving a strategy for a novel product, as well as the end proposal or the artefact produced. The widespread endeavour of designing is central to a diversity of disciplines within the autonomous conglomeration of industrial design, and a practice that ultimately impacts on all of humanity.

Whether we are looking at packaging, toys, furniture or electronic products makes little difference as the process of designing can often be similar with any such outcome in that it is often a non-linear process with interwoven phases. As such it could be usefully described as a creative, exploratory and intellectual activity or process focussed on conceiving and working towards future outcomes. A key element of the design activity is the aim to seek a beneficial solution to a design problem or issue (Nelson and Stolterman, 2005, p.16). Designers create and execute design solutions for specific design issues via 'design thinking' as strategic, repeatable problem-solving protocols ranging from ideation to final evaluation of the product, service, system or experience.

Many design theorists and practitioners within these disciplines have endlessly attempted to describe the essence of the design activity in one generally accepted definition, but have instead generated seemingly conflicting or incompatible descriptions. They share an uncertainty of what design constitutes and it continually remains as elusive and contended a concept as ever. It has proved difficult to contain it in one simple sentence that can be universally applied to all design activity without it becoming vacuous, meaningless, too broad

or too reductive a description. Due to this reason the term holds varying connotations in different fields and each sub-discipline has a variety of definitions particular to them. For example, Paul Rand (1997, WWW) described design as 'the method of putting form and content together. Design, just as art, has multiple definitions; there is no single definition…design is so simple, that is why it is so complicated.' Whereas other definitions range from Archers' (1973, p.27) all encompassing: 'Design is that area of human experience, skill and knowledge which is concerned with man's ability to mold his environment to suit his material and spiritual needs.' to Buchanan's more formal: 'Design is the human power to conceive, plan, and realise products that serve human beings in the accomplishment of any individual or collective purpose' (2002, p.18).

As an intellectual endeavour valuably understood as a process of transformation rather than simply its ever developing and changing outcomes, design isn't simply an esoteric activity performed on the peripheries of society by a limited number of creative individuals. Design fundamentally influences everybody and attempts to address a variety of human needs and desires from practical, instrumental to emotive and intuitive, but how well are the latter areas understood by design professionals? Although there are strong design cultures within some design disciplines this is not reflected on in the general design community. There are a number of design groups to be found online such as IDSA, Product Design Hub, Product Design Forums, PhD-Design, DRS, Core 77, and even a fleeting perusal of the discussion threads on design research and ideas evidences that knowledge being built on cultural contexts of design is still very fragmentary in nature. It appears many design theories remain in their infancy, whereas intermediate theory allows provisional explanations of phenomena introducing new constructs and proposing relationships between it and established theories and more mature theories are well-defined concepts that have stood the test of time and been rigorously reviewed by a variety of researchers with the outcome in a body of work representing cumulative knowledge that is largely consensual and refined. In support of a philosophical stance, which may extend the understanding of the design research community, often-undeveloped design theories can suggest a stance or lens with which to better comprehend the groups of factors that produce observed phenomena.

Given that industrial design is an intellectual community that is constructed from ideas and globally dispersed institutions, the lack of a strong international design body to vocalise and unite these design groups is arguably one factor inhibiting progression. Unlike the medical or legal professions, industrial design does not have a central, externally validated umbrella institution. However, ICSID is one of the few international organisations to have come close to accepting this challenge and they have begun to address this lacuna enabling a greater degree of centralised representation, engagement and debate by global designers and national design bodies to propel design research and benefit the profession.

Another barrier to further research has been poor recognition of the significance of design and the extent in which society's technologies shape its political, cultural, social and economic futures. Many key writers on design acknowledge the lack of design awareness on these issues (Margolin, 2007; Norman, 2004). The soft issues of design i.e. the immaterial are side-lined versus the material elements such as engineering design language. This appears to support a case for the establishment for an all-encompassing design body dedicated to uniting Industrial designers internationally and supporting design excellence and growth, as well as contributing to existing organisations.

Partially due to the autonomous, fragmentary and conglomerate nature of the global, intellectual design community where each of the design discipline subsets are unable to concur on any one definition resulting in diverse descriptions of design, there exists no universally accepted semantic or even a truly unifying institution for designers from varying disciplines. One obvious advantage of this has been that a variety of different approaches and philosophies have emerged due to this. Arguably, this multiplicity of opinions on what design actually is provides certain richness in design research and theory and nourishes the diversity of design practice, which may not otherwise exist. Nevertheless, it is still considered that the ongoing pursuance of a universal definition is a worthwhile endeavor in itself if only to repeatedly revive the discussion between designers of respective disciplines and fuel design's progressive momentum, 'the answer is probably that we shall never really find a single satisfactory

definition but that the searching is probably much more important than the finding' (Lawson, 2005, p.33).

As the focus of this thesis is industrial design and product design there appears to exist a great deal of uncertainty surrounding these disciplines. It is difficult to define what industrial design is or what an industrial or product designer does. For the purpose of this thesis, industrial design could be usefully described as the amalgamation of applied science and applied art in order to advance the usability, ergonomic and aesthetic dimensions of an artefact. As industrial design is a creative discipline, it aims to connect human culture with technology in innovative ways and attempts to develop original, valuable and meaningful manufactured products or product systems that can enhance our daily lives. Most designed artefacts are produced via an industrial process often on a sizable scale by institutions that fashion and distribute them to collectives and social groups who utilise them in particular contexts within creative and increasingly trans-functional environments.

The Carnegie Mellon's School of Design describes industrial design as 'the process of taking something from its existing state and moving it to a preferred state', an often accepted but deliberately unspecific definition [Carnegie Mellon, 2005]. The Industrial Design Society of America (IDSA, 2005) describes it as 'the professional service of creating and developing concepts and specifications that optimize the function, value and appearance of products and systems for the mutual benefit of both user and manufacturer' [IDSA]. This member-driven society has progressively broadened to represent the industrial, product and interaction design disciplines, design research, ergonomics, human factors, universal design and other related design fields.

Originally founded in 1957, the International Council of Societies of Industrial Design (ICSID, 2006) interestingly outlines the design process as: 'a creative activity whose aim is to establish the multi-faceted qualities of objects, processes, services and their systems in whole life-cycles. Therefore, design is the central factor of the innovative humanisation of technologies and the crucial factor of cultural and economic exchange.' In response, the investigative area of the research lays particularly within the nexus of the design process itself;

the ways in which it humanises technologies; and the manner in which it contributes and gives shape to socio-cultural change. Since it is argued industrial designers often attempt to humanise technology, the thesis then specifically deals with how this humanisation can often be hegemonically determined or culturally hegemonic.

The International Council of Societies of Industrial Design are one of the few organisations that attempt to serve as a unifying voice for design professionals globally to promote the growth of the industrial design profession; further progress industrial design education and interests and unite the historically fragmented community. Their vision is to strive 'to create a world where design enhances our social, cultural, economic and environmental quality of life' (ICSID). However, in contrast to this, the research argues that ill-formulated design and mass-produced products can actually have a detrimentally homogenising effect on our culturally diverse landscapes.

A universal theory of design does not currently exist, nor is there an agreed upon, crystallised definition of design that can be equally communicative to people from varying different backgrounds as may be hoped for. It is imagined that this would be problematic to conceive and impose unsustainable limitations in this postmodern, global community we inhabit with people from differing socio-economic and cultural origins and their diverse needs and desires. The question design theorists need to ask is why we even feel we require a collective understanding of theoretical concepts, languages, cultures or modes that straight-jacket varying design communities in the first place. However, it may indeed be possible to conceive of a common reference framework or design ethos that makes links between fragmented design communities.

Interestingly, ICSID defines design's role as an ethical one:

- Enhancing global sustainability and environmental protection (global ethics)

- Giving benefits and freedom to the entire human community, individual and collective. Final users, producers and market protagonists (social ethics)

- Supporting cultural diversity despite the globalisation of the world (cultural ethics) (ICSID, 2007)

There are a rising number of voices in the discipline that proffer that the designers role is increasingly that of an interventionist and that they are a key component for ethical change globally. With mounting awareness of ecological and social implications industrial design has a cultural, ethical and social responsibility it is only just awakening to. Thackara claims designers can modify culture and should therefore take responsibility for this:

> We've allowed too long the idea that the world is 'out of control' – be it our cities, the economy, or technology. We've filled the world with complex systems and technologies that are indeed hard to understand, let alone shape or redirect. But we are people not ants. We have culture, and language, and the ability to understand and share knowledge about abstract phenomena. Ants don't have that. Neither do they have a tool, design, with which to shape them. We do. (Thackara, 2006, p.225)

However, as this thesis will argue in subsequent chapters, despite having traditional design tools, industrial design still appears to somewhat lack the cultural, philosophical and political tools and methods and/or the intellectual impetus to fulfil its own potential and self-imposed ethical aim to make the world a better place.

In describing design research, Archer (1981, p.11) stipulates research to be 'a systematic enquiry whose goal is knowledge of, or in, the embodiment of configuration, composition, structure, purpose, value and meaning in man-made things and systems.' The various types of design research available therefore to explore falls into three main categories, based on people, process and products. These are:

- Design epistemology – study of designerly ways of knowing
- Design praxiology – study of the practices and processes of design
- Design phenomenology – study of the form and configuration of artifacts.

In light of this, the thesis attempts to explore a combination of all three through use of literature review and primary research tools with findings set out in the following chapters.

2.2   Industrial and product design process

The research focuses specifically on industrial design whose practitioners work to converge science, art and technology to produce tangible three-dimensional objects. They create diverse products ranging from laptop computers to microwave ovens, from motorbikes to sewing machines for industrial, commercial and domestic markets. They attempt to advance the efficiency and productivity of existing products as well as enable the creation of innovative ones by conceptualising and evaluating ideas (Morris, 2009, p.22). However, substantial ambiguity surrounds how designers arrive at finalised product solutions with the added complexity of the interplay of contributors such as manufacturers, product users, marketers and engineers. Due to this it can be difficult to define product design process in a universal manner as the respective methods by which new products are designed and produced can vary from designer to designer and product to product and often be discipline-specific. It is evident however, that there exist many diverse forces, which give shape to design solutions and products, some dimensions of which have been identified as the following:

1. Manufacturing limitations

2. Technical innovation levels

3. Marketing, social trends and norms

4. Creative and aesthetic choices

5. Economic and financial pressures

6. Material limitations

7. Functional specifications

Extensive and detailed research by practitioners and theorists in the field has led to our current understanding of each of these facets of design. As this project embarks from the basic premise that design is not intrinsic to a product, but a contingent practice relative to a plexus of variable determinates, the particular granularity at which it is located in the design schema is the creative and aesthetic dimension. Therefore, it deals with one particular element in the overall process: the point at which subjective, aesthetic and creative decisions are implicated and

absorbed into material form, thereby embodied in the solution. This philosophical analysis attempts to illuminate how within any designed product there are certain sociological assumptions imbedded – assumptions about how we act, where we are, who we are, the way we are, etc. From the basic inference that internal and external forces act on a process, which we call 'design', the product is perceived as the consequence of these factors, meaning the trace of this dynamic can be read into the product as an archaeological trace. It is manifest in the design elements of the product itself. Therefore, between the desire or conception of the product and the end result, there are numerous forces at play, so the designer can be argued to be in some sense, merely a medium.

Although forces such as the material, functional, economical, technical and manufacturing restrictions set limits on the product, there nevertheless remains much scope within those limits, but how do we account for them? In what way do socio-cultural factors affect the designer and therefore, the design outcome? In light of these questions, this research argues that many of these recognised forces have been key in literatures outlining design process but others have been masked and subsequently attempts to draw out a certain set of masked assumptions that have been characterised as 'postcolonial'. Postcolonial studies have likewise uncovered a masking of cultural assumptions, having pivoted on textual analysis in particular. Postcolonial theory appears to be on the forefront of contemporary academic discourse, however there exists a significant lacuna in how constructed, narrativised cultural myths may perpetuate cultural hegemony through the definition of and infusion into design solutions, thereby reinforcing a certain cultural myopia.

By evaluating a few of the more significant concepts and philosophies from design writers and discussing the influential role functionalism has played for modern design with its central concept of objective and rational design, it becomes clear product design's reliance on modernism has been repeatedly assailed from numerous directions in the past thirty years. From the Italian anti-design of the 70's to the rise of post-modernism of the 80's, critics have taken issue against objective and rational modernistic design. What was known as objective form has to a degree diminished as a given and an increasing gravitation towards cultural features may uncover innovative avenues for product design.

Despite design researches interest in the cultural aspects of products it still maintains a stronghold on modernistic attributes of function, technique, usability, logic, ergonomics and prominence of methodical design processes. Designers had always concentrated on functional features at the expense of nonphysical considerations (Margolin, 2002, p.23 and Lee, 2004). [11] However, Yang (2003) argues that design needs to upgrade from functional fulfilment to spiritual affairs, bolstering the vital need for infusing culture into design; an approach, which reinforces the intellectual drive of this thesis. Design projects that include universal and inclusive design make technological innovations more humane. Design needs to address two changes: the move from mass-production to flexible production as well as the move from domestic markets to markets that are both global and 'markets of one' (Whitney, 2011, p.18).

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[11] Lee, (2004) 'Design Methods for Cross-cultural collaborative design Project' in Redmond, Durling and De Bono (Eds.) *Design Research Society International Conference: Future-ground*. Melbourne, Australia, November 17-21.

2.3   Inter- and cross-disciplinarity in design

The current speed of technological change is unprecedented. Products may be usefully perceived as social actors enabling or constraining the quality of our lives.   Successful competition in the highly competitive global economy is increasingly reliant on new products and services that not only embody technical competence but also reflect a thorough understanding of the social and cultural context of technologies on the part of the designer/design firm. Creative design is often learnt through the act of doing and making in studio and industry experience but we become aware of the tacit assumptions that all too often control our designing through deeper analysis, reflection and evaluation. This would eradicate overt and tacit barriers to creativity (Tatum, 2000).

A better integration of inter-, cross- and trans-disciplinary work within the discipline of industrial design could only be beneficial. For example, integrating the expertise of social human research would aid designers to produce design outcomes and solutions that enable people to work more effectively in groups or teams, cross-pollinate and generate novel ideas, to mirror our emerging networked and collaborative society. Most office-related products such as office furniture, computer hardware tools and even software appear to have been designed for people to work individually rather than collaboratively. By implementing cultural human factors into the design process it would enable product designers and developers to create products that do not adversely conflict with and detrimentally shape people's norms, cultural values, world-views and patterns of behaviour.

For example, Edward Tenner's, `How the Chair Conquered the World' raised the questions of how many people in the USA have had little awareness of the implications of belonging to a culture that does not typically have or use chairs and what occurs when chairs are introduced, and gradually adopted throughout the culture. Tenner describes how, 'In Japan, where many households have maintained both tatami and western rooms, the younger generation are finding it increasingly difficult to maintain traditional ground-level seating positions' (1997, p.49). It began to establish an even larger 'generation gap' as the elders occupied the floor, and the younger generation the space above.

Cultural impacts on human perception and behaviour may not be easy to ascertain, yet such understanding is crucial when developing products for novel markets or designing fundamentally new products that existing markets will utilise in completely new ways. By applying postcolonial and cultural studies to human factors of design it is possible to bring new perspectives to the subject. Far more emphasis needs to be placed on bringing cultural studies into design theory, process and practice than is currently being done in industrial design.

As many of the approaches that have become part of postcolonial studies have their origins in other literary disciplines, similarly, design studies are also an interdisciplinary field (Walker, 1990, p.34). As a design practitioner I contend that design research by nature necessarily has, and continually will, benefit from insights that are often formed through varying disciplinary perspectives and methodologies. Therefore, it is argued that only through exposure to other disciplinary perspectives that novel connections, insights and knowledge can be integrated into the research process.

Adopting postcolonial theory as a lens with which to assess contemporary industrial design is therefore viewed as a particularly valid approach. The thesis inherently argues that we need a postcolonial discourse for industrial design. Opening up a dialogue between industrial designers about the effect of mass-produced design products on culturally diverse users promotes a greater awareness that design solutions may be culturally hegemonic and therefore obviate inclusivity. Design practice appears to often fall short of addressing issues relating to the cultural context as there seemingly exists 'no solid theoretical framework linking design and culture' to build on (Saha, 1998, pp.499-520 and Kersten et al. 2000, pp.509-514).

The International Council for Societies of Industrial Design is attempting to 'foster cultural diversity in response to world globalisation' (ICSID, 2002). A technological product is not an independent or alien object. Products are not produced in a cultural vacuum. Products are purposely created to perform and fulfil functions, needs and desires. This research argues that they can also be considered as a manifestation of their designer's culturally determined desire or preference. Products may be understood as a fusion and expression of a number of material and immaterial encryptions or signs, via which designers are able to subconsciously

transmit elements of their individual desires to users. Often this preference can be biased. The instance at which this predilection integrates itself into the design process is often at the preliminary conceptual and developmental stages in seemingly negligible decisions related to the aesthetic and usability dimensions of a product – a point evident from the illustrative examples in chapter four.

The incorporation of specific cultural biases into product design can often prove beneficial to design companies, designers and consumers but can also provide demarcations by reinforcing majority ideals and mind-sets thus marginalising alternative modes of thinking. There has to be an understanding of how hegemony functions in both design and education to allow a balancing of its effects. We require further research and intellectual moves into new terrain to arrive at a more comprehensive viewpoint on the intricacies between culture and design to ensure that our artefacts are efficient, sustainable and emotionally and spiritually satisfying. Design education should encourage future designers to critically reflect on the social relevance of their outputs.

2.4   Engaging with the metaphysical and socio-cultural implications of technology

The professional practice of industrial design is committed to solving problems with traditional discipline-specific guidelines such as colour theory and human factors such as ergonomics. Often socio-cultural and metaphysical issues are overlooked in favour of the material. Indeed, before designers can solve a design issue they have to comprehend practical fundamentals, such as what they are designing, what it should do, who should use it and in what way. This slow progression is plausible given technology only became a topic of serious enquiry since the late 1800's. However, there is a responsibility on existing and future designers to begin to consider the latent behaviour and impact of the products, environments and systems they design. We not only need to ask about the material effects of ideas and ideology, but also about the ideational and ideological impact of the quotidian things we create and how they transform our world. The anticipated use and contextual social network of the product should in bare minimum inform the form, structure and aesthetic it is given.

Ultimately design is authored as a structured process focussed on dealing with the sensation and manipulation of what appears to be the world – both external and internal to the human body and mind. Designers of the future will be increasingly expected to anticipate relational and reciprocal dynamics and how the product will mediate ideology and practice with its users and influence human development. Our creations are our realisation of concepts and simultaneously the means by which we can explore these realisations and our philosophical worldviews. We need to rethink some of these issues on a deeper level to avoid cultural detriment.

As with metaphysics, the humanist tradition of ethics within the philosophy of technology 'studies phenomena beyond the scope of scientific enquiry' (Mitcham, 1994, p.37). Its scope and agenda is dependant on how technology is conceptualised – whether as a neutral tool, a world-view, political phenomena, social activity, cultural phenomena, cognitive activity, professional activity, or a historical necessity. Philosophers in the tradition of a cultural conceptualisation such as Ihde (1990), Verbeek (2005, 2011) and Borgmann (1984) conceive of technology as a phenomenon that influences our interpretation of the world (contradicting the

sentiment that technology is neutral with respect to values. This concept combined with the view that technologies do indeed influence people's behaviour and subsequent perception of the world with a lack of distinction between humans and the tools they use (Ihde, 2003, Latour, 1993) has led to claims that technology has moral agency.

Metaphysics as a philosophy engages with ruminations about being, time, space, substance, identity, causation, and change. Products of modern industrial process require metaphysical analysis in addition to functional analysis, as is the norm. Design appears to seldom engage with the conceptual, metaphysical attributes of technology, for example with that which Ihde (1991) describes as 'instrumental realism' or as Baird (2004) describes as 'thing knowledge'. The alchemy of contemporary networked technology comprising gigabytes and terabytes with atoms melds itself with human consciousness transmuting space, time, mind, matter, and often circumventing ethical concerns and the impact of hegemonic culture. It is beginning to transcend the historical and traditional characteristics of the greater part of design and technology research to date: materiality, rationality, accrual, method and process.

As such, design excellence and efficiency can only be achieved by investigating the interchange between humans, products and their contexts of physical, historical, and cultural plateaus. There is a need for us to comprehend better the translations, transcriptions, transactions, and transformations that constitute the relationships between people, things and ideas. This can be done within the rich social matrix of people grounding the artifacts produced. Most designers blindly fumble their way through this complexity. Traditionally design practice was viewed as top down as many designers and engineers in industrial companies appear intrinsically motivated to change the world and in delivering ideas for improvement become their own best customer. Profits are the chief motivator. Nevertheless, design practice is increasingly becoming a far more collaborative endeavour with the user in order to incorporate social considerations into design. Designers need to continue fostering ongoing dialogues with end-users and thus incorporate alternative views in the design processes and reshape outcomes to be less technology driven and more people driven. Proficient designers are able to identify and meet their users' needs, wants, desires and expectations. They

attempt to satisfy additional criteria including seduction, psychology, and the users' consciousness and emotional attachment to technology.

The classical philosophy of technology proposed tentative questions about material phenomena observed in the world. However, for Post-modern consumers the product represents lifestyle, myths, and dreams. In the digital age, increasingly artefacts are being expunged of their materiality resulting in the 'death of the thing' indicating a certain loss of materiality, which can provoke a form of alienation. Platonist and immaterialist approaches to artefacts and materiality are beginning to prevail in much discussion on the future of design and technology. Philosophers such as Winner, Feenberg and Sclove conceptualise technology as a political phenomenon usefully viewed as a radically transformative agent ruled by and embodying institutional power relations between people. Such writers indicate how we can reduce technological artefacts into meta-physical elements such as social organisation and the will to power.   Industrial design needs to continue striving towards an enhanced understanding of the value of design research that goes beyond the simplistic, discrete confines of the studio and an artifacts' material attributes to address such socio-cultural, political, and metaphysical contexts and impacts of designed artifacts.

This intellectual move for the design community has been long overdue as Borgmann in *Technology and the Character of Contemporary Life,* coined the term 'Device Paradigm' to describe the hidden nature and power of technological devices operating within our world. According to Borgmann postmodern culture is infused with technological devices to such an extent that we have become incapable of perceiving how adversely this veiled model of living has affected human life. He distinguishes between technological devices and what he describes as 'focal things and practices.' and deliberates that 'if we are to challenge the rule of technology, we can only do so through the practice of engagement' (Borgmann, 1984, p.207). Many product solutions in the west result in imitating previous western design conceptualisations deprived of any appropriate concern to the local contexts of the target market. Post-colonial inventers therefore ought to increasingly operate as ethical, cultural architects and catalysts of social change.

Society and culture molds technology and in turn human activity, and in tandem technology guides society and culture resulting in design being grounded amidst the lived realities and grains of ordinary life. Complex economic, political, and socio-cultural forces either influence technology or are influenced by them. Most design discussions however, circumvent these issues, or acknowledge merely one or two aspects. It is only by a better grasp of the development of human consciousness and its intricate relationship to design practice can we begin to unravel the complex relationship between human beings, their man-made artifacts and contextual, cultural environments.

Products we utilise regularly impact on our person and wellbeing. In which ways exactly are often subtle, complex, and ill articulated, if they are articulated at all in design research to date. More research has to be undertaken to shed light on users' socio-cultural, aesthetic and emotional practices and values. 'Thus product design should be closely connected with identifying and reconciling technical, economic, aesthetic, social, environmental, and moral values' (Layton, 1993, p.21). With the ultimate intention being to advance the study of design in relation to research, practice and theory to give us an enhanced opportunity to eradicate, or at least more accurately predict and curb the detrimental effects of our technologies. There is value in any undertaking exploring cultural usability with the aim not being to reform usability – nor necessarily to suggest rules for cross-culturally usable or 'politically correct' interface design - but rather to move towards an increasingly critical, responsible, reflective practice of industrial design, which is conscious of its own values.

It is deemed that a postcolonial lens reveals interventions at the educational and practical echelons of design within the dynamics of culture and product utility. Products aid us in an array of experiences and activities: to help support wellbeing, gain independence, mediate various activities, and aid people to accomplish goals. We need to stop asking questions about the products themselves and ask about subject-object, socio-cultural, spatial and temporal and other metaphysical contexts. This thesis then argues that design products can wittingly and unwittingly contribute to alterations in our realities, perspectives, actions and behaviours. When an object no longer plays a key role in our daily activities or a new innovation enters our lives, our actions and often in conjunction, our mind-sets change.

2.5   Challenges for designers and discourse deficits

The International Council of Societies of Industrial Design in its mission statement describes their vision to both 'advance the discipline of industrial design at an international level' and 'address the needs and aspirations of people around the world…to create a world where design enhances our social, cultural, economic and environmental quality of life' (ICSID, 2006). As designers, how do we address these aims in terms of enhancing human life and curtailing the long-term negative impact of the technologies we design? The thesis posits the critical need for industrial design to stimulate further discussion in understanding how we reflect on and undertake our own practice, how we coordinate what appears to be disparate theoretical threads into a coherent framework, and how we address the gap between the intentions of designers and the intentions and holistic needs of users.

It is common knowledge that designers are expected to have a comprehensive understanding of the key historical and theoretical approaches and precedents within the discipline of industrial design, its parameters and its connection to other design disciplines. As an industrial designer you may be trained to have the proficiencies and knowledge needed to embarking on designing a vast array of products using various design processes, but are you encouraged to question stereotypes and undertake inter-disciplinary and cross-cultural work? In reality, industrial designers are often forced to adopt multiple skilled roles such as usability, engineering, information architecture and visual aesthetics so can no longer work in the specialised isolation as they once did. Most design companies, consultancies and designers work across several design fields despite what appears to be a distinct lack of training to do so.

Historically, formal and classical industrial design education primarily dealt with product characteristics ranging from overall form, shape, function, location of details, colour, texture, components, volume, usability and ergonomics. Many industrial designers had very superficial experience with the interactive elements of physical interfaces as was discovered via the responses to the primary research, illustrating they lacked any formal education in interactivity. This may be one reason that historically it appears meagre attention has been given to the psychological, emotional, behavioural, cultural and contextual elements of designed

products within the industrial design community. Design has only recently departed from focussing solely on the visceral/visual/aesthetic elements to balance form and function, to more complex but crucial interaction design issues and contexts of usage. IDSA, ICSID, AIGA and other notable design organisations have begun to fill this lacuna by enabling collaborative cross-disciplinary intellectual debate on online discussion group forums, however, there is a need for greater research and understanding more so now than ever before given the myriad mass-produced products and services (with needlessly complex interfaces) infiltrating our multicultural, global societies.

Quotidian, mass-produced, industrially designed goods such as chairs, lamps, stools, household products, ipods, phones, e-book readers, and pagers are being manufactured by the millions, yet, industrial design schools in Europe and the United States including Carnegie Mellon, Royal College of Art, Delft, Umeå Institute of Design have tellingly only fairly recently incorporated product analyses of psychological and emotional facets of products into their curriculum and principles of design education. Traditional issues of aesthetics, usability and ergonomics are now only some of the broader human factors considered by industrial designers. Human-centred analysis has also helped designers increasingly focus on contexts and socio-cultural utility thereby tying the discipline in with some of the fundamental rules of interaction design. Tangible design outcomes such as the bottle of Coke, the Apple iPod, the Volkswagen Beetle (1300) are viewed primarily as works of art rather than engineering, catering to the growing emotional and spiritual needs and desires of users. Thus we have borne witness, amongst other key developments, the evolution of design as a subtle shift from functionalist schools of engineering and design programmes toward pure art colleges.

Industrial and interaction designers recognise that user-centeredness is crucial to product success but have only begun to gradually comprehend how vital the cultural context and knowledge of the user is to avoid design failure. There was a time when design was grappling with basic concepts of how products and interfaces being mostly mechanical allowed us to interact with them in a more direct, physical and transparent manner, i.e. pressing a button, winding up an alarm clock or turning a dial to set the time. We were able to view our actions

connecting with the mechanism. These days the growing complexity of designed products and the global and multi-cultural contexts they are infiltrating is much more of a challenge to navigate for both designers and end-users who are too often required to master numerous menus, settings, and actions creating greater barriers to use.

Although product complexity has soared with digitisation allowing modern technology to respond to human and environmental actions and feedback, which can often leave people bewildered from their disjointed interaction with them, it is becoming increasingly incumbent that designers consider the cultural repercussions of the technologies they design. We are beginning to notice an infiltration of many mass-produced devices that fail to provide pleasure of use and remain culturally alienating. Even the nature of the physical instructional input with a product can impact on the overall experience we have. Donald Norman discussed in his ground-breaking book *The Design of Everyday Things*, how what is tangibly done with a product often does not reflect or reconcile itself with what is represented or depicted digitally on its interface or virtually on the screen (Norman, 2002). For example, turning a dial as opposed to moving a lever up and down to increase and decrease the volume on a car radio. Notable industrial designers such as Dieter Rams, also known as the 'father of modern product design' and associated with the Functional School of Industrial Design, is renowned for his 'ten principles of good design', which countered the complex interfaces and specifications design products were being produced with. Dieter made a significant impact on iconic Braun products: 'My aim is to omit everything superfluous so that the essential is shown to the best possible advantage' (Rams, 2011, p.48).

David Malouf asks a critical question in relation to this: 'If product designers are facing a deluge of interaction design challenges (and they are), why is such poor attention being paid to bringing interaction design into the fold of the industrial design community?' (Malouf, 2012, p.53) thus suggesting that product designers must greatly improve their comprehension of interactivity, metaphysical issues and the impact of technology on human consciousness. Just as many industrial designers lack interaction design know-how and skills, many interaction designers also often lack formal, traditional and general design training as a foundation. Therefore, whether industrial designers are designing automobiles, laptops, toys, and furniture

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or consumer products it has become increasingly necessary to consider the interactive elements and components imbedded within them that relate to the user. These are issues such as the design of words, visual representations, physical objects or space, time and behaviour (Moggridge, 2007). It could be argued that industrial designers need the skills of interaction and to work in an increasingly multi-disciplinary, culturally aware, user-focussed manner if they are to successfully promote the broader implications, significance and value of design on both a global and international scale.

Given that contemporary design culture should be multi-layered, mirroring and permeating the varying aspects of our complex world; the thesis argues that strategic cultural research and development into design culture would help uncover the haphazard combination of humanistic and scientific knowledge currently eluding industrial design discourse. It is surmised this would help create new areas of knowledge and expertise. By unveiling intentionality and historical progression in our theories and histories as evaluable theoretical constructs, we are more likely to discover the long-term consequences of our technologies. For this reason, the forthcoming chapter analyses the complex relationship between technology and culture in the hope that it proves productive in the search for a postcolonial design approach that firmly situates the practice of technology design and innovation within its cultural and social contexts.

There have been many design principles that have historically informed design process ranging between usability and sustainability to context and aesthetical merit. There are also a number of new demands impinging on the traditional role for designers and a rise in challenges they need to face. 'The product design field has moved away from a preoccupation with isolated 'things' and toward an understanding of how products operate in human, environmental, and cultural systems' (Buchanan, 2001, pp.3-23). Design competencies expected in product and industrial design processes can now broadly range from and include people-orientated factors such as physical, social, psychological, sociological and aesthetics-orientated such as form, symbol and communication issues to culture orientated ones namely

norms, habits and approaches (borrowed from cultural anthropology and ethnography), to philosophy focussed competencies that take into consideration users' values, morals, paradigms and world-views.

> According to a survey that we conducted of industrial and product design programs around the country [2], these programs fall into two categories: one stresses technical or engineering expertise (housed in an engineering school), and the second stresses aesthetic or arts expertise (housed in an arts and/or architecture school). Since there is little, if any, overlap, they fail to integrate the insights and expertise of each other. Moreover, neither incorporates into the curriculum an adequate expertise in how products shape social and cultural relationships and how in turn these relationships shape products. (Bronet et al, 2003, pp.183-191).

To train future designers to better understand social context, user and environment and improve global design competencies, it is also the view of the author through the evidence in this thesis that inter-disciplinary and multi-disciplinary pedagogy and curricula provision are critically overdue. By encouraging inter-disciplinary approaches within industrial design, we can not only productively open up further avenues of understanding and find opportunities to contribute to the welfare of various communities by producing socially responsible design, but also keep up with disciplines that have successfully adopted many such concerns as part of their evolving practice and extend the range of service provision. If the level of competence being developed within other disciplines and professions, such as engineering, does not become an integral part of industrial design then it could cease to have any deep ethical relevance. Product and industrial designers have a similar role to that of engineers, yet it is only engineering where this issue is gradually being recognised:

> Traditional engineering curricula does not address the new roles or responsibilities of engineers, nor does it necessarily reflect the values of the age; cultural sensitivity, socially responsibility and sustainable practice. Societal expectation requires engineering designers to contribute positively to global societies in a responsible and innovative manner. (Vere et al, 2010)

Therefore there is a similar need to reframe additional concerns and approaches in industrial design practice, not simply as new design guidelines, but to gain a critical sensibility of design within a global multicultural environment and one that encourages the exposition of tacit assumptions embedded in the discourses and practices of industrial design. Holistically successful products tend to slot with complete ease into the cultural environment they have been designed for thus making them more desirable, useful, accessible, emotional and powerful, and

it has become increasingly evident that:

> Design becomes the leverage point of determining a product's impact on our lives. In this sense, when we educate any of our students engaged with the incorporation of technology we must instill in them not only technical expertise but we must also lead them to examine and question the goals and value-system of the society they are being prepared to build. (Bronet et al, 2003, Pp.183-191)

On this basis graduate designers need to be trained to be flexible and inventive so that they can seize the opportunities these new areas of concern offer to develop design practice and contribute more positively to a broader socio-cultural and economic life. This may enable them to then create valuable, compelling, and empowering design experiences and outcomes for others and technologies that are culturally seamless, easy to use and accessible to all.

Design discourse and linguistics

The very nature of linguistic categorisation personifies abstract notions, persuading us to accept and abide by such conventions. Linguistic determinism suggests that the way in which we perceive and conceptualise particular technologies can be determined by language itself. In *The Hidden Dimension,* Edward Hall wrote how 'people from different cultures not only speak different languages but, what is possibly more important, inhabit different sensory worlds' (Hall, 1966, p.2; his emphasis). So the way we perceive and understand certain technologies can be determined by language, a concept recognised as linguistic determinism. Language influences thought and is also gendered, although one exception is the Finnish lexicon. It can result in the cognitive structuring of a gendered worldview in a very potent way. It is possible that this focus could be better served to developing a more inclusive literacy that defines a greater diversity of identities for individuals and their product interactions to identify with, should they feel the need. As this research is a theoretical textual design intervention evaluating conceptual and critical design history and practice, in order to avoid becoming a discourse of abstractions and conflations - which can often be unavoidable when dealing with super-complex cultural determinants - a good grasp on the degree of granularity is crucial.

The German philosopher, Emmanuel Kant's work has had a considerable influence on the development of the perennial philosophical polemic of empiricist versus rationalist thought. In *A*

Critique of Pure Reason, (1999) he contended that we gain knowledge through both experience and understanding. To reach what many of us consider as 'facts' we operate within the boundaries of probabilistic, intuitive, logical, real-world reasoning; frequently without even being conscious that we are doing so. It is difficult to discuss technology without referring to it as a monolithic phenomenon – something that is unavoidable indulged in even within this thesis - and even philosophers such as Jean-Francois Lyotard, Martin Heidegger, and Edmund Husserl also resorted to occasionally treating 'technology' as a monolithic entity in their works, proving just how problematic it is to discuss technology without doing so. Equally problematic is how writers such as Donna Harraway in her *A Cyborg Manifesto* (1990) and Lucy Suchman in *Plans and Situated Actions* (1987) periodically resort to treating technology under a loose umbrella-term thereby ignoring distinct disciplinal diversities. Generalisation is however often indispensable and unavoidable in any discussion on such subjects.

Additionally, it is important to recognise that we regularly use 'thought experiments' such as allegories and metaphors without realising they can be logical fallacies. Particularly in the west, we seem to use machine metaphors to identify our very nature, humanity and culture: body as a 'machine', humans as 'programmed' and almost everything can be seen as 'data'. Metaphors and prosopopeia are regularly used to give technology qualities of autonomy and agency, but as broad generalisations, they amplify the potential to increasingly mislead the masses. In *The Post-Modern Condition* (1984), Lyotard contends that technology is frequently placed on a techno-centrist pedestal and techno-science endeavours to offer meta-narratives as explanation. However meta-narratives are typically grand-narratives that try to unwittingly answer everything and constrain social complexity into one unified theory, thus eventually collapsing as inept with time. These are just some of the pitfalls that have to be considered in discussions or writings on technology and design discourse.

2.6   Critical Reflection

The design discipline and global intellectual design community is fragmentary and conglomerate in nature with disparate fields all under one creative umbrella. This is often problematic but presents a potential interstitial space for creative, inter-disciplinary work that may help tackle major impediments to the evolution of design practices. Ill formulated and mass-produced, one-size-fits-all designs too often serve to homogenise our culturally diverse landscape. A common reference design framework or ethos may still be conceived to connect different design communities to deal with socio-cultural and ethical issues and their own roles as interventionists better. As a postcolonial critique, this chapter was tasked to set the scene and suggest how inter- and cross-disciplinarity can open up new avenues for design research and produce new conceptualisations for design practice.

Challenges faced by industrial designers include a critical need to address the socio-cultural and metaphysical aspects of their design solutions and to better engage with interaction design issues. Despite numerous forces at play, there is often an ambiguity in how designers arrive at finalised product solutions and the role their own cultural predilections played in this along with their assumptions about end-users and consumers. These subjects are investigated further into the thesis. With cultural issues being rife with complexity, dealing with issues of linguistics in design discourse and academic discussion are further obstacles that designer practitioners, academics, writers and theorists have to acknowledge and navigate amongst many.

Chapter Three

Interrogating industrial design discourse and revisiting technological and cultural reciprocity

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3.1   A speculative review of design history and discourse

This section will elucidate how human activities and endeavours such as product design are often defined by their history, so that their essence can be sought only through understanding that history. Therefore, the research acknowledges the advantage of recognising industrial design history as a subjective and non-linear process as opposed to the conventionally accepted linear, teleological, sequential and objective western view of history, which was dominant in the 19th century and implicit in Christian theocentricism. Through a critical analysis of the historiography of industrial design I attempt to uncover how design history affects design process and method along with its technological conceptions and formations and how a products own history can present limitations on its development.

Additionally, the relationship technology has with culture is explored in some depth in this chapter to elucidate how the two have acted reciprocally shaping and driving each other throughout history and how designers would benefit from recognising that their product solutions collectively contribute towards a far more global socio-cultural evolution and that socio-cultural context is vital to design theory, practice and products.

Since design can be described as process with limitless creation, or an integrative multiplicity of creative processes that generate multiple products (without a unifying factor in an ever-changing technological landscape), there is naturally a lack of cohesion, a fractured sense. The thesis argues that due to industrial designs fragmented nature it lacks a cohesive sense of its own historiography thereby occluding its historical documentation of the integral fact that products and systems are introduced into, and emerge as a result of, a socio-cultural context and that this mechanism can be used as a pretext to impel certain worldviews.

In this section, it is premised that:

(i)   Industrial designs culturally myopic self-conception may be excluding alternative conceptions of within the philosophy of technology and occluding how products can be subliminally invested with hegemonic or exclusionary cultural myths. This will be discussed through the literature review and with examples throughout the thesis of design outcomes that consciously or unconsciously signify hegemony at play. Interestingly, one question that emerges is that if design mirrors lived reality, why are the metaphysical or spiritual aspects – a vast socio-cultural reality – mostly omitted from its paradigm?

(ii)   Given that any artefact of human activity may be subject to interpretation and 'anything in culture can be decoded' (Barthes, 1957, p.80) and technology transfer can be viewed as culture transfer, it is possible to hypothetically unravel these issues.

Underpinning the research are the subtle interconnections between Western design practices and the academic discipline known in the west as history and how these two seemingly dissimilar practices are homologous in that they both intrinsically convey a range of narratives within an infinite number of possibilities. History can be interpreted as a combination of external factors impacting on relatively open constraints that surround 'fact'. Modern history although attending to the period that precedes it, is a rather contemporary practice extending from the middle of the 18th century onwards and can be defined as the practice of history as narrative. The ways in which such stories have been told define what we know to be modern history and it is suggested that the history of design can be interpreted likewise.

Modern history has been inclined to adopt the rhetoric of polemics and not unnaturally, this history, written *in* the West, has then tended to suggest that the East and its cultural values are to be subordinated *by* the West. This bias has become naturalised in western historical practices and as a result of the cherry picking of particular eastern concepts it seems we are currently experiencing an unregulated and contingent globalisation of design situated on crude

signifiers and taste. The postcolonial era suggests a transcendence of the western supremacist methodologies that were once thrust onto other cultures, now implying instead an emergence of bottom up diversity and inclusivity in design. The question remains on how far along this route design has actually progressed.

Traditional design history has a pattern, body of knowledge, and a predetermined model and the most customary definition of design in the Western world is the materialistic conceptualisation. Design is too often defined in terms of artefacts, referring to form and function - with the objectification of all designed aspects including the perceived functions. Hierarchies of design, which predominantly characterised western design education such as boundaries, categories, lenses, historic facts etc., begin to unravel under a postcolonial light. Design history can be interpreted as a tropological form of discourse. It can both threaten and impose moral values. What may be argued as traditional Western values appear to be imbedded into their technological products and systems (values, such as an atomistic conception of individualism, materialism, hierarchies, an onus on logic, binary constructions, etc.) Products can therefore be associated with and embody certain values, which may have a somewhat concealed but highly potent nature. This is often not necessarily perceived by the sub-cultures absorbing them. Subconsciously, we can begin to internalise these ideals. Thereby the question emerges: are what is representative of ones own cultural values also suitable for transplanting into another's?

By surveying how design history is formulated, and how this in turn affects our understanding and practice of design as a process, this argument identifies how: A substantial body of people and organisations represent industrial design as a community. This community shares a common history through its documented literature. This history is one way in which the intellectual community is held together. People tend to form a view of themselves and the external world through common histories. Design history is of course an evolutionary social history. Designers have little choice but to act as historians so as to contextualise design problems to reach a solution. All historians have to undertake research. As design is a creative process of strategic manipulation where the content and context is provided by the historical and

theoretical parameters of the issue at hand, it is not difficult to perceive how the discipline-related body of knowledge can have a constraining effect on the design outcome. Designers are often perceived as professionals whose purpose it is to break-free of constraints but in reality the design process – from pre-conception to manufacture and use, poses countless, impinging constraints similar to socio-cultural constraints. Many products are improvements and developments on previous innovations making a products history an iterative guide.

Industrial design histories reinforce ideas of materiality side-lining socio-cultural and metaphysical concerns by tracking a linear trajectory of products and their designers. Interestingly, the ambiguity of design history as an inquiry relegates tensions between ideology and practice, mind and matter, production and consumption, utility and symbolism, tradition and innovation, reality and idealism. Its theory and methodology are in flux and in need of wider discourse. Design history has to gravitate from being primarily a history of objects and their designers to a history of the translations, transactions, transcriptions, and transformations that constitute the inter-relationships between things, people and ideas.

One of the reasons for this is that historical studies of design as a discipline is a fairly new phenomenon compared to other humanistic disciplines and can be characterised as simply having attained a modest level of professional organisation, institutionalisation and dispersion. For instance, The Journal of Design History only appeared in1988, Design Issues journal was launched in 1984, the Design and Culture journal was founded in 2009, the Design Studies Forumin (originally Design History Forum) was founded in 1983, the Design History Journal was founded in 2003 (in Japan) and Germany established the Design history Society in 2009 around the same times as the Scandinavian Journal of Design History. Due to the complexity and multifariousness of design history's subject matter, it is now better described as a history of design culture encompassing a broad gamut of practices and practices (Fallan, 2010, p.1).

Culture itself can be described as a highly complex series of fluid connections with fluctuating moments of identifiable density and solidification. Material and cultural analysis help us understand design creations that are embedded within culture. However, cultural influences are not well understood in industrial design discourse and histories and our

innovations need deeper analyses. Design culture is an everyday culture as ordinary, ubiquitous artefacts orientate and orchestrate our social and sensory worlds in a vivid and complex manner. Everyday quotidian things are essential to comprehending society and culture. Such artefacts, the ideas that shaped them and meanings they mediate, act as lenses that illuminate the many paradoxes within our culture.

The continuation of a linear and reductive trajectory of industrial design logic inevitably faces rupture in light of the reality and fluidity of the complex cultural networks that reflects the reality of the reality of our single holistic universe of interconnected possibilities within the un-bordered nature of the world. It is only by generating a broader intellectual understanding of the world through open-ended discussions of emerging technological paradigms that designers can fulfil their potential as interventionists with the capacity to alleviate design faux pas and international tensions. Through such intellectual moves we can shape a conversational philosophy for the community that is far from being simply academic, but has an application given that commercial expediency also requires scholarship that explores ideas emerging in the arts, sciences and humanities to reinvigorate contexts of design practice and curricula design.

New history and new historicism as a tool of literary theory allows us to re-evaluate design histories with a relativist stance within their historical contexts by casting cultural forces at the time of product inception as determining the design factors of any given product. It is a form of postmodernism applied to interpretive history and shares similar themes to cultural materialism. In design discourse, many principles are being challenged, for example, Gibson's affordance theory is the concept that the world is perceived not solely in terms of objective shapes and spatial relationships but also in terms of object possibilities for action and affordances.

'An affordance is the relationship between the properties of an object and the capabilities of the agent that determines the perceived action possibilities' (Norman, 2013, p.29). Effective design makes affordance explicit i.e. cords afford pulling, buttons afford pushing, levers afford sliding, handles afford pulling and knobs afford turning. Norman (2013) provides further examples on visual usability, making intelligent use of constraints, and coupling function and control. Amongst more recent rigorous applications of emerging research

and analysis that transcend and challenge traditional modes of thought the embodied cognitive sciences have had an impact on design discourse creating a voice of dissent to the historical hegemony of linearity and categorisation within design and contributing to its broader academic legitimacy. Gibson also noted how colonialism in physics in 19th century propagated linear cultural and biological determination. (Gibson, 1979 in Gaver, 1991, pp.79-84). However, linear evolutionary theory has also long since been challenged by the phenomenon of evolutionary and cultural relativism.

In the sciences, physics with its three laws of thermodynamics elucidates how some technological solutions problematise cultural hegemony, as capitalism can no longer be in charge. The concept of solely imposing a top-down universal law has also been disproven in both post-colonial and feminist arenas. An example of where this is in crisis is the evidential explosion of mobile phone applications being designed and created by product users (not designers) as a reflection of the last gap in physics' diversity. Clearly, 'design is the conscious effort to impose meaningful order' in our lives (Walker, 1990, p.31). The novel approach this research takes allows it to be inter-disciplinary by nature and use cultural studies as a critical lens to evaluate design studies. Despite designs discourses slow evolution, Walker noted the benefits such approaches may bring to design over two decades ago:

> In such areas of overlap the results obtained by different disciplines may well be commensurable. Even when two disciplines are far apart, new insights may be gained by applying the theories of one to the object of study of another in an analogical fashion. (P.34)

It is also imperative we see continue to value that:

> 'Interdisciplinary' is a word increasingly associated with design. For instance, the activity of design is regarded by members of the Design Research Society as interdisciplinary in two respects: first, it occurs in various arts and industries (fashion, architecture, engineering, etc.); and second, it synthesises information derived from a range of disciplines - ergonomics, sociology, psychology, etc. (P.35)

Design is created by the activities of innovation, methodologies and processes undertaken by designers. Established societies often tend to produce solutions within their pre-existing frameworks. However, we are also often comforted by qualitatively different historical practices that challenge our existing institutional and intellectual frameworks. We must not turn away from these. Design at best has a patchy history and often presents itself as ahistorical with

meager regard for other design histories remaining linear and founded and located almost entirely in the west. Objects can be and often regularly are used to define design history and vice versa. This elucidates how vital it is for trainee designers to deeply reflect on the intentionality, universality and social responsibility of their technologies to foster a design practice and global, intellectual community with similar qualities.

3.2   Re-orientating design history, praxis and education

Re-orientating design history and praxis

As a broad complex field, design history can examine objects from conception, through development, manufacture, mediation and consumption. Its diverse and disparate methodologies have been drawn from other disciplines such as art history and material culture. Proceeding from our analysis of design as a process we can begin to ask how design history and theory affect this process. What restrictions could design history be subjecting the design process to?

> History cannot be written as if it belonged to one group [of people] alone. Civilization has been gradually built up, now out of the contributions of one [group], now of another. When all civilization is ascribed to the [Europeans], the claim is the same one which any anthropologist can hear any day from primitive tribes – only they tell the story of themselves. They too believe that all that is important in the world begins and ends with them . . . We smile when such claims are made [by primitive tribes], but ridicule might just as well be turned against ourselves . . . Provincialism may rewrite history and play up only the achievements of the historian's own group, but it remains provincialism. (Benedict, in Hobson, 2004, p.1)

There are many ways in which the history of products and systems designed in the West, encompassing Europe and North America, are affected by and reflect this process. Design and technology driven products are able to embody goals, manifest skills and contour the identities of their users (Verganti, 2009). Design practitioners have had the power to make decisions on which technologies come to fruition. In order to explore this we need not only to be able to revisit the philosophical and ideological constructs that have become naturalised and made normative in design practice/processes but also evaluate how history, particularly design history has been formulated and written.

History is the industry of certification. The very nature of historicism means that we cannot provide a history without outlining what the history is for. This can lead to structural amnesia [12] and a zeitgeist outlook [13] that lies within the intellectual and cultural climate of the era (Schacter, 1997). Some disciplines within the humanities are perceived as past-orientated disciplines, ranging from comparative literature, history, English, philosophy and art history despite having some applicability to the present. The past is primarily represented in isolation as discrete, whilst the present is viewed as highly nuanced and connected.

Cultural studies, also under the humanities umbrella, is increasingly ever developing and usefully applicable to the present. Cultural studies theorists tend not support technological determinist views - the idea that technological development too often steamrolls culture and propels social change; nor are they historicist by nature. Rather, they support a new historicist paradigm [14]. The outcome of the debate between historicism and new historicism concluded with historical narrative being viewed as a cultural production of the present and arguing the alternative view to historicism - that the only way to understand something is to situate it in its rightful cultural context (Veeser, 1993). It can be argued from a cultural theorist and new historicists view that this approach is vital for design to evolve.

As is evident from the majority of industrial design literature that illustrate the trajectory of product solutions and their designers chronologically throughout the ages, artefacts are often used to define industrial and product history and vice versa. However, the actual practice of design itself is overwhelmingly and popularly viewed as ahistorical: without concern for history or historical development and indifferent to tradition. This is interesting as scholars of material culture accept the idea that technologies are in fact far from autonomous; and are in fact social artefacts, i.e. 'The things we make reflect our beliefs about the world; the things around us affect the way that we understand the world' (Winn, 2011). The many things that

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[12] A term coined by J.A Barnes, 1968, p.184. Ethnologists call the fourth type of forgetting 'structural amnesia'. This relates to when a person remembers only what is important to them or their society and they tend to forget things that do not pertain to this.

[13] Spirit, attitude, or general outlook of a specific time or period, especially as it is reflected in literature or philosophy.

[14] New Historicism assumes that every work is a product of the historic moment that created it and denies the grand narrative of modernity. New Historicists aim simultaneously to understand the work through its cultural context and to understand intellectual history through literature.

make us human - nature and nurture, our environment and beliefs – are funneled into our products. Therefore, 'Material Culture is the unpacking or mining of both historic and everyday objects to find the embedded ideas and concepts that define the surrounding society' (Stoner, and Rushfield, 2012). In this respect products can be usefully viewed and treated as reflexive historical subjects with their sense of history being inextricable from the product itself (Appadurai, 1988). We are therefore made aware of the importance of societal and cultural conditioning and that 'we live not in reality, but in a consensual reality' (Gariss, 2007).

It also appears that when history is written technological innovations often tend to qualify the discovery. Albert Borgmann attended a conference in the 1990's out of which papers were collected and published in a book called *Reinventing Nature: Responses To Postmodern Deconstruction* (1994). He intriguingly argues that America was discovered at least ninety times prior to Columbus and there were records of this reality. However, because Columbus arrived using a particular set of technologies, he then became the first in written history to have done so; a wholly inaccurate presumption presented as historical fact. Due to the fact that Melanesians landed on the west coast of America without using a map, but instead using a wave-grid, it was argued that this could not be understood as a discovery but rather an accidental landing. Interestingly however, Alexandra Fleming was nevertheless accredited for his discovery of penicillin in 1928 despite it being accidental.

Borgmann provides another example of how dominant hegemony privileged some design solutions over others. Flight is discussed in this book outlining how the Wright brothers are well renowned for their invention in 1903 but in fact at least 35 other flights qualified to be recorded before then but weren't. The question arises about why they weren't. We are made aware that this was due to it being women, blacks or other races deemed inferior who accomplished such feats (Borgmann, 1995, pp13-22). For numerous reasons facts like this have been written out of history illustrating how history is indeed primarily the narrative of the victors. It constitutes a primarily hegemonic discourse where the non-West is either not represented or 'produced as subaltern; forever immature, non-modern, and less developed' (Guha et al, 1982-1997). Evidentially there is scarce research available explicitly investigating cultural hegemony in industrial design. Design historians could do with more postcolonial

thinkers who reject interpretations of the binary constructs namely first World and Third World and North and South as pre-given, independent, or fixed identities and boundaries (Hall, 1990).

Designers operate in the gap between interaction and communication situated on a foundation of prior knowledge, creativity and/or inspiration. In *The Shape of Time,* Kubler asserted: 'Everything made now is either a replica or variant of something made a little time ago and so on without break to the first morning of human time' (Kubler, 1962, p2). The premise is that new products emerge out of juxtapositions and connections with former products. Novel methods of working and novel technologies frequently transpire from previous solutions. This appears paradoxical to most people who often mistakenly believe innovation is always the result of the rejection of previous products or a brand new concept. In addition to this a historical developmental perspective often consciously or subconsciously frames our view. This impacts on the way we understand technology and how it unwittingly prioritises and propagates dominant ideology as a cultural meme.

Intellectual premises in the form of cultural assumptions educate and shape our ability to design, and design is the process through which culture is created, modified and challenged. Yet we remain mostly perplexed as to how technologies created by different global communities can define culture. Some designers feel they have a license afforded by the profession to construct imagined design problems that concern primarily themselves, argue their compulsion to produce technological resolutions to these for similarly decontextualized and subsequently indefinable users. They are in effect their own self-perpetuating user ideal. In this vein, Dunne argues, 'Design is not engaging with the social, cultural, and ethical implications of the technologies it makes so sexy and consumable' (Dunne, 1999, p.xi). In response to these issues the thesis argues we need to help prepare and refocus future designers for emerging and increasingly complex global design ecologies through their training and education.

Historically, industrial design as a professional discipline expected its designers to merely be a hierarchical authority on form and aesthetic. Engineers, designers and professionals from other disciplines would deal with elements such as user interaction, manufacture, and marketing more proficiently than the designer. Design process, however, is gradually evolving

with designers now expected to take on numerous roles and work in inter-disciplinary modes. Notably, primary research undertaken for this thesis found that design practitioners who design for local markets, despite these being multicultural, rarely considered the socio-cultural effects of their products and dared not delve into the exceedingly complex and unfamiliar territory of the cultural transactions between a person and object possibly due to lack of formal training to consider these issues (see Chapter six).

In order to account for these complexities, we need to look at how we can interrogate, analyse, and address cultural hegemony in the design of technology. One method is to critically analyse industrial design history as well as artifacts of production. Are design products culture-neutral or do they exhibit intrinsic local specifics? In the geo-political landscape, many Muslims appear to feel there is a covert ideological war being waged on the Muslim world where one ideology has to defeat the other. Western ideology is sometimes viewed as being packaged and exported globally and showcased proclaiming ideological superiority over the rest of the world. Islamic intellectuals and scholars have often felt discontented and overlooked about un-credited Islamic inventions throughout world history. A number of organisations have been set up to address and counter this issue including the award-winning 1001 Muslim inventions international educational organisation. Given that history has been defined linearly in that:

> We have been taught, inside the classroom and outside of it, that there exists an entity called the West, and that one can think of this West as a society and civilization independent of and in opposition to other societies and civilizations [i.e. the East]. Many of us even grew up believing that this West has [an autonomous] genealogy, according to which ancient Greece begat Rome, Rome begat Christian Europe, Christian Europe begat the Renaissance, the Renaissance the Enlightenment, the Enlightenment political democracy and the industrial revolution. Industry, crossed with democracy, in turn yielded the United States, embodying the rights to life, liberty and the pursuit of happiness . . . [This is] misleading, first, because it turns history into a moral success story, a race in time in which each [Western] runner of the race passes on the torch of liberty to the next relay. History is thus converted into a tale about the furtherance of virtue, about how the virtuous [i.e. the West] win out over the bad guys [the East]. (Hobson, 2004 in Wolf, p.1)

thus design histories suffer from the same malady in that they are exclusively limited to hegemonic western design ideals and chronologically linear and exclusive western inventions, thereby denying the numerous contributions by other cultures. Much literature has previously established that the telling of design histories ranging from product to interior design is flawed due to an imbedded gender discrimination where women's achievements were omitted,

devalued or ignored in favour of male successes bolstering a masculine narrative. In much the same way it can be argued that non-western peoples have also been marginalised and their contributions left out of the literature on the history of design as a profession and discipline. Victor Margolin, a prominent writer on design has brought this issue to light and recently written a design history of the world to acknowledge, redress and disseminate this issue outlining how non-western cultures have in fact tremendously influenced design thinking and inventions in the west.

In truth, non-western cultures contributed immensely towards mankind's accomplishments and all civilisations and cultures contributed to technological advances. Yet, widely documented history prevailing in the west continues to fail to represent everyone fairly and many design pioneers have fallen into anonymity and more will do so without a postcolonial understanding and approach to design education and history. Western scholarship discounted countless instances of non-western accomplishments that never fitted in with the preconception of western superiority. For example, in science histories, the prodigious accomplishment on the heliocentric world of thirteenth century Nasir al-Din al-Tusi, a Muslim astronomer, was stifled.

When Copernicus published *On the Revolutions of the Celestial Spheres* in 1543, the idea that the earth was at the centre of the universe was a religious dogma in Europe. Not surprisingly, Copernicus transformed the European worldview.

> However, in the Muslim world, where no one believed that the universe revolved around the earth, his ideas, far from being seen as revolutionary, were simply appreciated as an advance in mathematical analysis. Similarly, Friedrich Nietzsche's idea of the "super ego", or Sigmund Freud's technique of psychoanalysis, were hardly news for the Muslim world. For centuries earlier, Sufi thought had grappled with the notion of the ego, while the scrutiny of dreams was also well established. Moreover, thinkers in different cultures sometimes draw very different conclusions from the same premise. Descartes declared: 'Cogito ergo sum' (I think, therefore, I am), but long before him, Buddha had proved the opposite just as convincingly: 'I think, therefore, I am not.' (Sardar, 2004)

Western historians knowingly omitted these conceptual and philosophical contributions to produce an image of a pure western science unadulterated by the 'Other' (Sardar, 2003, p.12). There are numerous examples such as those above – too many to discuss – of other worldviews, ideas, inventions and designs produced the world-over that either influenced, were outright

plagiarised or built on by western designers, yet the sources left unacknowledged. Many product design histories presented in the west pronounce great ideas as the exclusive realm of western and mainly English conception; and suggest a linear genealogy as the evidence of western preeminence. It is clear that in any historical account of technological development, we should refer 'not just to the west, but also to the civilisations of China, India, Japan and Islam' (Huntingdon, 2002, p.207), which directly or indirectly paved the way to such technological solutions.

In some western recounts of history, human accomplishment has been inherently biased in preference of western thinkers, as they felt the need to claim for the ascendancy of their particular world-view and project the purity of western thought with western virtue triumphing as a disingenuous enterprise to uphold the hegemony of what was often, western mediocrity. This suggested a universality, which is simultaneously pompous and misleading impacting both design and invention histories. In *The Eastern Origins of Western Civilisation*, Hobson argues how the Western world believed they held 'autonomous genealogy' (Hobson, 2004, p.376). To counter the accusation of Euro-centrism we need to recognise that our assessment of technological history is unfairly filtered through a western lens and constructed ignorance demands addressing and rebalancing.

Despite golden periods of science and technological advancement by countries such as China, which were often assimilated yet unaccounted for in western design histories, it is important, to acknowledge that there is much that has been written out of history. All histories including design histories are partial, incomplete, and very often biased. In Sardar's article, 'Written out of History', it is highlighted that 'many of civilisation's crowning glories originated in the east. Yet you'd be unlikely to learn this from reading western historians'. He asserts: 'People inhabit different worlds and have different histories' (Sardar, 2004). It is clear we need to place far more emphasis on plurality than we currently do which is why an analysis of design disciplinarity via a postcolonial lens is a useful way forward.

As an activity design has an enormous impact on peoples by making visible and rendering in material form the value systems of the society it is consumed and produced in. Our relationship with design however remains complex. It shapes many aspects of our lives, and is

influenced by cultural, political, economical and social factors. We need to contest the definitions, values and assumptions that to a great degree determine what is designed, who designs it and for whom. Feminist critique has already had a significant impact on how the histories of design have been written and the critical context within which design has been debated. Since the early 1980's a plethora of research, publishing, conferences and teaching has addressed themes relating to women and design, and in the last decade this has shifted focus to gender studies.

> Feminist historians have helped to show that women have always been involved in design and they have a rich heritage to discover and appreciate. Research to date has revealed women's widespread participation in design as practitioners, writers, critics, theorists, campaigners, and philanthropists. Women's place in the history of design has been obscured by the biased methods of design historians who have prioritized certain types, styles, and periods of design and who have emphasised particular design theories such as modernism and the work of a handful of male 'stars.' (Tierney, 1999, p.359)

Casualties of these biased historiographical techniques have obviously not simply been women but also non-western people. Given design has been influenced by many theoretical reorientations and shifts to its benefit, a critique of postcolonial thought is now deemed as long overdue. 'In an age of globalisation in particular, it is important to distinguish truly transformative ideas from mundane, provincial ones' (Sardar, 2004). The body of design knowledge mapped out in Margolin's *World History of Design* complements and recontextualises our understanding of design and invention by drawing on achievements worldwide across global cultures and is hopefully one of many books to make such endeavours.

Design is dependent upon its self-conception. Objects are often used to define design history and vice versa. By globalising design history, we begin to see that the value of design history and how it has not been a neutral discipline. We also begin to question how designed subjects and objects are represented and constructed through the use of metaphors. For many design scholars the difficulty that any limited definition of design poses is that it restricts its study to particularly hegemonic and industrialised areas of the world. It is necessary to acknowledge how various cultures have successfully addressed their own material requirements, along with how hegemonic forces of politics and economics have also molded the conditions for

material production in these cultures. 'It is clear that considering the history of design from a world perspective enables us to see that people of all ethnic backgrounds have been active designers within their own communities, even if they have largely worked outside the orbit of advanced industrialisation' (Margolin, 2005, p.235-239). Therefore, linear design histories do not always accurately depict the realities of design development, idea generation and trainee designers need to be made aware of this issue in the globally and culturally interconnected world we live and operate in.

Re-orientating design education

In the United Kingdom, design history is a taught component on many practice-based programmes of study since the 1960s when the National Advisory Council on Art Education specifically advocated its teaching within art and design programmes. Art historian specialists were drawn in which resulted in a particular style of delivery.

> Art historians taught in the only way that art historians knew how to teach; they switched off the lights, turned on the slide projector, showed slides of art and design objects, discussed and evaluated them and asked (art and design) students to write essays – according to the scholarly conventions of academia. (Raein, 2005, pp.163-174)

One effect of the traditional approach design history took was it became sequential, where X begat Y and Y begat Z. This had pedagogical implications with a realisation that assessment now required a fact-based regurgitation of received knowledge thus inevitably leading students to ignore discussions of the context surrounding a products creation and reception, instead focusing on simple facts such as which designer designed which product and when and materialistic concerns. This 'heroic/aesthetic' view – the idea that there are only a few eminent designers who have to be studied and revered unquestioningly – arguably instilled an unrealistic view of the design profession in its entirety. Although the design industry has been complicit in promoting this heroic view of history, the institute of Creative and Cultural Skills founded by the UK government has led to calls for design programmes of study to be made less 'academic' and more attuned to the 'needs' of the industry (Baldwin, J and McLean, 2005).

Ultimately it appears that design history for practice-based programmes are increasingly leaning towards social, cognitive and cultural studies, leaving behind their art history roots. This has resulted in growth of debate as each of these approaches forges distinct pedagogical philosophies and approaches. The primary criticism of the 'realistic' approach seems to be that it imposes anonymity on designers, while the counter argument is that the vast majority of designers *are* anonymous, and that it is the uses and users of design that are of more importance.

The thesis argues that a product's own history can present limitations to its development. Many products designed and produced in the western world impose and impinge constraints often unconsciously on the global market. When products cross cultural boundaries and geographies and are adopted internationally they often take inherent views and values with them. Greeley (1998) warns that: 'Design in our present decade cannot be thought of solely in terms of an object or product; rather, it must be considered as a process carried out with a nexus of particular social relations (cultural, economic, symbolic).'

In order to remedy the primarily materialistic approach historically taken by design discourse, cross-disciplinary discussions on alternative views that may exist are necessary. For instance it could be argued that as energy is crucial to facilitate everything; and we ourselves were designed through matter being manipulated by energy; design can therefore be interpreted as a transfer of energy – complex structures being moved by concentrated energy, thereby representing the nature of all things. 'The world is made of electric charges and our technologies operate through electric charges, and even our brains are powered by electric charges' (Bodanis, 2005, p.543). The behaviour of energy and matter would be impossible to comprehend using exclusively linear models, such as those espoused by design historians. Even in the natural sciences, research is coming up with qualms about the linear relationship between causes and effects, between circumstances and their results (Weeldon, in a review of De Landa, 1998). The thesis argues that the industrial design discipline in both praxis and pedagogy needs to similarly continue to challenge the concept and nature of a linear design history.

3.3   Technological and cultural reciprocity: cultural networks

Following on from the previous section on how a product's history can enforce a straight-jacketing effect on the future development and conceptualisations of design, this section argues that the predominating beliefs and views of any given culture can also shape or in turn be shaped by any new technology. It will begin by critically appraising the documented progression of technology in relation to socio-cultural aspects. A multitude of questions begin to emerge in respect to the cultural and social shaping process of technology and how it truly affects us, such as:

1. At what juncture do technology and culture collide and in what way do they effect and shape each other?

2. How does what we design and create shape our culture and future?

3. How does the way we assign meaning and function to phenomena influence our perception of it?

4. How significant is technology to the way human beings perceive each other and form identities and does it affect the manner in which they interpret cultural difference?

5. If technologies co-shape the human world and thus also human relationships can they also draw cultural demarcations?

Some of these questions are subsequently explored in a philosophically speculative mode.

Many artefacts of technological innovation such as automobiles, personal computers, electric lights, mobile phones, imply progress and a form of agency but to what extent is social development driven by technology? We inhabit an era where we are enchanted, enthralled, and entirely absorbed in a variety of pervasive technologies and our culture has enthusiastically constructed numerous ideologies located on the establishment of such ubiquitous technology. Many of the cultural myths dominating our thoughts have arisen due to the absence of meticulous and explicitly articulated theories, essential to make sense of the socio-cultural phenomenon we experience. By undertaking a comparative analysis of the intricate

relationship between human beings and technology and culture, this section suggests how we might understand the interdependent relationship between technology and culture through real-world examples. Chapter four and five develops ideas of culture and hegemony and chapter seven concludes with a model of philosophical thought, which could provide design with the lens through which a more intricately productive interpretation of technology and cultural difference could be attainable.

Humanism [15] reduced our world-view to one that identifies the human-technology relationship as dualistic and antagonistic, i.e. human-environment/nature (Pepperell, 2005). For example, some dissimilarity exists between the humanist, enlightenment world-view to the Islamic world-view where a creator is factored into the extensionist formula that exists between human, environment and consciousness. Muslim scholars reject the Darwinian evolutionary and humanist philosophical premise that humans are the measure of all things and that all intrinsic moral values are derived from human desires and needs. In Islam, nothing is 'owned' by man, not even his own person, as he is a steward over all things including his environment and other sentient or non-sentient beings/objects in his/her transient life. The primarily Western concept of ownership is therefore non-existent in such a worldview. The majority of Muslim scholars accept that many of the core values adopted by humanism, including the dignity of every human being, their human rights, freedom of choice within the collective good, participatory democracy, individual liberty, rational inquiry, and social justice, are all equivalent to those of Islamic teachings. An alternative interpretation to the Extensionist, post-human view is that all creation is to an extent extensionist or expansionist and therefore emanates from the source of all existence (whatever one believes that to be) but this does not necessarily relegate the same level of agency and self-determination - which are inherent qualities of the human - onto the artefacts we create.

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[15] Humanism here refers to the belief 'in human effort and ingenuity rather than religion' (Collins English Dictionary) with its tendency towards anthropocentrism — the view that Man is the central and most important entity in the universe. It is 'a commitment to the perspective, interests and centrality of human persons; a belief in reason and autonomy as foundational aspects of human existence; a belief that reason, scepticism and the scientific method are the only appropriate instruments for discovering truth and structuring the human community' (Craig, 1998).

Baark and Jamison (1986, pp.1-34) originally coined the term 'cultural critique of technology' to incorporate the images of technology along with the values challenged by technological change. From the perspective of this technological imperative, culture is then viewed as forming a context or a background for the development of technologies. The focus, however, is technological development itself in which certain technical, infrastructural and policy conditions lead to new technical products and processes. Culture, in this perspective, comes into play only as a context for technology and technological policy decisions, not as a determinant of technology itself.

The alternative, and possibly more useful, perspective takes culture as the starting point and 'places technology in relationship to the historical evolution of culture and cultural frameworks' (Baark and Jamison, 1986, p.5). Culture is not considered solely as a series of responses or adjustments to technology; rather, it is seen as an essential mediator and adversary to the non-cultural, the universal, mechanical, and artificial realm of technology.

As we have established, the relationship between humans and products are complex and dynamic but there is growing emphasis within industrial design to address the social, emotional, cultural, and creative dimensions of technology. Human-product relationships are comprehended via multiple, dynamic factors in the physical and social environment such as historical, cultural, economic, political contexts. In order to understand how our relationship with technology specifically impacts human culture, design scholars can use the product as a lens through which to view elements of specific contexts of time and place and republish this information to inform the design far of more culturally aware future products. This would address the needs and desires of specific individuals and groups as well as humanity as a whole. To achieve this we would have to analyse the impact of, and understand the role of technology in facilitating our spiritual relationships and construing product consciousness in a persons interactions with both people and objects.

Technology as a mutable consequence of culture.

Extensive literature exists outlining how technological innovations reflect and give shape to human history: 'Technology determines history' (Williams, 1993, p.75). All new media are born into specific social, political and economic contexts. Cultural change is very slow-paced which often results in us not detecting the changes at first. The value system of techno-centrism suggests that modern technology is subtly modifying mankind by controlling how we do things. It postulates that mans reality, values and agency are being eradicated and technology is altering both our views of ourselves as well as the environment we live in. It alters society in the environmental scale of its impact (O'Riordan, 1981).

Technology can be viewed as essential to the human condition and that our human species is now almost completely dependent upon it just as it is dependent on us. In our industrialised lives technology has radically impacted our living environment. We find it embedded in culture, in society, and in the physical environment. From everyday artefacts such as cameras, bicycles, televisions, computers, telephones, typewriters, printers, radios, light-bulbs to the printing press, automobiles, aeroplanes, weapons and automation. We utilise a vast array of technological devices and systems to accomplish an increasing multitude of tasks in our day-to-day lives.

Leslie White (1978) discusses how technology not only determines the direction of cultural development, but also the necessity for constructing a social foundation. Although technological innovation is perceived as the driving force compelling social change, it is essential to recall that technological practice is formulated via the complex interaction of multiple influences within a given community. In industrially advanced societies, as opposed to the global south, technology is being developed at a tremendous rate. Western values are perceived as favoring technological innovation and an ever mounting demand for efficiency, with consumer culture and the throwaway society all reinforcing capitalism: 'What matters is not the technology itself, but the social or economic system in which it is embedded' (Winner, 1977, p.20). Thus, it is apparent that multiple environmental factors aid in propelling technological development.

Cultural biases can also drive and shape the design of many technologies. For instance, Winner provides us with a clear example of this. In New York, overpasses architecturally designed for parkways had low clearances to prevent buses from travelling along such routes. The motive for this was to discourage the mobility of impoverished parts of the community, thus mirroring the prejudices of the designers (Winner, 1977, p.23). Also, consider the particular example of gunpowder. Gunpowder was originally developed in China in 850 A.D. by alchemists (possibly by accident) and was subsequently put to use in the form of fireworks to celebrate religious festivals. When western civilizations appropriated the technology they put it to an entirely different usage, specifically ammunition and firearms technology. As soon as China was intimidated with these novel weapons they went about putting the gunpowder to the same use themselves. From this we can see that in China gunpowder was an innovation brought about by a cultural or religious need, whereas in the West it was the inspiration of a cultural change (Winner, 1977, p.23).

Examples of technology shaping society and human behaviour are profuse. In the developed nations of the modern world fax machines, computers, copiers, mobile phones are ubiquitous. Once produced and disseminated, any given technology can start to change the culture that gave birth to it. For example, the technology of motor vehicles and mass transportation has shaped the way we envision the proximity of our surroundings and our entire way of life in relation to extending travel and work opportunities. It is also the antecedent to road traffic accidents.

Television has initiated an alternative model of leisure emerging as well as enabling a breakdown of barriers between cultural groups via mass media education, and has arguably aided in decreasing national differences. However, it has various negative consequences also such as curbing interactivity between individuals and enabling lethargic behaviour. Through the globalization of ideas, a more informed society emerges with enhanced knowledge of global issues, varying values and cultures. However, another consequence has been an upheaval of local cultures by increasingly globalised values. Jerry Mander argues in his research how the nature of a medium generally defines how it is utilised by people: 'Far from being neutral, television itself predetermines who shall use it, how they will use it, what effects it will have on

individual lives and if it continues to be widely used, what sorts of political forms will eventually emerge' (Mander, 1980, p.45).

Other communication technologies such as mobile phones characterise and cultivate the manner in which people undertake and retain contact on the go, dislocating our sense of geographical grounding and place. Genuine and personal moments of interaction between humans are made possible via mobile phone technology. It enables instant global networking and denser social circles, bearing on the relationships between individuals and constructing a 'smaller', more interconnected world. Another technology being the world-wide-web has arguably had similarly influential cultural ramifications, heightening global cultural homogenization, modifying the concept of nation, and steadily eroding differences. It has had an unprecedented rate of growth, immensely outdoing the velocity and scope in proliferating the globe, of earlier technologies such as the telephone and television. The freedom of information accessible can be perceived as both an advantage and a disadvantage to society. A boon as information is easily accessible to all, a detriment because the quality and authentication of this information cannot always be easily determined.

There are many other exemplars of how technology can, to an extent, sculpt our cultural values and social relations by affording limited means, in comparison to traditional means, of undertaking things. Continuing with communications technologies for example, its very availability can encourage indirect communication between people as preferential over traditional direct face-to-face methods. Instant messaging may be instant but exclusively communicates the words intended without any auditory cues such as the tone of voice. Telephone communications although broadening our reach, comprise of exclusively auditory interaction totally cutting out body language signifiers. Email is deficient of real-time interactivity, emotion, visual signifiers and tone. These forms of technological communication seem to be less authentic and inferior when compared to the apparent wholesomeness of one-on-one communication. Email, instant messaging and forum postings do nevertheless accord a greater level of anonymity to their users previously not imaginable.

Many artefacts of technological innovation suggest progress, however the use of any form of technology naturally involves some proportion of risk, some discernible at inception

others much more difficult to predict. One example is the design and manufacture of automobiles which creates a more mobile, dispersed society, but also unleashes the potential risks of car crashes and accidental deaths. Contraception has revolutionised sexual mores. The Internet has given rise to pedophiles networking more powerfully to undertake illegal activity. On the positive side, both personal transport and telecommunication technologies have afforded better interactions between family members and individuals living long distances. It has shaped and nurtured the way people initiate and maintain contact; enabled businesses to flourish by trading further and wider; and allowed consumer's more choice than they've ever enjoyed before. It is evident that the capability to remotely produce and transmit audible and visual data via vast distances has drastically transformed the task-orientated landscape of contemporary society.

However, there can often be risks in *not* using a particular technology. Medical technology, for instance saves the lives of thousands and deprived of it we wouldn't have any semblance of a healthcare system. A combination of medication, improved sanitation and agriculture has aided to extend life expectancy. The majority of people would accept that life would be exceptionally arduous without the simplest of technologies and would prefer not to adapt back to the traditional and simpler methods of living. The artefacts of human innovation have become so woven into the fabric of modern society that it is often entirely imperceptible to those looking at it. Without technology we would have no hearing aids, pacemakers, wheelchairs, prosthetic devices, drugs or medicines. We would not have electricity, plumbing or ventilation. Nor would we have furniture, computers, phones, bridges, airports, cars, roads, in fact our entire transportation infrastructure would in effect disappear. Our cities would not exist. Animals, vegetables and plants bred by humans would become extinct. Trees and plant life raised in nurseries and transplanted would not exist. It is an undeniably integral component of our lives.

Culture as a mutable consequence of technology.

A contrary interpretation of the technological and culture continuum surfaces when we scrutinise ethnographic research undertaken in Asia by anthropologist, Dr. Genevieve Bell who gave a keynote at the Computing Research Conference (2006) explaining how although popular opinion accepts that technology molds culture; it is the reverse that proves to be a more accurate depiction of reality. Human cultures are in fact quite hardy and evolve very slowly. It is characteristic for a new technology to, rather than being compellingly imposed, be adapted within a culture to reinforce existing patterns of behaviour (Bell, 2006). Cultures and societies are apparently much more resilient to change than we often naively presume. We are more inclined to adapt technology to conform to our own cultural needs. Through Bells field research she details critical differences in various cultural approaches to technology.

Technology is regarded as neutral, independent or devoid of values and purely an 'improved means to an unimproved end' (Thoreau, 2000, p.42). Thoreau reiterates that technology is a social emergent or artefact and ultimately in human control. Social determinists who postulate that the human race shapes technology rather than the reverse reiterate a very critical question 'how can technology be an independent variable to Man who not only conceptualised, but also instigated it into being?' This particular case is reinforced by the fact that society often shapes technology through a combination of consumer choices and social interests many of which relate to ethics rather than the singular purpose of satiating needs or a broader aim to build upon existing knowledge. A product's salability is contingent on the particular markets reception and assimilation of it. It is not and cannot be imposed into any given society or market. Therefore, various social and cultural factors define and govern technology, as we know it. Contemplate how both nuclear power technology and genetically modified foods are being prohibited and restricted via acts of general consensus culminating in laws safeguarding society from such potentially harmful technologies.

Technology can be more constructively comprehended as a social and cultural phenomenon – i.e. the trajectory of innovation and its consequences are shaped by society. Any particular society encompasses individuals living within defined territorial borders and sharing a common culture. The history of technology as defined in some of the cumulative research

under the canopy of the 'Design Research Society' and 'Design Philosophy Society' indicate how various human cultures that have evolved throughout the world respectively drove technological innovations according to their particular desires and constraints. The introduction of a new technology is seen as based on the identification of human needs and demands. Consider how out of the extensive number of technological products on the drawing board in design companies at any given moment only a minority are typically developed and advance to the point of becoming widely implemented. As technological artifacts appear to get increasingly complex, rapid technological modifications have appeared to often outpace a societies capacity to adapt to it thereby resulting in a rejection of it from the market it was initially predicted to occupy. If we meticulously examine the historiography of many new technologies we can ascertain that modifications and changes are frequently contingent on the cultural, social and political settings within which those technologies function.

Technological and cultural reciprocity.

Technology can be understood as a consequence of our society or more specifically, a consequence of mans intellect and creativity. As such, technology is a chief contributor to the well being of mankind. Both technology and human culture subsist in a synergistic, co-dependent relationship that is dynamic and continually co-evolving. Technological development is a complex, multi-dimensional process that flows on a cycle of co-production. Products and artifacts are not developed in isolation and technology itself is not extrinsic to society but an inextricable component of it. When we employ a technology its effects comprise much more than object manipulation leads us to imagine. It is not produced in a social-vacuum, rather molded within specific cultural contexts.

These contexts are contingent on various internal and external forces and factors such as evolving needs, materials, economics, tastes and political issues. The successful conception, dissemination and implementation of any assumed technology are therefore, based on many separate constraints some of which have been outlined as the following. Aesthetic, ergonomic, economic and ethical judgments (on the part of the designers, engineers and the wider historical and cultural context); market forces, manufacturing and material sourcing limitations; consumer

needs and desires, as well as many others. Technology is seen as being formed by all these forces. From this we can comprehend that there is very little that is inevitable concerning the changes to human culture influenced by technology. Sociological research as outlined in *The Social Construction of Technological Systems* (Bijker et al, 1987) demonstrates that they predominantly tend to be the consequence of human decisions rather than impersonal historical forces as initially presumed.

As technology is an inseparable component of human society, it sits at the heart of society and has the facility to both simplify and complicate life. With mounting technological complexity, comes a greater societal complexity. Contemplate simplistic technologies such as hand-tools in comparison with complex systems such as communications systems, transport systems, or warfare technology. In localities where technology is scarce, life seems to be simple and primitive, however, in regions where it is sophisticated and complex, life appears to be more hectic and intricate.

Although Karl Marx inspired the determinist debate by asserting that 'the hand-mill gives you society with the feudal lord; the steam-mill, society with the industrialist capitalist' (1978, p.102), with a deeper philosophical analysis of the connection between technology and culture, it appears that culture and technology influence one another in a sequential way. For the predictable future, it is anticipated that the symbiotic relationship between that of human culture and technology will continue to prevail.

As previously mentioned, there is currently an unprecedented level of interest within both academia and industry into the ways in which technology functions in society. However, the nature of technology, like that of design is incredibly complex. Design lies at the very heart of technology. Design and the practice of technology are intricately inter-related to culture and society and fundamental to one another. The design and the application of technology has been embedded in human society and culture since the dawn of mankind. Today, in the midst of the Information-technology economy, technology is viewed as having the potential to modify societal structure and processes akin in magnitude to that of both the Agricultural Revolution and the Industrial Revolution.

Throughout history, technology has been viewed as driving change in society. Therefore, many historical eras have been identified by their prevalent technology, such as Iron Age, Bronze Age, Industrial Age, and presently the Information Age. Information has taken on as much importance as physical artifacts. Within the Western world there exists a growing economy dedicated to the management of information through creating, editing, organizing, distributing and deleting it.

As the late 20th century has seen a remarkable surge in technological inventions we now discover ourselves occupying a society immersed with a multiplicity of pervasive technologies that increasingly encroach on our time and energies. Mankind has often been known to want to tame his external environment. For example, he tries to project human characteristics onto machines with the use of avatars in an attempt to understand them, yet modern technology's dehumanising nature appears to relentlessly continue to impose itself on him. It is argued by the author that confronted with the inhuman technologies we create we become obliged to carry out superfluous learning and undertake surplus tasks and responsibilities which has inevitably ensued in many users starting to resist complexity and technical knowledge in order to demand and opt for less conspicuous or obtrusive technologies as alternatives: culturally aware and sensitive technologies.

Throughout history, tools have often been viewed as both determining and mirroring the nature of homo-sapiens, but analysed at the most basic level, technology essentially comprises of an amalgamation of mathematics, physics and engineering. These are not and cannot be humanised, as they are inert however they can be more culturally in tune with our needs and desires. One of the principal philosophical tenets of the Post-Human hypothesis (Pepperell, 1995) plausibly postulates that any notion of divorcing technology from the human condition seems to be almost unfeasible as it is arguably one of the things that makes us human; or distinguishes us from the other species that roam the earth.

Since prehistoric times, human beings have been tool-users. Our very survival has been contingent on it as we fall short in many of the attributes other mammals seem to possess such as speed and strength. As technology is often used to enhance human physical capabilities, it is

sometimes claimed of being capable of augmenting human beings via its various manifestations such as interfaces, implants, attachments, communications, storage systems, transport systems etc. For example, within cognitive theory's extended mind hypothesis [16], our computers are perceived as a human effort to extend both our intelligence and memory. Our biological memory storage and retrieval system is not considered as dependable as the digital memory of the computer; and it certainly cannot be upgraded.

Critics of these theories, such as Adamas and Aizawa (2001) - who use the label transcranial cognition - view such an argument as being futilely based on vacant rhetoric and semantically caught up in linguistic straight-jacketing re-categorisations therefore, entirely unproductive in driving mankind towards any useful understanding of the human condition. It can be argued therefore that all our technologies despite how refined and complex they may become through time, will in fact still remain under the traditional category of 'tools', encompassing everything from the simplistic; pencils, soft furnishings, clothing, to the complex; microchips, skyscrapers, motorbikes, power plants and medicines.

Technology may be more productively envisioned as a social emergent and therefore, extrinsic to us and ultimately within human control. There exists a distinction between that which we create and is man-made and that, which is naturally occurring, from a material, ethical and spiritual position. We conceive, design and manufacture, then make a conscious choice to deploy; yet we seem to afford culpability on the tools, not ourselves for the consequences they might have on society. We tend to expediently overlook the fact that we neither live in a social vacuum nor a debilitating binary world

The phrase, believed initially to have been coined by sociologist Thurstein Veblen (1857-1929) in *The Engineers and the Price System* (1964, p. xviii), 'technological

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[16] The 'extended mind' is a hypothesis in the field of philosophy of mind, often named extended cognition, and founded on Clark and Chalmers' seminal paper *The Extended Mind* (1998) which posits that it is arbitrary to say that the mind is contained only within the boundaries of the skull. It presented the idea in which objects within the environment function as a part of the mind, so tools, instruments and other environmental props can under certain conditions also count as proper parts of our minds. The separation between the mind, the body, and the environment is seen as an unprincipled distinction because external objects play a significant role in aiding cognitive processes and the mind and the environment act as a 'coupled system'.

determinism' has developed into both a philosophical and a sociological theory. It postulates the narrow view that technology is an autonomous force, which transforms society in a cause and effect structure. Writers have described it as 'The belief in technology as a key governing force in society' (Smith, 1994, p.2) and 'the belief that technical forces determine social and cultural changes' (Hughes, 1994, p.102).

As a philosophical system, any form of determinism is principally concerned with axiological issues and the notion that technology is an entity that develops via its own laws, fulfils its own potential (restricted exclusively by material resources) and eventually permeates and dictates all other subsystems of society is a persuasive but clearly fallacious one. In sociology a technophilic outlook of such technological potency would cite the natural history of technology – its progressive nature and the co-emergence of independent inventions as corroboration for this proposition (Barry, 1993). Technophiles often proclaim that technology evolves independently as the force that shapes society arguing that technology strongly influences social organization, history and cultural values and is beyond cultural influence itself, as technical change leads to social transformation (Barry, 1993, pp.188-95). Technological evolution is seen as an irreversible force that takes an inevitable trajectory and is unrelenting and ever expanding.

Opposing models of social and technical determinism have hard and soft forms, the soft version asserting that it is not an absolute determinant but merely a solitary influence amongst a variety. Hard technological determinism asserts that technological progress is inevitable, autonomous, and dominant and constantly leads to social progress. Given that there are clearly many technologies that do not represent social progress and may have simultaneously negative and positive impacts on society, such as military technologies in terms of defence and/or attack, these assumptions are appear reductive and contentious.

One difficulty of such a reductive philosophical stance is that it completely fails to acknowledge the complex social networks that bolster such technologies. It makes the superfluous generalisation that everything designed and produced is eventually inaugurated and discounts human influences, individual and collective interests and even mans own cognitive restrictions. In contrast, the instrumental view is that technology itself is amoral, neutral, and

bias only results from the way it is implemented. The undeniable detriment it can cause is seen to be down to its abuse and misuse by conscious human beings and we purely displace the blame on it in a naïve endeavour to evade responsibility and exonerate ourselves. The soft determinist theory contends that certain technologies can in reality embody biases of a number of types thus compelling users towards a particular choice. In his book *Technopoly*, Postman discusses how 'the uses made of technology are largely determined by the structure of the technology itself' (Postman, 1993, p.7) and Abbe Mowshowitz also contends 'tools insist on being used in particular ways' (Mowshowitz, 1976, p.8).

The converse of technical determinism is social determinism, which advertently contends in a similar fashion that it is in fact socio-cultural factors that are the sole, autonomous, antecedent force modifying and moulding technology. This hypothesis heralds the same problematic: advocation of a mono-causal rather than multi-causal change. Both polarised assertions are hues of reductionism necessitating the focalisation of static, isolated components within what is often a much larger and complex situation thus often procuring oversimplified, erroneous outcomes.

From a social science perspective such a mechanistic model would logically be deficient when applied to the intricate web of social phenomena, as extricating and discerning causes from effects say within communications technology, is not quite as straightforward. Moreover, the effect electronic technology, such as the Internet or television, might have on the 'individual' is not necessarily likely to be equivalent or even analogous to the effect it could have on human collectives (Bargh and McKenna, 2004).

Interestingly, the counter theory to reductionism being holism [17] (or complexity theory), proposes that process or phenomena, such as cultural or technical, should not be fragmented into isolated segments as it is not linear so it cannot be elucidated by reduction but can only be understood as a whole. Social constructivism similarly emphasises that technology is best

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[17] Holism - is 'the idea that natural systems (physical, biological, chemical, social, economic, mental, linguistic, etc.) and their properties should be viewed as wholes, not as collections of parts. This often includes the view that systems function as wholes and that their functioning cannot be fully understood solely in terms of their component parts.' (Encyclopedia Britannica, 2010)

understood as woven inseparably into the fabric of much larger social, political, and economic contexts (Mitcham, 1995; Feenberg and Hannay, 1995; and Winner, 1991, 1994, pp.107-109), which is what this research suggests design research should improve on undertaking.

> A complex system is one whose component parts interact with sufficient intricacy that they cannot be predicted by standard linear equations; so many variables are at work in the system that its overall behaviour can only be understood as an emergent consequence of the holistic sum of all the myriad behaviours embedded within. (Levy, 1992, p.7)

However, as Holism as a philosophy does not lead to distinct analysis or clarify particular phenomena it is futile except in a few choice instances (Bilgrami, 1995). Technology appears to continue to remain as one of the gifts of reductionist thinking.

In the past, writers on technological determinacy such as Thoreau have generally articulate that humanity – often without even recognising - is fashioned by the tools it employs i.e. if you own a machine; you in turn are owned by it and will spend much of your time serving it. Thoreau contended, 'We are the tools of our tools' (1977, p.89), meaning that our tools utilise us virtually as much as we use them. Ellul also dismissively rejected the instrumental view of technology, asserting instead that our own technical systems and environments condition us. Such a view is in effect a reification of technological phenomenon, which may be understood as a form of essentialism. Statements in which humanity is the object can also be rephrased so it becomes the subject instead, the classical dichotomy between the observer and the observed, with diminutive potential for resolution.

Media determinist and Canadian scholar Marshall McLuhans famed assertion 'The medium is also the message' (Mcluhan, Interview, p54, column 1) propagated media determinism which is an extended model of technological determinism and hence reductionist by nature. In his book, *Understanding Media,* he appeared to employ a rather expansive use of expressions alleging that communication technologies such as printing, radio, writing and television have in the past and continue to considerably alter both civilization and 'the human psyche'. One exemplar of this is how our communication products such as laptops, smart-phones, television or radios that receive mass media are seen as the 'command centres' to which

we turn for our knowledge about news, entertainment, current affairs, commerce, politics, and politics: all that defines our very culture. Yet the assertion that such media can augment our very 'psyche' perhaps requires far more evidence.

McLuhan's general argument emphasises that human society, should succumb to technological forces as it is the prime, innovative cause determining all patterns of social organisation at every strata: individual, institution, interaction etc. However, should we readily assent such an apparently inflexible proposition? Maybe we should explore a little deeper. In resistance to this viewpoint, the philosophy of voluntarism emphasises mans capacity to exercise influence over change. His disputed characteristics of active agency, free will and conscious choice mean he is not just a powerless automaton duty-bound to adopt novel technologies: 'a new device merely opens a door; it does not compel one to enter' (White, 1978, p.28). Also, we cannot refute the fact that the obvious cultural lag between novel, emerging technologies and society's adjustment to it affords even more evidence for the defence, as the history of technology elucidates how we often choose not to adopt some innovations at all, whilst others we opt to return to after abandoning.

Technological determinist views tend to be either extremely dystopic and pessimistic or utopic and optimistic views on technological progression, whilst a utopic view unseeingly forecasts how particular technologies will revolutionise how we live for the better. Techno-centric approaches continue to account for anything and everything in terms of technology by centralising it so that all other phenomena become excentric in relation. Such a perception essentially allies with 'the doctrine of technological primacy' (Moore et al, 1974, p.484). However, the humanist ethical and philosophical stance continues to support the idea that humanity, individually and collectively is central to the technology-human discussion and remains so no matter the advances made (Edwords, 2008).

In the book *The Technological Society,* the sociologist Jacques Ellul describes how 'Technique has become autonomous' (1964, p.14) owning a drive and potency of its own. This is an inherent feature of the theory referred to as anthropomorphism, and a popular concept promoted by many writers such as Henry Thoreau, John Ruskin, George Orwell and Kurt Vonnegut (Winner, 1977, p.19). The very tangibility of mechanical devices and their

availability to us through our senses can provide credence to the impression of it being an independent, autonomous entity. Further reasoning following this proposition is that technological advances often conjure up unexpected consequences and unimagined possibilities beyond our predictions or intentions; and hence strongly seem to have a impetus and will of their own, thus seeming to be out of our governance. But this notion is argued to be merely a form of 'mystification' whereby declaring specific technologies as unfathomable enables us to displace our responsibility towards it (Benthall re. Ellul, 1976, p.159). Furthermore, the notion that we only design things we 'need' is undoubtedly a fallacy: we reside in a society engrossed in cycles of consumption. Desire is also a factor. Designers and engineers very often invent, design and fabricate artefacts and systems exclusively for the sake of producing them, devoid of consumer 'need' or 'desire' as a driving force in the hope of creating a novel market.

Critical reflection and summary

In its extreme form technology has been perceived by many as the single, most powerful, formative force in modern culture. This premise seems, at the very least, flawed, yet it retains great resonance within academic communities due to its simplicity. Technology emerges out of a cultural background that gives birth to it and in turn shapes its development too. The meaning of technology is often imbued and understood via social consensus. By constructing our society through our technologies we augment the physical environment in respect of our needs and desires and envisage it is in the service of mankind and for our own intellectual development. However, clear and irreconcilable concerns pertaining to its negative effects on our identity, consciousness and socio-cultural spheres are pandemic.

The following modest conclusions are drawn in this section.

1. Technology is a social emergent and ultimately in human control. For better or for worse, technology is part of our culture. One possible explanation for the popularity of the reductive technological determinist perspective may be that it was politically motivated as the hypothesis of technology being autonomous inherently leads to the hegemony of the technocrat.

2. Technology has infiltrated most realms of human existence extending from interpersonal communication to our quality of life. Culture is better understood as forming a context or background for the development of all technologies, as technology does not develop in isolation - disconnected from human influence - and likewise the social structures in society do not develop untainted by technical influence. In reality technology and society are continually, reciprocally interacting and mutually co-arising. There is a multi-causal/directional relationship rather than the mono-causal/directional outlook technological determinists naively infer. Simplistic assumptions such as that of hard technological determinism appear to gain empirical warranty owing to the nature of

language and mans own cognitive limitations. The manner in which we assign meaning and function to phenomena significantly influences how we then perceive such phenomena.

3. Analogously the social structures in society do not cultivate untainted by technical influence either. 'A technological system can be both a cause and an effect; it can shape or be shaped by society. As they grow larger and more complex, systems tend to be more shaping of society and less shaped by it' (Hughes, 1994, p.112). This research has found that it is vital to acknowledge that products do have significant socio-cultural as well as economic, repercussions. Any considerable technological change will logically have some repercussions on both human behaviour and society as a whole. Our inventions do appear to affect the manner in which we perceive our environment and ourselves to a certain degree. The relationship between society and technology is not effortlessly defined. Technology does not affect society in a linear, mono-directional manner. Technology and society are forever reciprocally interacting and mutually co-arising. Technology is always a consequence of society and fashioned within complex social organisations and therefore by no means possessing complete autonomy or agency – it cannot boast a relentless momentum of its own, nor is it monolithic. Computers, radio, the printing press, television are tools, which support human initiated activities, are not self-initiating or self-governing. Adopting such an opinion does not imply a Luddite-fashion [18] rejection of technology. It is merely a denial of the premise that it is the solitary, autonomous force acting on and moulding its users. Naive technological philosophies postulating technological products pursue their own route independent of human direction or cultural influences clearly disintegrate in the face of a postcolonial lens. They fail to acknowledge that technologies operate and sit imbedded within complex social structures, which factor in its poignancy and how it is man who plays a central role in its design, invention, implementation and deployment. Technology cannot be dissociated from specific contexts of use.

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[18] Luddite – 'A person opposed to increased industrialisation or new technology in reference to any of the bands of English workers who destroyed machinery, especially in cotton and woollen mills, which they believed was threatening their jobs (1811-16)' (Oxford English Dictionary, 2013).

3.4   An analysis of technology from a feminist context

This section evaluates prevailing historical and contemporary scholarship in relation to gender, technology, and design which contextualises the postcolonial approach employed in this study. The design profession is itself a constructed invention of designers and technology in terms of the design context, and has previously been examined by feminist theory in some depth. The universal male has been the dominant model within design disciplinarity and discourse though this has been gradually changing as feminist discourse approaches are increasingly integrated into design training syllabi.

The benefit of encompassing a multiplicity of female user identities is self evident with Attfield describing how 'if men were to take the lessons of feminism seriously, then the predominantly masculine discourse of design history would be transformed' and that the intention of a feminist designer 'would be to enhance the quality and usefulness of male design and encourage a position that says designs are not gender-orientated but made for people.' (Attfield; 2007). This will move us onto a more gendered discussion about those who struggle with race, class, age, sexuality, religion, and occupation, i.e.. a variety of cultural issues in the next chapter. Due to feminisms intervention in design and its close relevance to and connection with cultural studies and postcolonial studies this section therefore re-evaluates this foundation by consolidating available literatures on technology through a feminist lens and in accordance with a feminist perspective in order to help form a lens for the postcolonial imperative.

Although feminism may be primarily a western concept, it is not exclusively so. Feminism is in fact a very complex set of discourses and which are contested, particularly from different racial and cultural concepts. Although it is necessary to note the common modern view that feminism has roots in white middle class societies, and that early feminism was dominated by such voices with class, being another way of contesting feminism, it is still argued to be a valuable form of critique in many contexts especially in terms of the approach taken by this research which deals with power structures and struggles. Although it is possible to see the maintenance of cultural specificity to be inimical to feminism - as many traditional cultural practices, including western ones, require women to have specific roles within largely

patriarchal societies; such an approach overlooks the ways in which feminisms can contest *both* the hegemony of the west and the patriarchy of tradition whilst seeking to retain an identity within a culturally-specific context.

In the form of inanimate products many design products navigate international and cultural boundaries, so in order to function effectively, ought to ideally 'fit seamlessly into two of culture's components, namely ideology and norms' (Saha, 1990, p.25). The verification that technology is a component of the 'whole cultural system' raises questions as to who defines the cultural system. This research accordingly argues for a creative and pluralistic methodology to technology design. As a female, ethnic design theorist, the author perhaps not surprisingly believes that an intellectually inclusive product design process has far more to contribute to the transformation and future direction of technology. Global, ethical and sustainable designs are key concerns as we approach the millennium. It is understandably conflicting to contend that propelling sustainability or globalising can be achieved without a greater participation of women and designers from diversified, multi-cultural backgrounds. We need to challenge this naivety in order to move towards inclusive product design.

Evidentially there exists a scarcity of women engaged in the overall design discourse for industrial design and product design. This is one of the explanations for why society has been continually centred on male norms and why 'patriarchical values have shaped design practice, theory, and history' (Tierney, 1989, p.358). In terms of design and technology this 'inconspicuousness' results in the seemingly global phenomenon of women being disempowered by technology. Buckley (1989, p28) advises that 'patriarchy has circumscribed women's opportunities to participate fully…in all sectors of design'. Male roles were viewed as cultural, whilst female roles natural. Designers who are male often unwittingly recreate the conventional differentiation between what is perceived as femininity and masculinity and this is repeated with each product born of the previous. The masculinity found within design can be viewed as a discourse of power. It is this authority that affords male designers the power to define identities via the artefacts they design. Masculinity reinforces the concept of technological determinism;

a naïve argument postulating technology survives autonomously and independently from society. This reductive perspective is not only ubiquitous in design, but also in design education and design literature. This makes it easy to disregard inequalities and furthermore to resume with the conviction that women may be different but equal and even 'immaterial to the business of designing' (Goodall, 1983, p.52).

Design plays a vital role in the manner in which we receive and perceive technology. Forty (1989, p.63) confirms how through the late nineteenth century, 'the differences between the design of manufactured goods...became the incarnation of contemporary ideas of social difference'. Product design differs from other disciplines of design due of its explicit connection to technology. The product or artefact can be viewed as the central unit of analysis with consideration for the functional, symbolic, aesthetic, and emotional dimensions of artefacts.

One feminist argument amongst others is that technology is socially determined. This is due to the fact it is primarily males who design, construct and influence technology this therefore by implication making it potentially problematic as they determine its form, use and impact in a subconsciously gendered way. It can be argued that, just as linguistically Finnish is devoid of gender implications, so should technology be if it is designed for both men and women and not just male markets. In feminist literature, women are seen as of smaller stature and therefore by suggestion, less aggressive and more practical than men. 'Masculinity allegedly values achievement, heroism, assertiveness and material success, whereas femininity values relationship, modesty, caring for the weak and interpersonal harmony' (The Concept of Gender, 2009). However, both sexes are expected to be compassionate, humble and concerned with equality and social justice. This view is infused into the deliberate genderisation of industrial design products via marketing and other more subconscious means.

In one example, women as the end users of food processors are considered, though entirely in a stereotypical manner. Market-led design usually reinforces, and in fact in many cases, depends on gender stereotyping (Whiteley, 1993, p.137). Philosophical debates about technology and gender acknowledge that the stereotyping and genderisation of artefacts further

reinforces existing cultural stereotypes. The mechanisms that foster and reproduce the cultural typecast of women as 'technologically incompetent'. This cultural stereotype has become extraordinarily globalised, 'the myth...that women are afraid of technology and have nothing to contribute in terms of developing and spreading improvements' has been identified by Southwell (2002, pp.181-189). Writers such as Southwell argue gendered design often reinforced the idea that femininity equals technical incompetence and masculinity has been portrayed to do the reverse.

Stanley, along with Benston (1992) and Wajcman, (1991) contend that technology has been consistently defined, in Western culture primarily, according to what men do (Stanley, 1992, pp.193-203). She contends that technology is a 'language' for action, and subsequently men's dominion over technology and their determination to pursue a 'technological world view' has essentially 'silenced' women. Tools do not merely have a history, conspicuous or inconspicuous, but as Berg (1995) asserts:

> Every tool silences some voices and amplifies others; every tool helps to strengthen some knowledges and helps to forget others...and since the tools' actions can be so consequential, it is important for both participants and analysts not to delete its past - not to forget its locatedness.

The masculinities bolstering technological determinism appear overpowering and unchallengeable, arguably often forming a mythical standing amidst the design profession. In mainstream product design dominance over technology is power, dominance over technological products is likewise deemed as power (Hacker, 1990). The ideology prevails that 'technology is essentially related to the masculine' (Gill, 1996, pp.347-353 and Grint et al, 1995, pp.286-310).

It can be argued that when women are not physically involved in the design process, gender issues are ignored and often claims of gender neutrality are made with the user being viewed as sexless. Male identity can be inveterated via technology's masculine features, complexity, and active interactions. However technologies can also be gendered through visual and verbal languages, with emphasis on power, dominance and brawn (Balka, 1997, pp.99-115). Products can also be gendered via a visual language stressing technological masculinity. Baudrillard's statement on the sometimes 'forced, yet often-obsessive stereotypical fascination

males have for technological gadgets and gizmos' illustrates this point (Baudrillard, 1996, p.115).

Product designers essentially bring technology to life and it is primarily men who dress technology in many of the designs we find ubiquitously surrounding us. Therefore artefacts designed for and utilised by women are in reality created by men. Male product designers predominate in the profession and therefore:

> habitually design products for women, including purses and pant liners. Although they lament the scarcity of female designers they contend that as designers they have the necessary sensitivity and human understanding to create such products with restricted female involvement. Ignoring the social structuring of gender often appears to be necessary for the credibility of the male product designer. (Southwell, 2002, pp.181-189)

The description of what it is to be a man still defines men as 'successful, capable, reliable and in control,' men are supposedly inherently 'aggressive, ambitious, competitive and individualistic' (Telford, 1996, p.30). The natural bond between such characteristics and masculinity and women's knowledge was rarely legitimised (Balka, 1997, pp.99-115). Male designers have previously operated with the presumption of commonality of experience as 'an adequate model of the typical user' (Jacques, 1982, p.42). Designers often cast themselves in a multiplicity of diverse roles without significant time to consider their roles, as the nature of designing demands flexibility and but also sensitivity to others. They cast themselves into the role of women on the basis of their 'fallacious belief that they can represent the universal' (Martin, 1985, p.24-26). 'Universalism' is another important feature of modern technology wherein it is applied worldwide, irrespective of place and culture (Verbeek, 2005, p.15). Design needs to allow other disciplines to provide the method to do this with inter-disciplinary research and there needs to be an unequivocal acknowledgement that technology is not a 'universalism'. However unless culturally ethical and intellectual considerations are permitted to perform their rightful role in the artefacts that are being designed and produced the existing state of inertia will persist.

One of the many directing principles of design in teaching and practise acknowledges that consumer's purchase specific products so they may endorse or/and express their own identity. Design theorists have indicated that the success of gendered products within the

second half of the nineteenth century represented the socio-cultural archetype of gender differentiation. For example the gendered imposition of toys on children such as Barbie dolls and gaming consoles long marketed in a gender-specific manners tend to shape and fixate subconscious gender roles and worldviews. Designers tailor and reinforce social expectancy models by genderising designs. Refocusing would enable designers to cultivate a more inclusive literacy that defines a wider diversity of identities. In order to support the integration of cultural diversity we need to better understand socio-cultural behaviour evoked by products and how design is driven by values. Visual literacy is an important issue as it is not a case of simply designing for the fringe. Within the design industry, we need recognition of the diversity of cultural difference.

Product design has not been favourably viewed as a feminine career path as the rarity of women studying industrial design demonstrates. Back in 1993, approximately two percent of graduate product designers were female but this has only gradually improved over the subsequent two decades. This is likewise the situation within industry at least in the United Kingdom, where merely one percent of product designers in that same year were women (Whiteley, 1993). Although these figures have improved since, tellingly females remain a minority in this sector. The Higher Education Statistics Agency published the 2013-14 statistics for female graduates by subject, which still reflects a substantial disparity between women taking technology and design subjects compared to men. 'The proportion of female students was heavily subject-dependent, with wide divergence from the overall figure of 56.1%....subject areas with a low proportion of females included architecture, building & planning (35.0%), computer science (17.1%) and engineering & technology (16.1%)' (HESA, 2015).

Also, there remains a distinct scarcity of female students enrolled onto product design programmes across the United Kingdom and United States, but even when the cohort is equalized in relation to gender, the professional designers from consultancies and industry to whom they are exposed are virtually exclusively male. Male product designers have been extraordinarily disinclined to allow women in in the past - the glass ceiling has been very much in situ in industry, at design conferences, and in education but this is gradually changing (Gorman, 2001, pp.72-88). Hence it is critical for the design discipline in general and design

educators to engage themselves in such debates to ensure that the profession advances satisfactorily. Design history modules also need to integrate the inventions of women designers and theorists in order to develop ethically and holistically.

Gender concerns in conjunction to design need to be re-visited (Smeds et al, 1994) and such precepts require continual challenging as Rams (1989, p.113) asserted that 'products should be...as neutral and open as possible, leaving space for the self-expression of those using them'. He views design as a method of gearing towards a 'more humane existence'. According to him, a dialogue that would be reciprocally beneficial is critical if the aim of designer practitioners is to 'contribute more concretely and effectively toward a more humane existence in the future'.

The current gender-related approaches to design include:

1. The gender sensitive method where 'gender differences are accepted and equality is actively promoted' and 'viewpoints of women and men are appreciated' (Smeds et al, 1994, p.26). However, in design, gender differences are established primarily through a process of exploitation. Additionally, there exist an insufficient number of women engaged within the general design debate for their opinions to be valued proportionately.

2. The gender-neutral method is where gender dissimilarities remain un-acknowledged and equality implies uniformity. As Smeds et al advocate, this 'implies hidden discrimination...despite formal equality provisions, society continues to be based on male norms' (ibid). This is a dominant method within the design disciplinarity, its literature and it's teaching.

3. The gender-stereotyped approach where 'gender differences are recognised, even amplified, but equality is not actively promoted'. Within the design discipline a cursory examination of the gender-neutral debate exposes the magnitude of embedded gender typecasting.

As Wajcman (1994, p.162) argues, technology is a 'cultural product which is historically composed of particular types of knowledge and social practices' and as such mirrors a binary masculine and feminine demarcation. Such a division is often fuelled in design by technologies designed especially for male or female markets. ' 'Design for use', was totally gendered...it is thinking in which in reality there is always a gender model, yet in which gender is never fully admitted in such a way as to be incorporated into professional knowledge and design skill' (Gomez, 1994, p.38). One example of this is how the initial designs of vehicle air bags from the 1990's and 1980's, which were wholly inappropriate for the slighter stature of women, compared to the larger stature of their male counterparts were overlooked and manufacturing went ahead nevertheless.

Technological incompetence is revealed in gendered design. Gendered design and the stereotyped use of technology constructs our daily realities. It is imperative that as designers we begin to hurl off the chains of gender polarities. Male dominance is often 'embodied in the design of technology' (Wajcman, 1993, p.162). Arguments of gender objectivity claimed by design educators and designers alike need to be challenged when the manipulation of differentiation is so blatant in design (Gill and Grint, 1995, p.3).

> the connection between masculinity and technology has become 'ideological' for both men and women. They suggest there is a 'difficult tension' identified in feminist analysis between 'trying to sever the link between masculinity and technology' and acknowledging the 'effects of this deeply held cultural assumption. (Gill and Grint, 1995, p.4)

So we begin to acquire an idea of exactly how ingrained the cultural assumptions about technology really are, including the magnitude of the issue women encounter when they elect to partake in the design and improvement of industrially manufactured products. Women's contribution in product design depends greatly on men being prepared to confront the typecasting masculinity as exclusively representative of 'competitive, forceful, and independent', etc. (Edley and Wetherell, 1995, p.335).

Feminism is critiquing many of these positions and writers on such issues have previously established this. For example, in *Gender and Technology in the Making*, Ormrod and Cockburn discuss how technology can contribute to the disadvantage of women: 'The

making of gender and technology are comparable social processes, one helping to shape the other' (Ormrod and Cockburn, 1993, p.190). Design studies has mostly considered the effects diverse technologies have on women and focussed on how women have been viewed as inert recipients. Feminist analyses tend to stress the 'differential effects of change on women and men' (Wajcman, 1991, p.191). This evidently echoes the literature relating to technology that implyies women are somehow 'technophobic'. Additionally, it imitates the prevailing outlook of some male designers (educators, writers and students). Dormer (1993, p.233) asserts, 'designers respond to their own needs because their needs coincide with ours', if this is accurate, how demoralising for female consumers, not to mention consumers who do not feel they fit neatly into a particular gender, sexual identity, orientation or stereotype that isn't mainstream. Male designers more realistically would respond to their own requisite for a feminine woman and an on-going position of dominance. The needs of men are further engrained as the standard in the broader framework of capitalism and patriarchy.

If design is to address gender efficiently it needs to wholly comprehend that despite the fact that professional designers have 'long argued that…[they] represent the human being and the human dimension of product development' we no longer have to struggle to come to terms with the fact we do not 'possess special knowledge about what people want and need' (Buchanan and Margolin, 2002, p.xiv). Therefore the designs disciplines creative energies can be subsequently employed to further advancement. Design handles women in a similar manner as its evolution is addressed, by adopting the patriarchal belief that designers re omniscient and as a result we seldom consider alternatives. However, contemporary and cutting edge design organisations are seeking advancement by embracing novel user participatory approaches such as participatory-design and adaptive design and addressing issues of user empowerment, although the discipline still has a great distance to tread to become truly socio-culturally conscious.

Amram (1986, pp.10-12) claims that: 'society's expectations of women have simply not included technical innovation...(and) women themselves have absorbed this view'. An additional coating of inferiority is trowelled on by the bizarrely globalised 'cultural stereotype

of women as technologically incapable' (Wajcman, 1994, p.150). The technical empowerment of women is crucial to successful development efforts but as long as technology remains gendered so will it's innate power (Stamp, 1989). Too many technological encroachments have ensued in women's lives deteriorating despite the 'potential to transform lives...in a positive way' (Ng Choon Sim, and Nensman, 1994, pp.277-287). Buchanan (1989, p.98) broaches the issue of 'technological reasoning, where beliefs and values always condition products, whether they are recognised explicitly, are implicitly assumed, or ignored completely'. The conviction of women being technologically maladroit is so deeply entrenched that it has become imperceptible and overlooked.

Women are infrequently portrayed as inventors and are seldom reported in the inventory of professions, least of all during the inventive period itself. The hypothesis being that men have been the primary inventors and employers of products prevails notwithstanding proof that women also utilised instruments for subsistence production, which is obscured by the man-the-hunter/gatherer paradigm (Mies, 1994). Known inventions by women emerging from the many unreferenced and occluded technologies the reaper and clover cleaner invented by Jersey in conjunction with her husband; Shaker eldress Tabitha Babitt designed and created the rotary saw.

More recently women designers were involved in the design of the first portable voice controlled computer; the prototype heart-lung machine, the first on-line reservation system for airlines; and an enhanced rocking bed for polio victims. The Windshield Wiper, Correction fluid, Scotchguard and Kevlar - a fibre used in bulletproof vests, were all invented by women (Washington Times. 2009). In the past, having adopted the roles of designer and inventor, men have been unwilling to relinquish them to the contemporary- feminist re-thinking of gender roles. The 'male control of human technology remains neither a divine dictum nor an environmental imperative, but a social construct of the Bronze Age or later' (Stanley, 1992, pp.193-203).

In product design practice, design has only been gender-conscious to the extent of giving artefacts constructed feminine and masculine qualities for segregated markets.

Obviously the classification of *feminine* is defined by male designers and moreover, as Eisler (1990, p.xviii) argues 'in male-dominated societies anything associated with women or femininity is automatically viewed as secondary....to be addressed, if at all, only after the 'more important' problems have been resolved.' In order for a dichotomy to endure there needs to exist a relationship perpetrating dominance and subjugation, as each can only be understood in contrast to the other. Therefore the constructed and reductive male and female dichotomy extends to other types of dualistic concepts such as culture and nature, developed and undeveloped and modernity and tradition. These dualisms afford a reductive and misleading route to comprehending the intricacy of the relationships between gender, technology, development and design.

In 2010 at the University of Wales, informal seminar discussions with the author were held with 17 second year BA design and interactive media students in a classroom setting. These entailed discussing their views on the topic of gender and design. All data was freely given on the basis of anonymity if published. 14 of 17 students agreed with comments outlining how they experience femininity as 'relating to interactions of attraction and caring and beauty', whilst they experience masculinity as 'the interactions of utility, functionality and power' [19]. This was regardless of the fact that they knew this experience to be profoundly sexist and debatable. However the majority of the students were male which may account for the reasoning behind such a belief. People follow and reinforce social expectancy models by genderising designs and this is not an innate skill but learned within a patriarchical society. Product gendering can be viewed as an implicit form of sexism, calculated and fuelling preconceived perceptions. In response, 'gender neutral' suggests that the un-gendered artifacts of interaction would be impersonal. It is difficult to support the neutral, uni-sex, middle ground as an inclusive solution to language and design.

If we take a look around and see what gender attributes there are to be found in the many objects we see around us can we comprehend the problem. There presently exist many crudely gendered stereotypes, or even gender ambiguous, artifacts of interaction. There are

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[19] 'Gender and Design'. Unpublished class discussion. BA (Hons) Interactive Media. University of Wales, Newport. 3 February 2010.

many design examples showcasing how they have been produced in their variously gendered ways for variously gendered people. Chapter 4.1 of the thesis gives an exposition of this. Products undoubtedly have gender characteristics, and are regularly described as being masculine or feminine. There has been strong feminine influence on car interiors. With mobile phones 'feminising' design often follows the formula of 'shrink it and pink it'. Female designers also design masculine products, which are purchased by female consumers but many may simply be reluctantly buying into the patriarchical culture they find themselves in. Design itself is viewed as masculine (Buckley, 1986, pp.3-14).

Gendered worldviews can mean that in addition to the problem itself, its various potential solutions may be redefined. In previous ages there existed simplistic models, which were often binary, in terms of culture and culture supposedly in order to simplify decision-making and behaviour. However, dichotomising the world is an act of will and results in domination and subordination in a status hierarchy. Designers who are born and bred in their country of origin and only produce there are often vended an ideal of design, which has ossified. Many products manufactured remain inflexibly positioned in the traditional and decorational specialty and resume to be exported transculturally regardless of destination. In examples where technological innovations emerge in relative isolation from society, they continue to infuse and inform product design practice and culture.

Norgaard (1995, p.56) contends that societies rather than picking and moulding technology according to their values, are being increasingly shaped by technology instead. The connection between consumers and designers can be defined additionally as a dualism, as Plumwood (1993, p.47) articulates: 'is an intense, established and developed cultural expression of such hierarchical relationship, constructing central cultural concepts and identities so as to make equality and mutuality literally unthinkable'. This may seem a severe evaluation, but nevertheless one worth pondering. 'Once the process of domination forms culture and constructs identity, the inferiorised group ...must internalise this inferiorisation in its identity and collude in this low valuation.' Being technically inept, accepting condescending formations of 'appropriate' technology appears to be the allowance of the marginalised.

Sociologists distinguish between sex and gender; one being biologically ascribed, dichotomous, and normally assigned for life; the other socio-culturally constructed. A person's gender is analytically distinct from their sex. 'Gender is a sociological attribute; it is learned behavior and distributed across an ideal-typical continuum, ranging from behavior that is extremely feminine to extremely masculine' (Lindsay, 2010, p.52). Gender is of course particularly cultured and what precisely, constitutes femininity or masculinity widely fluctuates around the globe. Any given individual can be classified as more masculine or more feminine overall, given cultural norms relating to these behaviors.

3.5   Critical reflection

Design process is complex and dependant on context though designers have historically focussed primarily on the material elements of design whereas the metaphysical attributes of our technologies need greater onus. Working in a cross- and inter-disciplinary manner may help rectify this. Optimally designed products we find around us are the culmination of numerous practices and concepts sourced and amalgamated from a variety of disciplines only made possible by transcending disciplinary boundaries. Designers have to increasingly have to work across practices and disciplines and we are constantly moving between the margins of our own knowledge, skills and experience.

This shifting of perspectives between theory, practice, analysis, and production is a very fluid, challenging and intuitive task. Often we fail to comprehend how small problems we resolve relate to greater ones and how might we be contributing to that problem unwittingly. Our self-questioning on socio-cultural context is proposed as a healthy and productive approach to design process, making us aware of conscious complexities when they arise and even in predicting them. Internal contradictions, binary and hierarchical relationships can be viewed as hallmarks of western traditions of thought. Therefore, products mirroring a belief in such reductive relationships can be exposed as mechanisms subliminally reinforcing and bolstering a particular way of thinking.

Culturally aware, inclusive design is a vital endeavour for the seamless assimilation of technology into social frameworks, as well as to make technology accessible and create

identities and therefore shape culture. One of the regulatory dictums of design as it is both practised and taught is how consumers purchase products often so as to indicate and/or endorse their self-perceived identity. People inherently form an identity so as to create meaning in their lives. A combination of nature and nurture in terms of our environment and culture is undoubtedly a shaping factor of an individual's personality. Lambourne et al. (1997) argued that people are increasingly searching for their own identity in the current era, beyond any preceding historical period. If this is accurate then designers have a crucial role in shaping prevailing cultural systems. Until cultural systems are redrawn relative to women they will resume to be disempowered by technology. Technology can foster and reinforce cultural taboos instead of negating them as implied by Carr (1984). Men and women will simultaneously be the poorer.

Technology in its material manifestations is not always necessarily gendered and the way in which it is gendered can sometimes be dependent upon the perception of the spectator and the 'framework within which it is constructed' (Grint and Woolgar, 1995). Design educators and practitioners have a responsibility to drive and define the future of design in a gender and culturally sensitive, humanistic and principled way. Without feminist critique we would be unable to be proud of how 'in a number of ways feminists have changed the way writers, critics, teachers and historians think about design and women's interaction with it' (Tierney, 1989, p.358).

Regrettably, technology still primarily exists as 'both the social property and one of the formative processes of men' (Cockburn, 1994, p.56) and designers remain chiefly male. Accordingly those for whom technology is made available are typically men. Countless design products traverse international and cultural boundaries but even doing so they remain 'social properties' of males and in numerous cases come to represent the stronger force of male dominance in the public sphere (Mackenzie and Wajcman, 1994, p.22). Design is crucial to how products are experienced and utilised by humanity and it is a critical component in cultural constructs. So as to increase the process of design, enhanced cultural understanding and integration is vital to break down the barriers built, which could also enable those engaged in development to be become cognisant of all design has to offer. Unless designers are prepared to

engage in such unsettling debates, and become willing to see external to their own perceived reality and scrutinise its relationship to technology, culture and gender, it will continue to remain marginalised. 'Design has a critical role to play in making technology accessible at all levels and its impact on people and vice versa' (Southwell, 2002).

More women need to be actively engaged in decision-making on the utility of technology as it is both is shaped by and reciprocally shapes society being entrenched in culture. There exists an urgency to gravitate towards 'multi-ethnic; multicultural' designers as Balaram claims 'for designers to be convincing they too have to become involved with the object of design … only then can they expect to produce artefacts that are meaningful in the sense of reflecting the very mythology that guides users' (Balaram, 1995, p.137). 'Mythology and archetypes can be rooted deep in the collective unconscious.' The absence of cultural and gender diversity amongst global and international designers is an anathema. At the very practical level, the absence of female designers results in the 'application of 'tacit knowledge' about women users' needs happen(ing) only rarely in product design' (Walsh et al, 1992, p.244). Given this, the thesis then argues that along with encouraging and producing more multi-ethnic and multi-cultural designers we need to be increasingly gender-aware and culturally aware in our design practices and education.

3.6   Section II Summary

Chapter two and three in section II of the thesis lay down the foundation of this study in the form of a literature review by identifying and evaluating critical issues within design discourse that have either hindered or helped the discipline evolve. These implications range from the design community, design process, inter-disciplinarity, the metaphysical attributes of products, the writing of design history and gender issues in design. An exploration of these issues was necessary to set the scene of the juncture where design is currently at for any valid discussion to emerge. The theoretical conclusions drawn from section II that are being taken forward into section III include:

1. The understanding that although the industrial design community is a fragmentary one it exists and operates. A greater unity is required possibly via a strong centralised international design body and ICSID is one of a few organisations attempting to do this. By increasingly working in cross- and inter-disciplinary ways we can also become more critical of our own practices and outcomes and generate new ones.

2. Product design processes are often complex and contextually dependant. A postcolonial understanding interrogating discourses power-relations, and structures can help expand and account for the unacknowledged limitations in the designer's paint-box. Growth in inter- and cross-disciplinary working practices that incorporate socio-cultural research would also benefit design disciplinarity vastly.

3. The metaphysical and socio-cultural qualities of design and technology are very often minimally addressed, if at all. Industrial designers have historically been fixated with the functional and physical impacts of products at the expense of metaphysical ones, such as connectedness, emotion, pleasurability, experience, cultural and historical contexts of use, spiritual, inter-culturality [20], symbolism etc. Universal usability fallacies are propagated with the often-imposed mechanism of enculturation whilst the aesthetics of design is often prioritised

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[20] Inter-culturality – 'Pertaining to or taking place between two or more cultures' (Oxford English Dictionary, 2013).

over its metaphysical, psychological and emotional value. Design training is not sufficiently preparing designers to tackle these issues.

4. Design needs to discuss the place of *culture* as sparse explicit research currently exists on the relationship between cultural hegemony and industrial design practice, products, or education.

5. Contemporary designers face many new challenges with growing issues such as globalisation, multiculturalism and designing for products destined for global, trans- and cross-cultural markets. This makes specific design skills and the awareness of hegemony integral to both product and professional success. In terms of deficits in training provision currently available in formal higher education, this becomes a pressing issue (see chapter six).

6. Design history and discourse in the west has in the past been colonialist with its products imposing limitations on future conceptualisations and driving particular values onto global markets. Mainstream design histories have also long occluded the various contributions to invention and innovations that were anti-hegemonic. Design has long been the remit and discourse of dominant groups, however this is changing as it evolves with counter-hegemonic methods and models being developed.

7. The co-evolving complexities of the technology-culture relationship are often misunderstood or trivialised with a reductive technologically determinist stance commonly adopted by many. A better understanding of the nuances and implications of how technology operates and sits embedded within complex social structures would help trainee designers better comprehend their roles and responsibilities.

8. Feminist theory has interrogated and influenced the development of design and technology enabling a new discourse to emerge that tackles issues of patriarchy, gender stereotypes, neutrality, inclusivity, ergonomics, usability, and hegemony. In the past products were unconsciously genderised and often unwittingly disadvantaged particular social groups. Postcolonial and cultural studies have the great potential to critically evaluate designs detrimental impacts and help it evolve as a discipline.

Section III: Industrial design in crisis:

Quotidian things, hegemony and globalisation

Chapter Four

Crisis: Culture, design and globalisation

Chapter Four

Crisis: Culture, design and globalisation

4.1   Illustrative expositions: Design failures due to cultural lacunae

Overview

Examples of specific design products are presented in this section with a view to illustrate and ground the thesis argument. These product manifestations indicate the limitations of the design paint-box - the various psychological and intellectual tools designers have at their disposal - to tackle design issues and by association the value of extending the paint-box. A combination of both the symptoms and expressions of culturally hegemonic thinking embodied in design solutions is explored. However, rejecting a reductive stance this research broadly attempts to argue the nuances of how a fluctuating nexus of often-subconscious cultural ideologies can become integrated in and impact on designed artefacts regardless of their geographical genesis or specific cultural origin.

Emerging from this are implications that impact on our understanding of the world that have deprived us of possible alternative solutions to design problems. Designers increasingly have to face and cater for this reality as they find themselves engaging with the design of global products, which by definition are trans-cultural. I therefore return design discourse to postcolonial studies as a useful lens via which to interrogate both professional design practice and design education. The literature survey in the preceding chapter sets the basis for this discursive interpretation of the study in the format of philosophical, theoretical and cultural analysis.

The term artefact derives from Latin *arte factum,* meaning artificial. Artefacts are manufactured usually for a particular purpose/s with a target of achieving this purpose/s. It can be argued that writers on design and researchers already possess the material culture required – i.e. the artefacts - as the primary empirical material to be critically evaluated as 'the artefacts are the physical remains of human activity, the starting point for understanding of a culture' (Appadurai, 1988, p.72; Tilley, 1991, p.229). Both ethnography and social research methods can be valuable tools for exploring cultural capital. Pierre Bourdieu describes cultural capital

as: 'immaterial and being a persons accumulation of cultural knowledge via experience and education' (1984, p.86).

It can be surmised from this that objects do not in fact exist in isolation. A product detached from the context within which it is utilised can be of little value to its users. Designers in theory concede that this is common sense as issues such as culture, situation and environment have to be considered during the process of developing new products or redesigning previous ones but in practice both culture and context are only superficially touched upon in design meetings or consultations and within many educational syllabi as per the findings of the primary research (chapter six). It is evident that designers don't need to travel far to discover many users who are stymied in realising their intentions because the technologies available to them are neither usable, nor useful or culturally viable and thereby reject them (see following examples). This exposes critical shortcomings of the integration of cultural expertise and know-how within general design practices and design education. On the positive side it also exposes a critical vacuum or juncture where possibilities and opportunities magnify for both designer and end user.

Numerous examples abound where the solution offered by trans-cultural artefacts fail due to them being culturally determined and positioned in the wrong setting or context. It is important not to confuse the idea that the design or shape of any given product can be a result of a certain set of cultural assumptions about racial supremacy, with the idea that we can examine a product and it will reveal to us a certain set of cultural assumptions. These are very different but intimately related points. With this in mind, the illustrative expositions in this section simply exemplify products that are futile in a different cultural context and pose a cultural or gender impasse for particular users/consumers. Also cited are examples of products that are successfully integrated into diverse cultural settings, often via the mechanism of glocalisation [21] or an unexpected subversive adaptation of the design by end-users. These expositions in effect

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[21] Glocalisation is the adaptation of a product or service specifically to each locality or culture in which it is sold. Sociologist Roland Robertson popularised the term modelled on its original Japanese inception as dochakuka. It was 'formed by telescoping global and local to make a blend' (Robertson, 1995, p.28). 'Glocal' is defined as 'reflecting or characterised by both local and global considerations' (Oxford English Dictionary, 2013).

demonstrate the significance and value of this intervention in the 'real world'. The exemplars are gathered from secondary sources and outlined to allow us to draw conclusions and although some may appear polemic they allow the illustration of, and set the ground for, thinking about how to address this malaise.

I.   Manufacturers and designers for Crayola crayon boxes designed, labelled and retailed a pinkish 'flesh' colour crayon in their collection issued in 1949 and tellingly similar to the pastel pink band-aids, which were clearly marketed without black or asian people in mind. Partly in response to the United States Civil Rights Movement and partly cultural sensitivity issues given not all people have the same hued complexion, the colour branded as 'flesh' was subsequently voluntarily renamed to 'Peach' in 1962. Renaming the crayon was a way of recognising that skin comes in a variety of shades. 'Indian red' was also renamed to 'Chestnut' as it could be perceived as derogatory towards a segment of the U.S population and due to many school children mistakenly believing it to represent the skin colour of Native Americans, whilst Binney and Smith, the company that produces Crayola's insisted the name referred to a 'reddish-brown oil-paint pigment imported from India and commonly used in fine artist oil paint' (CRAYOLA, 2001). Prior to this in 1958 Crayola also changed the name 'Prussian Blue' to 'Midnight Blue' after teachers requested the overhaul. A *New York Times* article (January 16, 1992) outlines how Crayola have long since actively recognised diversity and produced what they have branded as 'multicultural' Washable Marker Pens which are ethnically sensitive, politically correct and described as 'colours of the cultures', heeding the call for a new age of multiculturalism. Multiple skin-toned crayons allow non-white school children that previously painted themselves as being white and blonde to select a color to draw skin tones more accurately and consciously recognise that not everyone's flesh is the same shade. Examples like this indicate how design practice has been gradually evolving to take such considerations into its toolbox and progress in the face of increasing multiculturalism and globalisation. Such cases clearly demonstrate that the design problem this thesis posits exists and can also be addressed and alternative solutions can be successfully implemented. The thesis intervention is situated at

bringing a postcolonial and cultural studies lens to contemporary user-centred design practice (CRAYOLA, 2001).

II.   Studies such as Judy Wajcman's 'Feminism Confronts Technology' (1999)*, which* challenges common assumptions such as the gender neutrality of technology. Questions such as whether technology is inherently patriarchal are significantly part and parcel of the postcolonial critique. Male bias and the reinforcement of sexual divisions in society through how products are designed, developed and utilised have been uncovered in both feminist and sociological literatures on technology. One example is the gaming joystick. Feminist arguments in regard to the gaming 'joystick' being phallus shaped and the 'mouse' as breast shaped deem that it was commonplace to see the physical interface of computer gaming as reflecting sexism. This research argues that there are other design solutions, which can be prejudiced and colonialist in the a similar manner. Products can be deliberately sexist to cater for a largely male market, and reveal an inherent, insipient sexism. Although some products are designed with all good intentions to be ergonomic etc., the can appear sensual. The sensuality of the mouse can be viewed as an eroticised sensuality and not a refined sensibility of touch. The counter argument being this is irrelevant – so what, as long as the product achieves its capitalist goals. Boys have been successfully incentivised to purchase the products. However the gaming market has gradually been evolving with more and more females become gaming enthusiasts. Purchase levels do not efficiently reflect the success of a product considering the idea of turning girls into boys is a dated 70's argument outlined in Berger's *Ways of Seeing* namely that 'women always look at themselves as though they are being viewed by men', i.e. girls realise they are missing out on something and then join in choosing to forget the ethics (1990, p.8). Entrenched misconceptions and barriers however, do still exist, though there is clearly more to gender perspectives of technology than simply glass ceilings and barriers. As this issue is still endemic, 'Women therefore need to be involved in decision making regarding the development of the new technologies in order to participate fully in their growth and impact' (A.F.E, 1995). Employing the correct gender sensitive method can enable us to deconstruct conscious and unconscious stereotyping and bias of technological artifacts. In this respect, design clearly

needs to recognise the different needs and desires of women and acknowledge the diversity of feminist approaches to develop enhanced tools for designing, fostering, and appraising existing and emergent technologies in appeasement of the valid feminist argument.

III. Design history relates how Owen Maclaren began his design and engineering career in 1940, designing and modifying essential aircraft components such as landing gears and protective sealing elements. He then went on to design his first pushchair, the prototype the 6Ib B-O1, using innovative lightweight aluminum tubes, in 1965 (Mollerup, 2001, p.114). The forward-facing buggy, which was also originally designed by the aircraft designer, became popular because of its collapsible structure, high-tech production and design, as well as a strong emphasis on aesthetics. The iconic design of the Maclaren lightweight strollers remain with us to this day and additional features on pushchairs such as Micralite alloy used in aircraft engineering, pneumatic wheels, handles, folding mechanisms, brake pedals, suspension, tyres and swivel wheels have emerged.

Products are understood to be conceived and developed based on user or human-centred design principles. However, prams, pushchairs and buggies designed and manufactured 10 years ago in comparison to contemporary designs, were evidentially very different types of product, but how can this be accounted for? The mainstream argument is that these changes were merely due to technological advancement. However, there is very little known about the pushchair now that wasn't known in 1900. How do we account for these changes in design? Some design writers posit that nobody even thought about the design of the buggy until 1990 when there was a study or programme in pushchair design. Though this is simply a secondary explanation. Another occluded argument being that buggies designed after 1990 reflected a primarily male view of what a buggy should be for a woman. Arguably as men participate in child rearing much more in the western world, they have taken more of an interest in buggy design. Also geographical and environmental contexts such as straight, flat roads have shaped and driven this need.

Heavily feature-laden pushchairs available on the current market appear to be products being sold to a man not a woman – i.e. according to its features (not colours, aesthetics etc.). In actual fact the company that led in the conception of such developments analysed aircraft landing gear for inspiration, which means they not only have technical design features but an aesthetic for precisely that demographic – playboy reading, white young males for whom sex and technology are inter-related. The aircraft designer Maclaren clearly had an influential impact on the design of pushchairs but could this have unwittingly reinforced a constructed an unfair genderisation positing femininity as beauty with interactions of attraction and masculinity as utility, power and function. It is also quite possible that alternative ways of carrying babies have been displaced and occluded by designers who solely focus on appeasing what is considered as Western male requirements in designed products as there is a narrower market for pushchairs in countries such as Bangladesh where the roads would not facilitate a four-wheeled product.

IV.   Another subtler example is how just as email imposes a new set of rules, terminologies and procedures on the user, so too does the standard QWERTY keyboard layout on computer, mobile phone and other device interfaces. Alphabetically arranged keys would be far more productive for users who are not trained in typing as they usually type with one hand and not two, over the customary QWERTY layout. This issue highlights how the interface design of any technology can often side-line and pose usability divides for members of the community who are economically unable to acquire the required typing training. The keyboard could easily be redesigned to cater for people who's first language may not be English and therefore have only basic grasp of the alphabet and therefore an alphabetical layout would be far more relatable reducing the need for surplus to requirements learning.

V.   Ormrod and Cockburn's research, 'Gender and Technology in the Making', offers us another interesting analysis, in this instance of the microwave oven (1993, pp.80-91). Originally marketed towards men as a hi-tech gadget amongst other electronic devices such as stereos and video-players, it was relocated within kitchen appliance retail outlets once it became

apparent that it had to be more geared towards the female demographic. The aesthetics and usability features of the design of the microwave oven also drastically changed into being presented as a more conventional, regular appliance requiring a reduced level of operation owing to the preconception and gender bias regarding women who were viewed as decidedly technologically inept and illiterate whilst their male counterparts were perceived as technologically sophisticated and consequently by logical association intellectually superior. In line with this predisposition on the part of designers and design teams engaged in the re-design and marketing of the product, complex instructions were substituted with simplified pictures and diagrams of foodstuff above easy to operate buttons. The symbolic meaning rather than the material structure of this technology therefore reinforced a certain, perhaps subconscious, gender-stereo-typing. Contemporary microwaves vary in many respects with some buttons with text and others symbols. Such products can be redesigned with a balanced approach and considered in light of this faux pas in the past.

VI.   Pepsodent attempted to sell their teeth- whitening toothpaste in Southeast Asia but were faced with extremely limited success due to one very important, yet overlooked detail. In many cultures throughout the region, people chew betel nuts in order to make their teeth black because black teeth are deemed attractive, the nuts are believed to strengthen teeth, and these nuts are associated with a variety of cultural rituals and ceremonies. Market research and awareness of cross-cultural differences would have avoided the design fail (Bratau, 2008).

VII.   One high-profile example of a company failing to recognise cultural differences occurred with Kakuto Chojin - Back Alley Brutal, the Xbox game developed by Dream Publishing and published by Microsoft Game Studios in 2002. In 2003, the game was recalled due to the extremely negative and vocal reaction from some Islamic groups due to the fact that verses from the Qur'an could be heard in the background (Haig, 2005, p.172).

VIII.   The Lotus 1-2-3 spreadsheet package had to be altered due to negative consumer feedback after its introduction into the Japanese market. Since many Japanese people did not

want the entire office to be aware of every time they made a mistake subsequently Lotus had to modify the program and remove all the audible beeps that sounds when a user makes a mistake (Taylor, 2011).

IX.   A rather more localised example is the digitised weather map depicting Scotland versus England, which has subsequently been redesigned due to the reaction it has received from many scots being less than favourable. The BBC's new weather map caused a political storm with the Scottish National Party who claimed it gave a distorted perspective of Scotland. The new look 3-d television weather forecast graphics replaced the previous two-dimensional one, which was allegedly considered flat and dull by the audience. However, the SNP MP for the western isles, Angus Mac Neil, called for the BBC to rethink the outcome. The argument being that the map makes it far more difficult for people in the north and the islands to get an accurate perspective of the visual forecast as the graphics display the United Kingdom from a southerly standpoint. Although England has a landmass less than twice Scotland's area, recent changes give England a presence on the television screen, which is 10 times that of Scotland. Mac Neil stated, 'I am obviously very disappointed in the slanting map, which gives England and wales a precedence. The BBC needs to rethink their daft distorted map. They need to see Scotland as it is' (BBC, 2011). Design solutions that initially appear impartial can be oftentimes revealed as prioritising one nation over another, one race over another or one gender over another. A postcolonial discourse approach to design would circumvent such design blunders.

Counter reactive forces: examples of glocalisation and culturally adapted and subverted design solutions emerging

X. LG Electronics's F7100 Digital Qiblah phone was marketed as a benchmark in regional innovation and was the first of several phones developed specifically for Muslims. While it was already possible to sign-up for a text message service that would send a reminder of the five-daily times for Muslims to pray towards Mecca, LG went one further and, as well as an alarm, the handset featured a compass that would indicate Qiblah - the direction of Mecca. With an Arabic interface it is popularly retailed in 'India, Malaysia, Indonesia and Turkey as well as the Middle East, North America and Eastern European countries indicating how commercial companies have begun to recognise religious countries as a viable and important market embracing new technologies' (Campbell, 2010, p.131). Similarly, in 2004 Dubai-based Ilkone produced the i800 phone that incorporated software design from the call-to-prayer function, in addition to the English and Uthmanic texts of the Qur'an stored on its handset too. Muslims are now well served when it comes to phones rich with Islamic applications and features. Even those with regular models can (and do) augment them with a religious ringtone, 5-mthod quibla direction or download a Hijri, Gregorian or lunar calendar with date conversion (Nair, 2004).

XI. Photography is generally banned in Saudi Arabia, and women are sometimes sensitive to being photographed without a veil. When phones with integrated cameras started being used to secretly photograph women, the chief of the Commission for the Promotion of Virtue and Prevention of Vice took decisive action and banned the phones. Messaging, multimedia or not, often makes the headlines in Saudi Arabia. Phone contact between males and females is not acceptable but religious texting is very popular. Text messaging is invaluable during Ramadan. Throughout the month of Ramadan, messages reminding Saudis to practise their religious duties or to undertake charity work are widely sent. Religiously and culturally motivated traditions and beliefs often shape the way we choose to use technologies designers' produce.

XII. Similarly, in India mobile phones have been customised to emit a specific frequency of sound waves alike to those produced by male mosquitoes, which are undetectable by humans, to repel female mosquitoes from biting users, entirely a geographical, location-based requisite, its conceptual origins emanating from the user rather than the technology producer. Although products usually originate with a pre-determined purpose to satisfy a specific need, desire or niche in the market, this purpose can subsequently either remain intact, or augment in accordance with modifications driven by the society itself. There is ample evidence in existing research to indicate that there is a continual abrasion between technological advancement and the protection of socio-cultural values. Although a conflict between innovation and tradition may endure, it is clear that socio-cultural forces can direct the trajectory of any given product.

XIII. In 2003, Mattel Barbie dolls were outlawed in the Middle Eastern country of Saudi Arabia because the doll did not conform to the ideals of Islam. An alternative doll named Fulla was designed to be more acceptable to an Islamic market, even though Mattel Corporation does not make Fulla. In Iran, Sara and Dara dolls are available as an alternative to Barbie and Ken. These dolls are targeted to the Muslim population and feature modest clothing and pro-family backgrounds developed by a government agency to promote traditional values (Augustyniak, 2010).

XIV. Phones in Japan are often viewed as important identity statements. Mobile phones allow a way to establish a personal identity within a well-defined group, as people get bored of their phones very quickly. Not only are phones keitai - meaning ubiquitous, but also strolling around Tokyo or South Korea without a phone would be as unusual as walking barefoot. Both countries have the best cellular service and the choicest selection of phones in the world. Although strongly influenced by American and European trends and tastes, Japanese phones are usually more technologically advanced than their western counterparts. It seems that many people prefer technologies that reinforce their own perceived identities and are flexible enough to adapt rather than top-down, hegemonical designer to user models of design process and production (Bratu, 2008).

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4.2   Navigating cultural variation

Stuart Hall, often deemed the 'father' of cultural studies, defined culture as 'the actual grounded terrain of practices, representations, languages and customs of any specific society' (2000, p.8). Thus, for Hall, 'culture' signifies not solely what is considered as 'high culture' such as art, literature, music, sculpture, and so on, but also the daily practices and daily objects we use to construct meaning in our world. Brett et al (1997) views artefacts as one of the manifestations of culture and defines culture as:

> a latent hypothetical construct knowable through patterns in its manifestations such as symbols, artifacts, modes of communication, values, behaviours, institutions, and social systems shared among group members. (Herskovits, 1948, p.428)

A myriad of definitions for culture exists and there is very little consensus of what culture is across disciplines (Roberts and Boyacigiller, 1984, pp.423-475). Hofstede's definition of culture describes it as (2001. P.9): 'The collective programming of the mind that distinguishes the members of one group or category from another'. Herskovits defines culture as the human-made portion of the environment. Triandis (1972) distinguishes objective and subjective culture – objective being concrete and observable elements such as artifacts, institutions, social structures and subjective being language, beliefs, attitudes, stereotypes, norms, ideals and values. This research studies both the objective and subjective forms of culture.

Cultural variables depend on many factors, which can differ significantly from one place to another and from one country to another depending on variables such as environment, history, language, religion and beliefs etc. Accordingly, there exist extensive differences in people's needs.   The three basic impetuses for cultural differences can be narrowed down but not limited to:

1. People from different cultures perceive things in a different manner.

2. People from different cultures have different ideals and ideologies.

3. People from different cultures have different tastes, attitudes, life style, customs and rituals. (Wetherell and Mohanty, 2010, p.73).

Additional cultural differences that can drive the above are racial and religious factors. Global design strategies succeed when they consider different types of local and international cultures through a cultural lens. For example, Nike, IBM and Google have achieved success, as they have never hesitated to conduct in-depth studies to understand both the elusive and the obvious socio-cultural differences in the countries that they intend to sell their products. Early exposure to new cultures and to multicultural social networks and teams is more likely to have positive consequences if those involved have been properly trained in their formal education to comprehend and appreciate fundamental cultural differences and values that impact everyone. Many design graduates secure employment in either organisations with global reach or a domestic firms working with a diverse population, so it is key is to empower and train all future designers to be culturally competent. A trans-cultural design ethos would seemingly enable this.

In spite of the widespread application of the concept of globalisation and its foci in various areas, the author takes the view that it is inconsistent - at least theoretically - with the concept of the designers' identity. This research therefore attempts to resolve the dispute between the concept of the designers' identity rooting from the differences in culture and the concept of globalisation that is unifying and its impact on the design process and outcomes.

There are many mapped and unmapped reasons for the neglect of cultural awareness in design theories. Some of these are as follows:

1. The additional costs that may be endured to research specific cultural contexts.

2. The lack of industrial designers' know-how in cultural integration, stemming from a gap in their education (Reese, 2002, pp.17-43).

3. The rapid globalisation of products and services (ICSID, 2002).

4. Technology-focused designers and engineers, as well as market-oriented manufacturers, who prefer to innovate on technological grounds rather than addressing cultural fitness (Holt, 1989, pp.163-168).

5. The customisation of products being viewed as contrary to the nature of mass-manufactured industrial production (De Souza, 1999).

Culture being a dynamic association of value systems, in its dialectic form, absorbs novel practices and significance. It can be comprehended as an intelligible group of dynamic philosophies and practices in certain historical eras. As such culture comprises of numerous layers of information, which require scrutinising. Schein (1999) and Lee (2004, pp.17-21) advise of three specific levels (basic assumptions, values and artefacts), whilst Hampden-Turner and Trompenaars (1997) and Spencer-Oatey maintained four layers: (i) basic assumptions and values (ii) beliefs, attitudes and conventions (iii) systems and institutions (iv) artefacts, products, rituals and behaviour.

However, it is often difficult to draw a precise divide between the notions of 'basic assumptions and values' (Spencer-Oatey, 2000, p.5). The Spencer-Oatey cultural framework combines both as they arguably consist the innermost centre of the layers of culture. 'Basic assumptions' remain acutely assumed by the community though subconscious and remain as inconspicuous fundamental beliefs that infuse the other layers whereas 'values' indicate the discernible culture, which the particular community claims to have. 'Artefacts include the visible and easily described elements of culture which has an immediate emotional impact' (Schein, 1999, p.22).

This research conceptualises culture as a collection of elementary values and assumptions with consequential behavioural norms, outlooks and viewpoints that are manifested in structures and organisations as well as material and immaterial artefacts. External forces of globalisation, colonialism and postcolonialism affect any society, and can homogenise cultures. Globalisation acts as an evolutionary force that is gradually and systematically reorganising interactions amongst nations; but is also demolishing obstructions in the capacities of commerce and culture and raising the integration between world markets. However, it is evidently and worryingly threatening cultural difference. Mass produced global products obliterate cultural plurality and accordingly obliterates diversity by negating or disregarding cultural identity. A post-colonial and trans-cultural design ethos that is ethical would enable enhanced gender

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parity, governance with ecological sustainability and advance alternative holistic ethics for all inhabitants of the globe, though the current drive of blind globalisation itself can often make these aims seem unattainable.

With culture increasingly becoming a critical agenda, designers are not exempted from this hypothesis. Ultimately it is the designers' responsibility to contour the users' daily culture by designing novel technologies that effectively interact with that culture. Initial connections between design and culture become evident within social anthropology in which society was appraised via the design and advancement of their artefacts and tracked via the cultural physiognomies left imprinted on such objects.

> Culture generates diversity and it is naturally revealed in all human action such as the artefacts people design. The correlation between design and culture has taken many twists and turns throughout the last centuries, as design is seen both as a mirror and an agent of change. (Moalosi et al. 2005a, p.221)

'It is observed that modifications in the formers evolution both reflect and determine developments in the latter. Design changes culture and at the same time is shaped by it' (Rose, 2004, p.132). For instance, it is understood that cultural beliefs and social practices create and reinforce frames of meaning, which in turn determine the ways of relating to a product. These cultural framings then affect ways in which people utilise or do not utilise a specific product. It is culture that gives products meaning and provides the rituals within which artefacts are used and the values that are often reflected in their form and function (Press and Cooper 2003, p.12).

Buchanan argues that 'Designers should focus on cultural rights' (Buchanan, 2001, pp.5-21). 'In product design, the goal of cultural respect can be achieved by incorporating the historical and aesthetic values of users' (Moalosi et al, 2005b). Design is firmly embedded in the users culture: it does not occur in a cultural vacuum (Margolin, 2002) and 'Users are not just physical and biological beings, but socio-cultural beings' (Baxter, 1999 and De Souza and Dejean, 1999). Baxter states the case that designers have not yet managed to consciously encode cultural phenomena to the same extent as physical and cognitive human factors due to

insufficient research on the subject. Each culture is said to have evolved its own responses to its problems (Hofstede et al, 2002).

It is argued that consideration of cultural factors may lay the way to the diversification of design concepts and facilitate more efficient product innovation. Product design is an agent of change and it is important for designers to know how they can either undermine or support the indigenous cultural systems of the society (Popovic, 2002). It is via artefacts that cultural values are often communicated and therefore design being a vital medium of communication, has the potential to express, challenge or reinforce the values of the system within which it operates. Designers can interpret and transform their needs and desires and societies predicted wants into product characteristics that will offer them histories and shape the present and future.

A static view of culture is greatly problematic such as those represented in Hall's cultural model, which were not originally developed for a discipline like design. (Hall et al, 1990). In an empirical approach where there is no subjective definition, the culture is defined based on the case or context that researcher is operating on. Therefore, culture can be defined according to the specific case and context, as there are no clear boundaries between culture and regional specific parameters like economy and politics. Assumptions about globalisation and cultural homogenisation are rife, but what various research projects can reveal is the different ways in which a product, (a communicative medium that is utilised) is understood in different parts of the world from Brazil, India, Vienna and Berlin; to different parts of the UK and furthermore within different age groups. Following on from this, it is deemed that by 'designing for a culture' we introduce a new product or system, which contributes to changing that culture. Products successfully adopted also act as a reflection or manifestation of users' identity and ambitions.

The mainstream of design thinking today is a desire to know of the effects of design on users and how it operates in 'the world out there' and acknowledge that we require leading-edge research that is socially conscious, introspective, and internationally significant. The design

world has begun to recognise the necessity of incorporating issues of social reality and social constructivism in their world.

> Design culture, and the notion of culture medium in particular, has hardly been explored by the design community. Although there are few precedents for understanding the social and cultural influences on design, literature reviews reveal a growing interest in exploring the social and cultural nature of design. (Strickfaden, 2006)

As designers we have a social obligation to make better contributions towards the multicultural society we inhabit and to significantly improve the lives of minority groups including the disenfranchised, young, poor, sick and old.

All aspects of human life are deeply and profoundly influenced by culture (Schwartz, 1997, pp.69-84; Zhan, 1999, pp.80-81; Hofstede, 2002, Salimi, 2002, Unesco, 2002, Yaveroglu and Donthu, 2002, pp.49-63). Culture plays an integral part in the intuitive utility of artifacts. Human instinct connects to our notion of objects that has already been constructed in our personal cultural contexts. One demonstration of this in action is the opposite ways of turning a light on in different countries by flipping the switch either upward or downward (Powell, 2001, p.12).

> The hierarchy of consumer requirements starts from the functionality of products and it passes through usability and then towards seeking pleasure in both aesthetical and functional aspects of products. Since the very concept of pleasurability is rooted in culture…pleasurability can mainly be achieved when users' cultural wants and attributes are seriously taken into account in the design process. (Norman, 2002, p.xii)

The deliberate integration of cultural knowledge into products can be valuable and useful to the product design discipline and to users; though nevertheless challenging, as there exist a vast amount of variables within culture in differing levels of this unification.

However, identifying and extricating values from cultures and subsequently decoding these into significant elements of product conceptions would entail some expertise in the fields of cultural theory, psychology, anthropology, sociology, industrial design and other possible fields. Added to this, values are intangible and largely unconsciously effect designers, and as a consequence, are difficult to ascertain and practically ambiguous to comprehend.

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Hofstede's cultural model is possibly a more suitable reference model for this analysis despite contemporary criticisms of this model as with every other. Hofstede (2003, p.10) contends that each individual holds within him/herself patterns of thinking, feeling, and potential acting that were learned throughout their existence. These are itemised as the main manifestations of culture in the form of values, rituals, heroes and symbols, demonstrating that symbols express the most superficial while values comprise the deepest layer of culture. Hofstede's 'onion diagram' (Figure 1.4) depicts the concept of cultural layers.
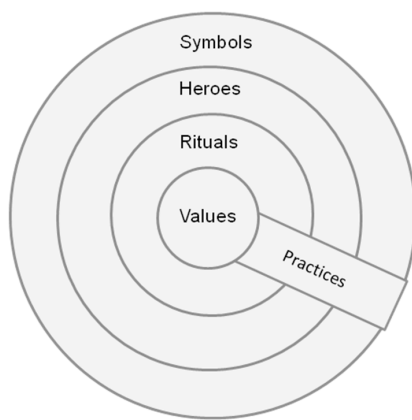
Figure 1.4 Cultural layers
Source: Hofstede, 2003, p.10.

As values are amongst the primary things children learn implicitly rather than consciously, they are manifested or practiced by members of a society and remain within the innermost layer of ones beliefs and mind (Hofstede, 2003, p.235). Some examples of cultural episteme navigations include:

1. Spatial Orientation - Left justified text will probably be more visually appealing for English readers as opposed to people reading Arabic, where the language is read from right to left rather than left to right.

2. Different cultures use different measurement systems, different ways of writing numbers or even different ways of interpreting numbers. What is considered a lucky number in one culture may be considered unlucky in another. For example, number 4 is considered unlucky in China, Korea, Japan, and Vietnam. Some buildings in East Asia

do not have a 4th floor; none of Nokia's cell phone series begin with the number 4; and the Canon Power-Shot G series of digital cameras skipped the G4 model name due to cultural beliefs. Number 13 is considered lucky in Italy, while the unlucky number is 17. Well-known Italian airline company, Alitalia, does not have a seat with the number 17 and Renault sold its R17 model in Italy as R177 (Haig, 2005).

3. Some companies forget that certain cultures read from right to left, rather than left to right. In this situation, a billboard in North America with pictures from left to right in the order of a man with a headache looking sad and in pain; a man taking a pill; and a man smiling without a headache will not have the same advertising effect in the Middle East.

4. Other examples would be how using an owl as part of a promotional strategy in India would most likely fail as although the owl is seen as a symbol of wisdom in some cultures, in many parts of India it is believed to be a symbol of bad luck. Also animals are viewed as a low form of life in Thailand, so when an eye glass company attempted to sell their product using images depicting cute, little animals wearing glasses, the advertisement was rejected by the target population (Bratau, 2008).

5. Unilever's soap and toothpaste products have been available in India since 1887, when the sub-continent was still the crown jewel of the British Empire. The secret to Unilever's longevity in India is distribution. Hindustan Lever Limited (Unilever's Indian arm) has products available in a staggering total of 10 million small shops throughout rural India (Bratau, 2008).

Consumers in different locations and cultures are influenced by their values, economies, preferences and attitudes and will therefore differ in 'what they buy, why they buy, how they buy, when they buy, and where they buy' (Ricks, 2006). For example, when Whirlpool launched its refrigerators on the Indian market, it found the market unwilling to buy larger sizes than the standard 165 litres (Haig, 2005, p.134). Therefore in order to sell, enter and succeed in international and foreign markets culture must be considered in every aspect of product development process combined with a familiarity with the concepts of localisation and the

needs of the target market. To be a competent designer we must take into account cultural considerations involving expressions, idioms, concepts and other phrases to avoid designs that are controversial or offensive to a particular culture, religion, or ethnic group. Design therefore needs to better address the values products can proliferate in the global economy and develop effective tools to navigate cultural variation in global markets.

4.3   The aesthetic and symbolic value of products

Alexander (1979, p.231) concluded how users from differing backgrounds are affected by the design of technological artifacts in varying manners. Features such as product aesthetics constituting materials, structures and color can accomplish appeal in one culture; yet remain unattractive to users in another. The contradictory aesthetic values that artifacts display across countries distinctively denote socio-cultural relativity in terms of preferences and prove cultural variables are often in control. As such, designers can be regarded as cultural gatekeepers. Aesthetics, or 'the guidelines for what is beautiful' cannot be declared as universal rules on good form and good taste. Aesthetics can nevertheless be valuable as an ethnological, anthropological, or sociological idiom employed to distinguish socio-cultural guidelines for what is deemed as desirable or undesirable. The main challenge for industrial designers is perhaps, identifying the approach needed to develop the aptitude and knowledge required to design within this complex space.

Reflect that people from Asian or Middle Eastern cultures may ascribe variant meanings to colours compared to people in the United Kingdom.   Colours are significant to communication and emotions, ideas and feelings can be conveyed using colours. For example, the colour red is usually a symbol for Christmas in North America whilst countries such as Russia, China and Vietnam view the same colour as symbolising Communism. The former Soviet Union army was in fact named the 'Red Army.' Views around the colour white are another exemplar of contrasting different responses to the same colour. In many Western countries white tends to conjure up images of innocence and purity with brides in wedding dresses, or winter, and snow. In juxtaposition, many Asian cultures associate white with mourning and death.

All of the elements important to localisation must be viewed through a cultural lens because products can often carry implicit or explicit cultural messages. Symbols, graphics, and colours that will have a negative connotation, be misunderstood, or cause offense in a particular culture must be avoided. Sometimes symbols that are understood and culturally acceptable in one country may be meaningless or even offensive in other countries. For example, the icon depicting the OK sign using the thumb and index finger is perfectly acceptable in Canada. However, this same symbol is considered an obscene gesture in parts of South America.

There are many aspects of culture, such as religious beliefs and customs, which are hard to see and understand if you take only a cursory glance. However, these deep and hidden elements under the surface, much like an iceberg, often deeply impact the perceptions of potential customers in local markets. Part of the problem is that the Chinese prefer dolls that are cute rather than sexy - such as Hello Kitty; so introducing a Barbie doll to the Chinese market may not take as well as in other countries.

> The makers of Barbie realised that little girls around the world had different skin colours, wore different clothes, had different types of hair, and had completely different names. As a result, for the past 40 years, countries including Argentina, Australia, Canada, China, England, France, Germany, Italy, Korea, Malaysia, Mexico, Peru, Portugal, Spain, Sweden, Taiwan, and Venezuela have all sold Barbie dolls unique to their particular country and geared towards the wants and needs of their buyers. (Augustyniak, 2007).

Hofstede (2001) defined culture as cultural programming of the mind distinguishing members of one category from each other. According to Hofstede culture is a result of 100 thousand years of evolution. However, in the modern world people are still influenced by basic cultural factors such as authority, morality, group membership, gender roles, drives and emotions (Hofstede, 2001). Products from different cultural backgrounds often differ from each in their form, colours and shape properties. Hofstede argues that cultural values distinguish one culture from another and are actually measurable (2001). Moalosi (2008) states that certain design features a product could embody certain cultural values. Leong (2003) similarly stipulates that specific cultural values can be represented by product design. Leong goes on to say that it is only via detailed cultural research and the development of new design theories products for

certain cultural groups can be effectively tailored to be successful. Therefore it appears possible to design products that convey symbolic values and messages that may be favoured by one culture more significantly than another as they reflect the values therein.

Literature reviews in product aesthetics demonstrate that people tend to favour products that match their values at a symbolic level. It is widely accepted that products carry symbolic values, such as impressiveness or modesty; it was hypothesised that such symbolic values can be integrated whilst designing the product aesthetic and shape. Gotzsch (2006) argues that products convey and transmit meaningful messages to users and mirroring the consumer's identity would make the product appear more appealing. Hassenzahl (2005) argues that each product has a character, which can be experienced differently by each consumer while communicating identity. Demirbilek and Sener (2003) indicate that certain products can connect with consumers at an emotional level and, if this potential were correctly implemented, this would enhance the consumers' motivation to purchase.

Within the last two decades new terminology has begun to be introduced describing a product's symbolic values. For example, Gotzsch describes these values as a 'product's charisma' (2003), Desmet named them 'product emotions' (2008), or 'emotional value' and Govers stipulates them as 'product personality' (2004). Creusen and Shoormans stipulate designers should not only be knowledgeable in how to design products with certain symbolic values but also acquire knowledge of the target user-group and their socio-cultural values (2005). In Govers and Mugge (2004) research on a products symbolic value they argued that every product has specific, symbolic but measurable values. Govers (2004) coined the term 'product personality' as symbolic of the product itself being ascertained humanistic values, such as sociable, deep, moving etc. He describes product personality as primarily being cultivated via shape and form. For instance, a product is perceived as serious via angular shapes or friendly or modest via curved shapes.

The concept of 'affordance' (as earlier discussed in chapter three in the thesis) describes all the 'action possibilities' that a product can offer us. For instance, a chair may offer seating potential, a bed - the potential to lie down and stairs - the potential to climb up them. Moreover, the shape of these objects can often indicate their 'character' via affordance. For example, a deck chair can be considered as more relaxing and sleep inducing due to its form than an old fashioned church pew designed so you will not fall asleep during early morning sermons. In this manner products relate more information to us than what is obvious. Krippendorf and Butter (1984) coined the term 'product semantics' and highlighted the relationship between the consumer, the product, and the utility of the object within its social context. Each man-made object, according to product semantics, can communicate a message through its shape, colour, texture and other aesthetic values in specific social contexts (Creusen and Schormans, 2005).

Griffin's study on product semantics (1999), describes a dual process motivating every product appraisal. Consumers and users initially associate product appearance to social and cultural values subsequently responding with an emotional reaction. This process tends to be inherent and seemingly connected to people's values, attitudes and beliefs that are triggered by an object or situation. Such values, beliefs, etc. tend to be established during childhood and adolescence (Hofstede, 2001). According to Creusen and Schormans (2005) it is possible to create a product in a defined form or shape to evoke a certain feeling, for example delight or desire, which would enhance its appeal. If this is so, it is tenable that a designer could customise a product to gain advantage in the market-place (Creusen and Schormans, 2005).

4.4   The fallacies of universal and a-cultural design

Any research that discusses 'hegemonic technologies' and 'hegemonic cultures' should outline the working definitions of 'culture' and 'hegemony'. As an interdisciplinary field of study, 'cultural studies' has laid a claim to the analysis of 'culture' and scholars and theorists who work in this field have paid specific attention to cultural forms that work 'hegemonically' to secure the interests of particular social groups.

The phrase 'hegemony' can be traced to the Antonio Gramsci, an Italian political leader and theoretician who used it to signify 'manufactured consent' or a type of social pressure

applied by one class on another via its cultural products and practices. Gramsci was especially interested in the hegemonic cultural products of the 19th century; serial novels, newspapers, theatres, as these cultural products were reliant upon prevalent literacy and developments in the technologies of automated replication. He noted how technology is used to build a middle class culture that busied itself with stipulating the 'norms' of class, race and gender. These cultural forms, advanced largely by the bourgeois, function to wield control over the 'popular classes' (Gramsci, 1985, p.363). With these ideas, this research continues to claim that fallacies exist such as a-cultural design and universal usability that erroneously deny an underlying cultural facet and hegemony at play.

It is a given that it can be difficult to design across cultures. Just as I would have difficulty understanding how to design for a client in Bangalore or for a designer living in Germany to do a remote design for a client in Malaysia. Currently there are three basic approaches on how designers undertake the honing of design usability across cultures: centralised, co-operative and offshore, each with its own benefits and drawbacks. Centralised approaches work well when the cultures or countries being designed for have a similar cultural profile. Many design organisations employ centralised teams to decide preferred solutions for different locales making decisions such as how things will look and behave in different cultures. In contrast, the co-operative, co-design approach requires a deeper design understanding of the matter of perception, mapping, and practices in different cultures.

Products that feel slightly foreign to the consumer can sometimes be considered both as advantageous and as disadvantageous respectively, dependent on context. Design critically needs to locate a point between communicative translucency and heterogeneity:

> In the international economy design becomes a quintessential asset, through branding and product identity formation. However, the radical internationalisation of the economy does not seem to lead to an equally radical diversification of design forms and solutions, but rather to a hegemony of international archetypes and dominant cultural phrases which disregard local contexts. (Bruinsma and Kluitenberg, 2003, p.46)

Usability itself suggests it is a fairly universal attribute: everybody is the same in terms of behaviour and thought if you cater to *basic* human nature (Figure 1.5).

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Behavioral and thinking sources
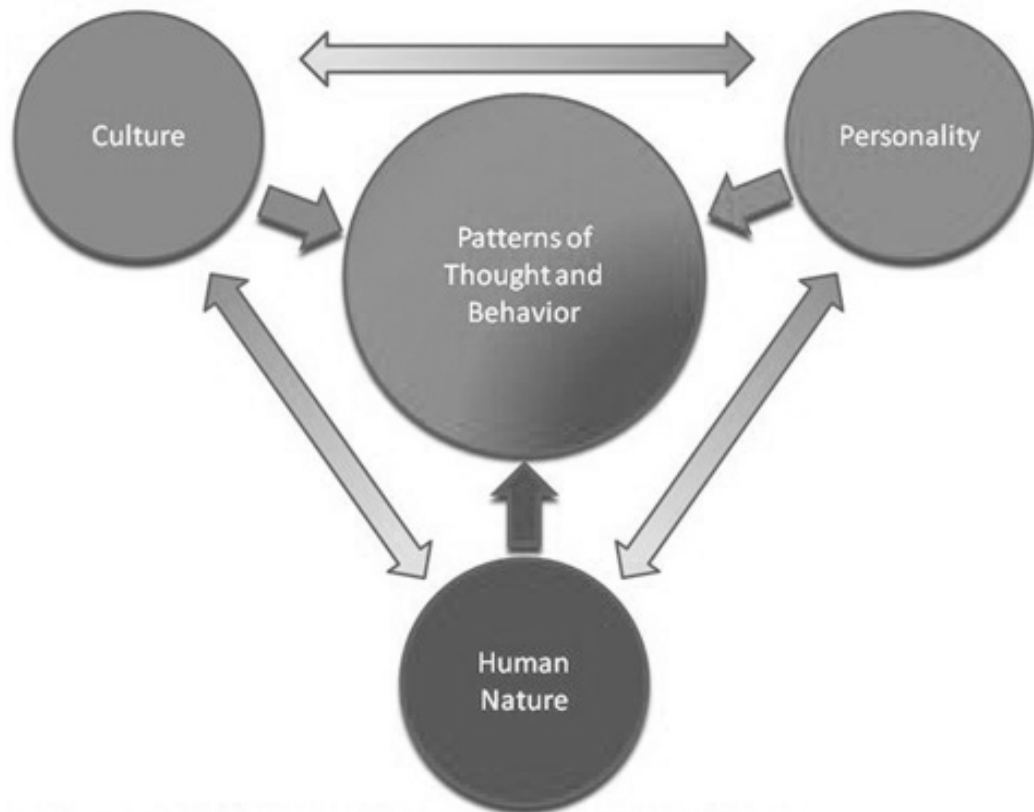
Figure 1.5 Interactions between sources of behaviour and thought. (Re-modeled).
Source: (Original by Hofstede, 2005).

Hofstede and Hofstede (2005) present the sources of influence on thinking and behavior as existing on a number of levels, which include human nature, culture, and personality. They depict them as various levels of a pyramid. Human nature is the base all people share, which universal usability approaches address and personality is the peak as unique to the individual. Culture then forms a wide middle section of the pyramid, reflecting its multiple layers of group interactions. Figure 1.5 depicts a different representation of these influences. This re-modeled diagram emphasises an added complexity to stress the nature of these constructs as mutually influencing the sources of behavior and thought.

Culture comprises means of thinking and behaving that are taught by social groups, which might include friends, family, community, and colleagues, developed via direct interaction as well as via media exposure (Hofstede, 2005). Cultural inclinations and preferences are strongly embedded because human beings are extremely social creatures with a

great need to fit within our groups. Culture may be learned but it is also constrained by human nature.   Humans are highly adaptable; people are able to compensate for their cultural conditioning when they find themselves participating in another culture by adopting the behaviors they begin to see as appropriate to that culture (Lemke, 1997). It is difficult to separate or identify deeply held entrenched cultural values from superficial practices and behaviours. For this reason it is hazardous to define or categorise cultures and this is not the intention of this thesis. No attempt is made to classify cultures; its intention is to simply stress the spectrum and variability of cultural diversity that actually exists rather than discuss the differences, which would be a ceaseless task.

There exist many challenges in designing across cultures, for example Ellsworth et al. (2002) examined the consequences of culture on the design of the 'refrigerator' in the Europe, US and Japan. The conclusions they arrived at indicated that the equal concept of keeping things cool may be expressed in a range of varyingly designed refrigerators, which were accredited to the variations amidst the users' expectancies, requirements or predilections within the particular cultures. Another example is how 'most westerners hold a spatula like a tennis racket when they stir, flip, or cook…but the Japanese women we observed cooking all held it like a pen. Clearly the design of the tool had to be entirely rethought' (Lee, 2012). A set of six culturally sensitive adjusted nylon server designs, precision tongs and angled measuring cups were released for the Japanese market alone and sales figures have proved lucrative.

Another technological approach termed as the concept of 'Universalism', is described by Ellul as being an accepted but fallacious feature of modern technology wherein technological artefacts are perceived as ahistorical and asocial and therefore can be applied worldwide, irrespective of contexts such as place and culture. Is there an intrinsic universality within designed products that enable them to exist outside such socio-cultural frameworks? Are basic social patterns universal across all cultures? Can we really accept that usability is a-cultural? Could the western notion and application of usability theory cause alienation in users in a subliminal, latent way? Existing research has defined how diverse cultures' approaches to technology can often differ. Gender and technology studies have revealed how the design of

some technologies can privilege the masculine over the feminine (Cockburn, 1985). This leads us to the pressing issue of whether or not technologies can additionally prescribe the 'norms' of race, class and religion and not solely gender alone. We would envisage this to be the case especially when subjective, aesthetic and creative decisions become absorbed into material formations.

The previous four sections introduced the idea that once presented into the market, products tend to undergo certain modifications and evolve throughout their trajectory from one cultural setting to the next. A consequent trajectory of a product may lead it to cross many cultural and geographical boundaries all of which are fluid, evolving and fluctuating, many of which are unfamiliar to the demographic the technological product was originally aimed and designed for. Often collisions with differing cultural values can lead to reshaping of the way certain technologies are subsequently developed but only to a fixed extent; restricted by the technology itself and the technical know-how of the era.

To test the idea that technology can profoundly change the society it is immersed in, an extended study of domestic products traveling starkly differing cultural settings would prove extremely valuable in predicting subtleties of cultural change in those societies where Western technologies are exported, but this is currently beyond the capacity of this research. Instead, illustrative expositions were provided in chapter four, section 4.1 of products that have failed on symbolic, aesthetic and usability grounds from a cultural perspective exposing the coded visual rhetoric of marginality and the cultural association hegemony invokes. The following sections will explore the important mechanisms of globalisation, glocalisation and enculturation in greater depth to understand their relationship to design hegemony.

4.5 Globalisation's rupture and glocalisation's recovery of design

This research argues that industrial design is in a form of crisis, a crisis of aim, identity, responsibility and meaning. Its boundaries and impact require re-examining due to its rupture in the face of our increasingly multicultural and globalised landscape. Technology is viewed as the common language in the global and increasingly borderless world we live in, but can we conceive of ways in which it may pose challenges in its material and symbolic existence in cultural terms? It is posited that non-culturally modified products deliver under-developed interaction experiences and the pleasurability of such artifacts cannot be achieved or satiated by tackling aesthetics or functionality alone. This section narrows its focus to the importance of this issue in particular.

The term globalisation has had a meteoric rise since the mid-1980s. It describes the process where individual lives and local communities are affected by economic and cultural forces that function worldwide as individuals and communities gain access to globally disseminated knowledge and culture. 'Globalization theory examines the emergence of a global cultural system. It suggests that global culture is brought about by a variety of social and cultural developments' (Albrow and King, 1990). The primary dispute versus globalisation is that global culture and global economy did not spontaneously erupt but originated in and continue to be perpetuated from the centres of capitalist power. The significance of globalisation to postcolonial studies comes from its evidences of the structure of world power relations, which stands secure in the twentieth century as a legacy of western imperialisms. Under the colonial age westernization - an element of globalisation - enabled various cultural traits and institutional features, which originated in the west to be put sited in colonized countries and geographical locations under the basis of diffusion and global inter-connections.

Glocalisation as a term describes the concept that trends of heterogenisation and homogenisation coexist in society, when local culture assigns meaning to global influences in and interdependent and enabling manner. Glocalisation as a notion surfaced to alleviate the conceptual problems of the micro-macro relationship. Global culture and social theory merge to explore diversities and commonalities in culture. Sociologist Roland Robertson popularised the

term modelled on its original Japanese inception as dochakuka. It was 'formed by telescoping global and local to make a blend' (Robertson, 1995, p.28).

Often products intended for global markets are subsequently customised to fit the local cultures as the primary research indicated. A substantial numbers of respondent to the survey questions indicated they would be willing to change their product to fit global, trans-cultural needs and markets (see primary research) indicating a possible belief that cultural differences may be generally superficial or easily catered for and design should be context aware rather than completely context dependant.

Glocalisation is the idea that eliminates the common apprehension that globalisation is like a tsunami obliterating cultural diversity and differentiation. It confronts the long-posited argument that globalisation generates a homogenous world, where boundaries vanish and cultures are merged into a global whole. It celebrates the idea that the essence of social, cultural and national life is indeed diversity. Under glocalisation, practices mutated and assuming novel meanings. It comprised adapting, blending and/or mixing of a number of processes including the local.

Design practice and education has benefitted from the practice of glocalisation by enabling a wider, transcultural market need to be met. However, this involves various constraints on the designer and product from the offset and stops short of a critique enabling postcolonial ideas informing design. Numerous products now assume a local flavor or character even though their origin of creation were elsewhere. However, often only a superficial element of the design is adapted to meet a perceived, superficial need and products are not catering to the deeper emotional, socio-cultural desires users have.

Sociologist Jan Nederveen Pieterse utilises terms such as hybridity, syncretism, mélange to capture similar issues in relation to culture. According to Nederveen Pieterse, (2004) there are three views on the issue of globalisation of cultures. The first view is the clash of cultures view expressed in terms of clash of the civilizations by writers like Samuel Huntington. The second idea is best expressed in the phrase of the 'McDonaldization' of the world (Ritzer, 2000). This interpretation clearly suggests a homogenised world that is dominated by a uniform culture that eradicates variances of local cultures. The third view is that

of hybridization or synthesis. Much of human evolution of culture can be seen as exchanges; diffusion, etc. where adjusting cross synthesizing, and borrowing to the local needs and so on were very common.

Although glocalisation can be effective as a conscious development strategy for design practice it is limited in its scope and impact. This is widely evidenced by Robertson who himself states: 'the distinction between the local and the global has serious limitations, ones that are rapidly becoming recognised both in academic scholarship and in activist movements concerned with various aspects of a world marked by the intensification of globe-wide connectivity and global consciousness' (Robertson, 2001, Pp. 458-471). Simultaneously universalising and particularising tendencies can result in confused products that fail to fully satisfy either market or demographic. 'The dichotomy of the global and the local has become a very prominent theme in so-called anti-globalization movements' (Hines, 2000). Binary, dichotomising themes of local/global, diversity/commonality, difference/sameness, universality/particularity, and heterogeneity/homogeneity can depict a form of false consciousness and reductively project the concept of global and local a dialectical relationship of equal tension and footing when the reality is far more complex (Canclini, 2001; De Mooji, 1998; Tharp, 2001). The oft-times valuable endeavor of glocalisation of design products is curbed by the need for companies to spend more time researching other markets and loss of profit if unsuccessful.

Despite the possibilities and limitations of localisation and adaptation, in the author's view there is still a dire requisite for a culturally aware design practice, process and training that is socio-culturally sensitive from design inception, as the thesis posits. Feminist theory has seemingly already had a conversation with design and cultural theory yet remains to have a similar engagement and discussion. The future success of design rests on addressing these pertinent concerns and better meeting local variables and contexts to avoid blind imitation or a mindless mirroring of western ideas and concepts. In conceding with Robertson's view - that although social scientists, historians and theorists (e.g. Albrow, 1996) have argued that we live in a global era the 'quotidian, reflexive synthesis of the local and the global is an ever-present

feature and, also, a dilemma of most of human life', it is believed that a better socio-cultural understanding of this in terms of design practice would be highly beneficial.

ICSID (2002) describes globalisation as a 'must-be-opposed' phenomenon of our industrial age in terms of industrial design futures and calls for design practitioners to the critical task of supporting cultural diversity in response to the globalisation and internationalisation the world is undergoing so we can preserve and celebrate our differences and traditions through approaches such as glocalisation - thinking globally and acting locally to present global knowledge within a local context that respects human rights. Another way Industrial designers can begin to move towards addressing the necessity of cultural integration is by localising their solutions and product outcomes (Powell, 2001, p.12). The world market is teeming with standardised industrial products which are undifferentiated, homogenized, mass-produced and have resulted from the effects of globalisation and yet further its cause. 'The International Council of Societies of Industrial Design are challenging industrial designers the world over to foster cultural diversity in response to world globalisation of products and services' (ICSID, 2002).

Historically, it is evident that human beings have an innate tendency to maintain and foster their own values, cultures and territories within their societies. As a reaction to the detrimental effects of globalisation, contextualised terminologies have surfaced in the literature against it with terminologies such as glocalisation, regionalism, segmentation, colonisation, and privatisation as opposing forces. Some research has been undertaken to tackle and identify the link between global, mass-produced products and cultural diversity degradation in society but not enough has been done to inspect the impact of such products on culture. 'It is well documented that culture and cultural values play an influential role over almost all elements of human life', (Hofstede, 2003, p.311) and it is presumed the discipline and practice of product design isn't immune from such permeating cultural forces. However, there is a distinct paucity in the amount of research undertaken on the impact of industrial designers' personal culture on their own design outcomes.

Zec (2002, p.34-38) observed that 'globalisation aims to provide greater similarity of perception and lifestyle as well as greater uniformity of product culture'. However, human beings thrive on market diversity, as it is a logical desire, often beneficial and mirroring the socio-cultural diversity found between individual consumers and communities. Globalisation advocates the inverse of this, the convergence, regulation and homogenisation of culture, taste, goods and services. Naturally there are noted advantages of globally distributed products that are mass-produced. Levitt (1983, pp.92-102) believed that 'a single worldwide market was the only means forward as a positive future vision'. Designers, advertisers and marketers desired 'the creation of an infrastructure for unified marketing and for the selling of standardized products' (De Mooji, 1998, p.11). The design of products of every category is distinctly connected to the economic wellbeing of manufacturing sectors. Another obvious reason for the widespread predominance of globally oriented, mass-produced products is that attempting to integrate the design nuances of various cultures into products is viewed as an incredibly costly and difficult task.

Through globalised markets the multiplicity of culture could be obliterated in support of uniform artifacts. As globalisation continues to effect all aspects of socio-cultural life it is feared that homogeneity of culture would eventually lead to similarity in everyone's manner of thinking, eradicating socio-cultural differences, and make multicultural societies mono-cultural. Cultural homogenisation and linked dissatisfaction of consumers in Western society can already be witnessed in the rising demands for individuality and culturally specific solutions with products that holistically fulfill diverse needs and expectations against the vacuous ills of mass-produced items, consumer culture and materialism (see primary research chapter). Market globalisation has also produced in many ways positive, complex and intertwined sourcing and marketing strategies. In relation to the domain of the country-of-origin construct, it appears that consumers are not always led or influenced by a products country of origin when purchasing a product (Okechuku, 1994). If they were, then the businesses' sourcing, manufacturing, and promotion strategies and policies would have to be reassessed. Evidentially products are selected on the basis of the identity and lifestyle they purport to represent and the limitation of particularly Western world-views embodied in artefacts produced in the West encourages

diverse users to attempt to 'fit in' and often deny their individuality and differences, which should ideally be celebrated.

Cultural values have a myriad of influences and impacts on everyday life (Zhan, 1999, p.80-81). Based on the primary research this thesis argues that designers oftentimes consciously or subconsciously incorporate their own personal design morals and codes into their design solutions through their design activity. These communications, codes and implications are subsequently decoded and engaged with by the end-user. As such it can be reasoned that some designed artifacts do have the latent capability for possessing, conserving and offering socio-cultural values to product consumers. This research argues that products can be influenced by two specific variables, namely the designers own specific manner and method of designing and the contextual and cultural design dynamics in society (see Primary research chapter). There have been a number of investigations on the subject of culture and product design around this particular angle but seemingly none outlining how the impact of the designer's own values expressed via his or her design outcome may have resulted in a cultural sidelining for others. 'A distinct cultural negligence in the product design process itself is deemed to be one of the detrimental effects of globalization and designers need to be encouraged to address this' (Mcburnie and Clutterbuck, 1987, p.98; Nickles, 2002, pp.693-727).

Humans intrinsically find meaning in their lives via seeking and forming an individual identity for themselves via products and a person's culture is undoubtedly part of their overall personality. Lambourne et al. (1997) asserts that people are now searching for their own identity more than they have in any previous era. The cultural converse can also be accurate when we analyse products designed and originating from foreign countries and imported into Western countries – this imposition of culturally alien products can pose a cultural fracture. The developed nations comprise the largest markets in the world, which annually import hundreds of billions of pounds value of foreign products making this a real issue. The research however is restricted to evaluate products designed in the West and dispersed into global markets due to restrictions on the scale of the research.

The literature search outlined in chapters two and three begin to reveal that although the industrial design discipline is keen to be concerned with the relationships between cultures, designers, users and products, the majority of actual research available is based primarily on the physical and material factors of designing a product such as usability, aesthetics, functionality and ergonomics. Industrial designers have been fixated with the functional and physical limitations of products, at the expense of addressing the non-physical characteristics. What are considered metaphysical qualities, such as the pleasurability of the product, the experience and emotion in the interaction with it, the feel of connectedness with the artifact, the contexts of use; the conceived soul or spiritual elements of the artifact and its inter-cultural qualities are rarely considered. It is only recently that such issues along with sustainability have begun to be seen as additional elements of user-centered design.

Design professionals have loosely held onto some fundamental misconceptions about the process of design. Some of these have been as follows. That if the design is suitable for the designer it will be suitable for the end-user; if it is suitable for the average end-user it will be suitable for everybody else; that as it is impossible to cater for everyone due to the inherent differences between individuals and communities and cultures it is known as well as expected that people should adapt themselves to fit the design and not vice versa; that consumers make their purchases based on aesthetics, style and basic functionality so other factors such as ergonomics or cultural aspects do not matter as much and many other designer-orientated assumptions that have been challenged since. By comparing the fundamentally polymorphic nature of culture with design process itself it is possible to better comprehend the two interacting in unison. Like culture is ever fluid, with changeable forms at given times, design itself, in the shape of any given product, can assume numerous different forms and be interpreted in many ways. Context is integral to resolving ambiguity.

The design process itself varies from discipline to discipline within design and more importantly, is not prescriptive in that industrial designers do not simply use practical information on the brief but combine it with their own intuitive judgement in the form of

implicit and tacit knowledge, which is often culturally located. Although design outcomes represent many limitations in structural strength, material properties, or production constraints, the designers' own culture and values as well as their emotions, aesthetical preferences, and various non-physical issues can also be active agents in shaping and molding the end-product. Hofstede (2003, p.9) deems that 'this integration is mostly done unconsciously, considering human psychological and intellectual activity is never culture-devoid.' The effect of culture on the design process could arguably influence the development of the product and in turn have a either a detrimental impact on, or tangible benefit to, product users. The designer's individual cultural capital and values above that of the end-user can preside and cause conflict in the users world-view. One example of this phenomenon being countered is how often mass-produced industrial products are customized and subverted by end-users.

Conventional industrial design culture has shifted and commenced a transformation in both regional and international terms as industrial designers have increasingly begun to realise the necessity for inter-disciplinary discussion and growth, which will inevitably help them find new tools to engage with many of the challenges they face. Engineers have in the past received little exposure to the skills and knowledge of industrial or product designers and those designers in turn received inadequate training in manufacturing requirements and restrictions or interaction design concerns.

> Designers and engineers have always been technology-focused, whilst manufacturers have been largely market-orientated and have therefore favored innovation centered on technological foundations over addressing cultural suitability. (Holt, 1989, p.163)

The canvas of industrial design has been gradually evolving in many ways. Historically, the discipline of industrial design focussed primarily on the balance of form and function in relation to instinctive visual aesthetics. It is only a recent pedagogical development for industrial design programmes in Europe and the west to be steered towards considering 'contexts of use' as foundational to that balance. Designed artefacts have long been in dire need of greater sensitivity in the ways in which they are designed for use to make them more user-centred, context-sensitive and experience-driven.

With such changes in design theory and practice, industrial designers now not only study form and function to improve the connection between product, user and environment, but also consider user contexts and design with novel contexts of use in mind. The most effective designs are those that take physical, cultural and historical contexts of use into consideration, which is critical as every product is part of a larger network. Contemporary industrial design process has since begun to not only include analysis of the problem, exploration of ideas, creation of design solutions in the form of new artefacts that consider functionality and aesthetics, but also an often cursory understanding of the symbolic, socio-cultural and emotional qualities of products that needs to be deepened.

4.6   Enculturation and design

Enculturation is the procedure where an established culture instills its customary norms and values in an individual via repetition, so that the individual can become an accepted member of the community and locate their appropriate role (Kottak, 2007, p.38). Conscious and unconscious mechanisms of enculturation serve to establish a context of boundaries and correctness, as the process of learning itself teaches individuals the ways of life, their realities and cultural beliefs of their people or country. Enculturation is learned via communication. We can learn not only via imagery, environments, people, language, and experiences but often objects, which are representative of distinctive cultures. The specific elements of culture which are learnt are: technological, interactive, economic, ideological, political and world-view (Kottak, 2007, p.53). As enculturation can be conscious or unconscious, it is a process that is in line with both Marxist and hegemonic discourse. As a positive process, enculturation helps unify people. However, even though culture is fluidly changeable core beliefs, values and worldviews often remain the same. Enculturation is occasionally referred to as acculturation; a term utilised to specifically denote exchanges of cultural features with 'other' cultures.

When an individual repeatedly performs an action mediated by a product he/she becomes encultured into the established culture that gave birth to and supports the product, for example thereby making certain norms and values more prevalent. Often an individual engages with enculturation due to a desire to become an accepted member of that particular society, but

at other times it is done without the knowledge of the long-term effects and consequences and 'once people are acculturated, their thoughts, beliefs, and actions become biased, without their conscious awareness' (Norman, 1996). In brief, there exist three modes in which an individual learns of a culture: from directly taught conscious learning of a culture; by consciously watching others and emulating their behavior; or unconsciously learning, via incidences and activities that predominate in their culture. These three styles of enculturation can occur concurrently and continually.

It is evident that designers provide a lot of the raw material that culture is created from and culture plays a significant role in design activity and processes. The assumptions that products are all positive or benign in terms of effects on culture, cultural diversity and identity is a very reductive and simplistic perspective and untenable. Complex culture-related factors are typically problematic for designers but difficulties in culture-related factors need to be increasingly addressed to circumvent substandard design outcomes.

One view is that material products can shape world-views and therefore reinforce subconsciously held cultural prejudices. In this sense it could be argued that the paradigmatic nature of industrial design can restrict new design conceptualisations and the following tacit questions begin to emerge from this pertinent issue, and chapter five of the thesis explores some of these further:

(i)   What are the values that western design is driven by?

(ii)   If cultural identity is a narrated, mythologised phenomenon, how are identities formed and how do designed artefacts and technology contribute to this?

(iii) How may cultural differentiations appear within the structure of modern technology itself?

(iv)   Can technology represent an invisible, latent or inconspicuous interface-divide between cultures and if so, how can we surmount this?

(v)   Can technology distinguish people and social systems not only symbolically but also technically? (Feenberg, 2000, pp.294-315).

(vi)   Which technologies cause cultural uniformity and which accommodate diversity?

(vii)   Are the politically, economically and culturally disenfranchised subconsciously bearing

         the brunt of powerful norms inherent in western design?

4.7   Consumer needs and globalisation

Globalisation can be viewed as a force, which has to be countered due to it resulting in the unification of the consumers' culture via the standardisation of all merchandises. 'Users around the world are no longer willing to simply settle for one-size-fits-all products with standardised designs' (Delaney et al. 2002, pp.46-49). Designers are increasingly being tasked to nurture cultural diversity via localisation of products in the wake of globalisation. 'Universality is no longer meaningful in a post-industrial world' mourning the forfeit of customs, ethnicity and culture (Krippendorff, 2006, p.175).

One exemplar is how globally marketed products by Nokia, Whirlpool and Electrolux have begun to demonstrate sensitivity towards certain cultural specifics, showing a comprehension of the cultural multiplicity of their global users (Ono, 2002). It could be suggested product localisation might be perceived as an offsetting influence in regards to the preservation or stability of nation-wide cultures confronting globalisation coupled with inherently latent capabilities for preserving, maintaining and offering cultural values to the particular artefact. The key objective is to evolve a comprehension of users' behaviours and values, which may then be transformed into feasible, aesthetics, architecture and concepts of design. 'Technology is not a good traveller unless it is culturally calibrated' (Kaplan, 2004, p.xiv). Therefore it is argued products should better factor into design development processes and the anthropological, aesthetical, social and cultural tendencies of their envisioned owners. A postcolonial approach to design in curriculum would enable this.

The meanings that artefacts signify ought to be formed in the course of a dialogue between design, users and culture. Much of the contemporary studies on the correlation between design and culture are American, European and Asian based. Therefore, we need to delve beyond superficial issues and collate detailed knowledge on how social and cultural

attitudes could be converted into industrial design features. Such an approach would enable us to evaluate the way in which distinctive features of any social system - beliefs, values, behaviour, norms - would beneficially unite when designing technological artefacts.

Technological artifacts may be viewed as the manifestation, connection, and fusion of numerous material and immaterial codes, through which designers may convey elements of their own ideals and desires. Cultural values and preferences provide a 'frame of meaning' to objects. Product designers often consciously or subconsciously incorporate their personal encryptions of design values and these encryptions are often consciously or subconsciously deciphered and appreciated by product users.

The literature search brought up very scarce research on how the designer's own culture can have a shaping role in influencing an end product beyond physical concerns of functionality, usability or ergonomics. However there is some research on the idea of what Carlson (1992, p.177) describes as the 'cultural creep'. This is the idea that often designers innately introduce their own values, preferences or other non-physical qualities onto their designs and innovations subconsciously. 'The process of concept generation in product development is, for the most part the designer's mentality or impressions engendered' (Lloyd and Snelders, 2001). Much literature however, bolsters the idea that the *deliberate* integration of cultural knowledge has a substantial function in the effectual design of artifacts bringing tangible benefits to product users but not much investigates the subconscious integration of culture.

In light of this, the primary research undertaken as part of this project explored the effect of the product designer's cultural predilections that have been formed within his or her individual contexts. Findings and their analysis are presented in the report and discussion (see chapter six and seven, sections 6.1, 6.2 and 7.2). Cross-analysis of product design cycles across diverse cultures would perhaps present new modalities of research. The impact of our own conscious, subconscious and unconscious minds on our product outcomes needs to be unraveled. Samuels (2002, p.6) also proposed 'the necessity of redefining industrial design in

order to subsume 'culture' in in his definition of industrial design as a goal for optimizing the lives of individual users.'

Designers being negligent in catering for cultural issues in the product design process is considered as one of the many causes and consequences of globalisation (Mcburnie, and Clutterbuck, 1987, p.18, Bond, 1991, p.3, Nickles, 2002, pp.693-727) outlined how globalisation seeks to deliver greater similarity of perception and lifestyle along with greater uniformity of product culture, whereas in contrast diversity is a natural desire of human beings (Zec, 2002, pp.34-38). Thereby, the cultural diversity would be eliminated in support of uniform artifacts perceived as the given advantage of globally distributed products. The uniformity of global culture, the resemblance in people's thoughts, along with the expense of designing such subtleties of non-western cultures into technological solutions can be perceived as being the foremost reasons propelling the extent and prevalence of mass produced, globally-marketed artifacts.

Investigations undertaken within culture and product design range from different directions such as contexts of use, culturality, usability, sustainability, user-centered design, pleasurability and spiritual elements of artifacts. Nevertheless, scarce research appears to have been performed that seeks to analyse influences of the product designers' own socio-cultural ideals on the design elements of artifacts. To seek the pleasurability of our products we need to stop solely addressing functionality. Ellsworth et al. (2002) surveyed cultural impact on the design of the 'refrigerator' in Europe, Japan and the United States. The conclusions indicated that the identical concept of 'keeping things cool' can be expressed as an range of diversely designed refrigerators, which was accredited to the variances amidst the users' expectancies, desires and predilections in the varying cultures.

4.8   Designers culture and globalisation

Designers do not invent in a void but operate within a broader culture that shapes their design outcomes in both macroscopic and microscopic ways. Therefore, the designers' culture and the way in which this influences their solutions is a commendable research venture. Scant research exists to date that details the cultural milieu and the impact of designers' culture on design outcomes, minority cultures and communities and society as a whole:

> Design is created for and by society. At the heart of this short statement we find the notion that designed objects are not singularly produced but produced simultaneously by all of society. Even though this is something we can understand to be the case the majority of research on designers and design processes looks at the individual as author and not the sociocultural system. (Sparke, 2004, p.31)

Third world users find it difficult to connect psychologically and sometimes physically to many foreign imports arriving from Western countries. For this reason, it is argued by the author of this thesis that misappropriations can be quite common and in some ways psychologically marginalising (see chapter four, section 4.1). Often consumers do adapt, convert or simply make do. Also, the West is being swamped by imports from elsewhere which can be viewed as a reversal of this model at a much smaller intensity. Culture continually evolves via imports, inflicted, or selectively and intentionally appropriated from 'Others' as arguably, designers propose and users dispose.

In the diverse multicultural planet we inhabit, if it's not our own culture or subculture implanting into products it is a foreign culture being imported in. Tangible aspects of culture including product specifications such as materials, form, colour, user demographics etc. are far easier to research than intangible ones.

> Discourse on products can also be abstract and refer to culturally and socially intangible factors such as intangible, ambiguous, idiosyncratic elements' these may be on 'assets such as knowledge, competence, intellectual property, know-how…culture. (Hartley, 2002, p.118)

It is crucial to remember here that the effect of culture might not directly 'embed' into the product except in certain instances. Logically it is imagined culture/s can be a key driver in both collective and singular design processes. Mass-produced, trans-cultural products would not sate the multifaceted, latent needs of the user. Designers' cultural values, preferences,

desires, priorities and decisions can be influenced by their cultural background and in turn determine their approaches, decisions and ultimate design solutions. It is argued that designers from some cultural backgrounds tend to focus on one particular design element/characteristic over another compared to their Eastern counterparts would, for example. The designer's culture influencing user culture is a nexus in cultural knowledge and design studies that needs unpicking.

> However, the radical internationalisation of the economy does not appear to lead to an equally radical diversification of design forms and solutions, but rather to hegemony of international archetypes and dominant cultural phrases disregarding local contexts. (Bruinsma and Kluitenberg, 2003)

Design functions at the core in terms of the critique of globalisation. Yet, the industrial design profession lacks a distinctly concentrated dialogue on ways of reconciling its applied and commercial needs with the globalised socio- cultural obligations, which arise in its standing as the chief supplier of modern day material cultures. Some critics reject globaisation as a form of domination by 'first world' countries over 'third world' ones – distinctions of culture and society become erased by an increasingly homogenous global culture. They argue globalisation is not a simple, unidirectional movement from the powerful to the weak, from the central to the peripheral, because globalism is trans-cultural in the same way imperialism has been.

The first world brought different values, customs, laws, and motivations due to its universalist language which arguably appears to imperialise values onto others. 'Values are created in context, conceptions of what is right or wrong are created, and while this may seem to collapse all morality into relativism, it in fact does not. Rather, it simply makes the job of determining what is right more difficult because moral laws are not handed down.' and 'The proliferation of the English language throughout the world serves to marginalize local languages. This produces a detrimental effect on those cultures as language is fundamental to cultural maintenance and flourishing' (Wahl, 2008).

The different components of cultural hegemony become interwoven with such an influential impact on the global landscape and contribute to the rising cultural homogenisation instigated by the cultural hegemony of the West. An erroneous idea of the east and west as

separate entities gives way to the misguided view that the 'West' is an immaculate, autonomous entity that has single-handedly pioneered all the inventions it lays claim to. Within minority cultures in the West and in the third world in particular, there often exists a self-denigrating stance concerning a persons own culture, coupled with a struggle that's focused on identity, with animosity directed against the prevailing cultural power. 'The effect on the people's of the submissive culture is a type of mystification, that is, they start to uphold and identify with the values of the dominant culture even though to do so is really not in their own interests' (Sardar, 2003, p.40).

We occupy an increasingly designed world, furnished by technologies wherever we turn. With the global, international marketplace over-spilling with every conceivable product category, from food and apparel to automobiles, computers, and industrial robots it appears that barriers that divide us are falling – but are they? We simultaneously face hybridity and heterogeneity versus mass-production and homogeneity – the designer finds him/herself amidst a web of cultural controversies actively contributing to and shaping machines, culture, power and economy.

4.9   Critical Reflection

People who were once geographically distanced are now becoming intricately connected as the vacuum that existed between us is increasingly devoured by communications networks, cars, trains, airplanes and more. With the rise of multicultural communities a variety of cultural discourses and forms have emerged, that ideally ought to be mirrored through a diversity of product design outcomes and/or approaches, yet is this actually occurring, and how we can tackle such novel challenges? How can designers stimulate new ways of thinking that will meet the challenges of designing for trans-cultural technologies? Design functions at the centre of the critique of globalisation. It has become increasingly evident that the design profession needs a lucidly honed discourse on ways in which to resolve its real-world and industrial needs with its socio-cultural accountabilities, which arise in its position as principal

contributor of material cultures. Designers are increasingly moving towards being political activists and not just simply reliable 'problem solvers'.

The reality that technology affects everyone's lives either directly or indirectly is seldom acknowledged and design itself has a critical responsibility in making technology accessible across the board. Widening accessibility to difference and the *Other* has the potential to foster a greater cohesion between varying cultures. The international design community's understanding of our responsibilities in contemporary multicultural society needs to be highlighted and developed significantly into a clearer understanding of the social influence of design in the philosophical sense is required in order to create a new theoretical framework and methodological tool for industrial design. Papanek claims that 'design has become the most powerful tool with which man and woman shapes his and her tools and environments; and, by extension, society and him/herself.' He also adds 'design must become an innovative, highly creative, cross-disciplinary tool responsive to the true needs of men and women' (Papanek, 1971, p.9).

Chapter Five

Cultural hegemony in industrial design

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Cultural hegemony in industrial design

5.1   Design, cultural hegemony and the political landscape

This section extends the feminist argument to embark on a postcolonial argument, which analyses culturally hegemonic ideas in product design. It explores how products designed in the west for global markets can sometimes embody and reinforce culturally hegemonic assumptions related to race and gender hierarchies. By analysing the design of global, trans-cultural products within the design industry we can define design as practice rooted in culture, and often, cultural myths. From previous sections we have ascertained that technology and culture are not two independent domains but in effect shape one another. Therefore we have to recognise their factual and inescapable entanglement and reciprocal impact.

As the previous chapters established, culture is not something that is absolute; but relative, meaning it only exists in relations. Lived experience itself is a seamless labyrinth and design is a cultural, humanistic practice with various overlapping interdisciplinary fields and societal problems to address. Substantial untapped potential exists for design to provide greater social, cultural, political and economic benefits to global multicultural societies.   Both postcolonial theory and design theory are inherently multidisciplinary, presenting academic paradigms that incorporate theories from several disciplines. This is advantageous when a methodology from one discipline is falls short in providing a holistic perspective on a specific issue. For instance, it is popularly understood that 'cultural values exert an influential role on almost all aspects of human life. This is broadly corroborated in much literature' (Hofstede, 2003, p.10), so the notion logically follows that industrial design - also an aspect of human life - is analogously not immune from such permeating cultural influences. However, this hasn't hitherto been extensively scrutinised in industrial design studies. This may be due to the fact that product designers don't appear to be trained to identify nor surmount their respective cultural constraints in favour of integrating those of the users or user groups, and this is an

intriguing notion indeed. The research data collected within this thesis evidences and discusses this point; as it is integral to the thesis subject; and, a report in chapter six and discussion of findings in chapter seven summarises and substantiates this claim.

The thesis claims that design is inextricably bound up by dominant cultural idioms. We can no longer ignore cultural values and their impact on design in light of this reality. Almost every product is subjected to two variable design processes: the designers' personal methods of designing as well as the broader contextual design elements in culture, so culture is integral to product design. Neither design nor aesthetics (intuition, cognition), nor socio-cultural exchange (and politics) operates in a vacuum but is inter-connected with a wide range of variables. Viewed from a more nuanced cultural theorist stance it is more a complex intertwined activity dealing with deep multifaceted relationships between products, people and environment or culture. The necessity of designing with the users culture in mind, by at the very least investing market research into the design of a product, has been broadly advocated in design research with user-centred design principles but often these are superficially addressed.

It is increasingly important for design practitioners and educators to better address social and cultural contexts of users and designers combined with other forms of analysis on the individuals who use it and their attitudes, routines, dispositions, roles fit, mutability, age, gender, values, socio-cultural norms and backgrounds. The basic assumption by many design practitioners and producers is that human behaviour is too often an adaptive fit to external environments and products (see chapter four, section 4.5). With products that pose a hegemonic divide, immaterial references do not always become tangibly embedded into an artifact; though, but can be entrenched in an immaterial sense as they have influenced the general design evolution of the artifact. The naive assumption that any western mass-produced product would fit within any given context around the globe, regardless of local specific conditions and requirements needs to be challenged.

One of the biggest threats posed by modernity has been the alleged homogenisation of human cultures. Dissemination of and access to varying forms of cultural knowledge is often done through the proliferation of mass-produced globally distributed domestic products

embodying a lack of choice and diversification. Due to architects and designers creating artefacts and habitats with the ideals of 'progress' or 'development' in mind and western socio-economical ideology, the same western industrial production is set up to believe they are *apt* due to their functionally satisfying qualities and cultural biases. In some pro-globalisation biased views, local products are not fit for use and should no longer be in currency and local craft production is relegated to mere folkloric manifestations.

Gramsci specifically emphasised the responsibility of scholars in the construction of hegemony. The result being one of the most significant but abstract conceptions in current social theory (Femia, 1981). For Gramsci, hegemony is the dominance of one group or class in society over others, achieved not via force but more through the accord of other groups. In classical Gramscian terms hegemony is accomplished through institutions, which we would associate with 'civil society' such as political and educational institutions. 'Cultural hegemony' specifically, is when one culture holds a preeminent sway over another culture or multiple cultures. It stands for dominance, ascendancy and leadership. Evidentially the West, and the United States specifically, have a great effect on a significantly large part of the globe. The expansion of multinationals throughout the world has altered the manner that labor and capital is redeployed radically and multi-nationals have a virtually omnipresent existence, which influences the richness and diversity of cultures globally.

Hegemony is positioned in opposition to ideological vehicles of choice and diversification. Categories utilised to classify particular cultural knowledge and practices can be seen as inferior or superior. History describes the European empire to have dominance over more than 85% of the world by the time of the First World War, having consolidated its power over several centuries. The sheer expanse and period of the European empire and its dissolution post Second World War has led to prevalent interest in postcolonial literature and criticism in contemporary times. 'The political and cultural mono-centrism of the colonial enterprise was a natural outcome of the philosophical traditions of Europe and the systems of representation that this privileged' (Ashcroft, 1989, p.11).

Design appears to be the remit and discourse of dominant groups. Femia emphasised the need to study cultural values and ethics in the analysis of hegemony (Femia, 1981, p.23) as hegemony indicates domination, leadership and ascendancy. 'Hegemony is related to the issues of ideology entirely. In other words, hegemony itself is ideology' (Cheng, 2001). Laclau argued how every perspective of hegemony is grounded on the basis of an unsteady equilibrium and extended the arena of hegemony from politics, society and culture to minority groups, women, gays and lesbians and those underprivileged (Laclau and Mouffe, 1985, p.164). Bocock discusses how the implementation of hegemony has to be coordinated with rational understanding. Thus, uniting users from diverse backgrounds and moreover the consensus of morals and emotions from consumers must not be achieved by force (Bocock, 1986, p.86).

Discussing *The Thing Things* Heidegger asserts we can understand technology by analysing it in terms of concrete artefacts that play a role in the relation between humans and their environment; analysing the intention of its creators; analysing the cultural backdrop at inception and development and analysing its intended user, context or cultural setting (Harman, 2007, p.177). We need to construct a social design theory and practice in this world of designed objects, interfaces and interactions between designers and their product-users.

The responses from the design community to address diverse needs have been inconsistent at best. As such this is an attempt to refocus the debate onto multifarious needs and human issues bound up in growing multicultural environments and address inadequate design standards. Interdisciplinary enquiries attempt to foster awareness for designing for the majority providing economic stability, empowerment, and sustainability and trying to understand the effects of our mass-produced products on others. As designers become increasingly aware of the grammar of form and colour; signs and symbols, and human factors almost everything can be argued as political. Technology can lead to cultural uniformity or diversity as when attitudes become form, conscious and subconscious ideas can become engendered as products. Philosophical question about technology are as always concerns about ourselves. Globalisation is a process involving global transfers of technology, information and people; their migrations, diasporas and displacements. We live in a highly textured technological society where the

social circulation of material objects can shape meaning and communication: 'The gramophone industry was transnational in character from inception' (Gitelman, 2008, p.16).

Globally-marketed domestic products often deny inter-culturality and can unwittingly reassert hegemonical society and its reigning structures. If hegemony is accepted as being institutionalised ideology, from a postcolonial stance, design can also be understood as a continuing conflict between hegemonic and counter-hegemonic powers for cultural, political and economic domination of the market. The consideration of diverse users' particular cultural requirements, spiritual necessities need to be considered. Gunther Anders (1987, p.37) highlighted the homogenisation of the material environment created by mass production. How can we evade this and technological universalism, yet identify technologies that culturally disadvantage particular social groups?

> Understanding cultural human factors helps product-development teams avoid creation of products, environments, software, and systems that conflict with values and patterns of behavior. Cultural influences on human perception and behavior are often difficult to grasp, yet such understanding is essential when developing products for new markets or when creating fundamentally new products that current markets will use in entirely new ways. (The Institute of Design, 2007)

> Technology fundamentally involves applying knowledge, materials, resources, tools, and information in designing and producing products or artefacts, structures and systems. (Stein, Docherty and Hannam, 2003, pp.145-170)

The question is, how do we select which forms of knowledge to apply to the design process? A designer's approach to technology will often encompass ergonomic, aesthetic and environmental concerns so it could be argued that design is partially accountable for the formation of identities and directing cultural transformation or funnelling knowledge. As a remedy, design can be undertaken in an increasingly participatory manner by proposing flexibility between designers, users and technology, and distributing control, rather than proposing technology blindly controls users in its traditional hierarchical practice. Norgaard (1995, p.57) interestingly states 'control [over technology] can only be exercised by each society developing a collective sense of self, defining its objectives, and thereby determining what progress is.'

Buchanan and Margolin (2002, p.xii) remind us how 'design exists as the central feature of culture and everyday life in many parts of the world'. Nevertheless, a lack of emphasis on and publicity of cultural artefacts will have ensued in a loss of designs tacit knowledge via the 'sense of inferiority' (1995, p.xii). As such, implicit cultural imperialism as indicated above continues to assert control over the development of both design and technology. It is suggested that design in most developing; along with a few industrialised countries; is mostly connected with craft making if contemplated at all.

Often design education appears to promote cultural diversity on a superficial level but continues to initiate and sustain dualistic notions of tradition and modernity bolstering such ideas via approaches that often mask the complexity of the issues or are ill conceived altogether. Designers make explicit and implicit judgements on the ways to utilise technological products and if, as Deforge contends technology has historically circumvented ethical issues, it logically ensues that designers have too (1995).

Walsh, et al (1992, p.49) highlight how in the past it was 'very easy to ignore the wider consequences of design'. This is similarly applicable to both the positive and adverse properties of design. Designers have long disregarded the environmental impact of the disposable society and similarly disregarded the subsequent potential within design to pioneer socially and globally ethical and responsible change. In order to achieve such goals designers need to assume an amount of responsibility and surpass their own bespoke illusions to pursue the visions of morally aware creators and end-users. In doing so, the tacit knowledge that is 'regarded as an essential component of the skills and quality of designers' (Walsh et al. 1992, p.49) will not be devalued.

Technology and the political landscape

There are many events occurring around the world, which are having profound implications on us as designers. Design and designers have always had a hand in shaping each wave of industrial, economic and social change (Kimbrough, 2006). We need to reappraise the expectations and needs of a twenty-first century society. We are presently more than ever

before a part of a networked, global and increasingly multicultural economy.

> As a call to responsibility of designers and visual communicators against the back-drop of the unfolding post 9/11 and proto- 'War on Terror' cultural landscape. The question raised was how to articulate a critical position for visual design without falling prone to the universalist / dogmatist fallacies of the modernist movement. (Bruinsma and Kluitenberg, 2003)

Accordingly, we need to ask pertinent questions such as what are the social, cultural and political responsibilities of design(ers) within their constituent disciplines? We need to re-evaluate the value-proposition of design inside the framework of a globally multicultural and economic network given the clearly intentional nature of the act of design; as behind every design there is presumably an intention. By questioning the social and political responsibilities of design practice we maximise the influence of design and enrich our input to the global economy on volatile issues surrounding design's role and can thereby only begin to contribute to the groundbreaking works of many of the most revolutionary design intellectuals of our era such as Margolin and Norman.

Established designers and writers such as Margolin and Norman are actively developing the future potential of technology and design research in the 21st century and attempt to engage with the juncture between culture and the various practices and spheres in which terms it is commonly described, including society, technology and culture.

> Culture is no longer, if it ever was, singular. It denotes a shifting multiplicity of signifying practices and value systems that provide a potentially infinite resource of academic critique, investigation and ethnographic or market research into cultural difference, cultural autonomy, cultural emancipation and the cultural aspects of power. (Dillon and Wilson, 2010)

It is clear that as responsible designers 'we have to break through our preconceived notion of self-limitation and connect to a new awareness; a global awareness that examines the confluence of ideas and thinking both internal and external of our design profession.' We can achieve this by developing a 'unique vision in a broader global community' as we keep evolving our potential as designers (Bruinsma and Kluitenberg, 2003).

Design is synonymous with change just as communities change, migrate and disperse. Issues

such as 'global economy, in- and out-sourcing and geo-political unrest' are critical (Kimbrough, 2006). 'The de-humanisation being undertaken via mass-production within our society all grossly effects our profession. As the gate-keepers of technology production and the purveyors of modern culture we need to address these issues' (Kimbrough, 2006) to find a deeper cultural underpinning to our design theories. 'A global flattening of the product development process and its supply chain questions the value proposition for design throughout the next decade. As world economies expand, will we be considering expanding cultural differences or shrinking ones?' (Kimbrough, 2006). We need to begin thinking increasingly about exposing questions and unrealised opportunities and experiences, which transpire in the connection between types of normativity, forms of subjectivity, and fields of knowledge in varying locations and settings across the globe.

> As design is one of the most vital and prolific areas of contemporary cultural production, by its nature it is located in the heart of social, cultural and economic life. The act of designing is therefore always and necessarily a political act, even so (or even more so) when this political dimension is denied by many designers – in fact by the better part of the trade – and ignored by the general public. (Bruinsma and Kluitenberg, 2003)

This issue follows on from the fact that every Art form has a political dimension, therefore similarly every design form also does so and design practitioners, scholars, or the design community as a whole do not always acknowledge this making it problematic.

By examining how products designed in the west for global markets can embody and reinforce culturally hegemonic assumptions relating to race and gender hierarchies, we can begin to develop our understanding of the design process that inexorably leads to technology development. The thesis argues that cultural preferences, biases, inferences, prejudices, sites of conflict, patterns of inequality and sociological assumptions can become imbedded within our assorted products of industry. Langdon Winner published an article entitled 'Do artifacts have politics?' (Winner, 1986, pp.19-39) within which he explored the concept of how artifacts such as machines, structures and other systems that are the result of human innovation can quite often embody certain forms of power and authority thus encompassing political properties. Ideas of technological determinism have historically often been linked with political motives. With this

in mind, let us consider the following. Can technology exist prior to differences in class and gender? Is it neutral and offered to everyone equally? Cynthia Cockburn argues the contrary within gender and technology studies, arguing how technology can be symbolic of power and the ability of controlling the environment (1985).

Contemporary historians advocate propositions of technology being a consequence of social processes; relative and susceptible to changes in wider cultural contexts. Various writers such as Donald Norman and Victor Margolin and have investigated these ideas in depth by scrutinising technology both in general as well as within specific cultural contexts. Social relationships are viewed as often wielding substantial influences on technological development. Emerging from this it is argued that industrialised Western communities produce technologies within their respective cultural patterns. A. Reddy described how, 'Science and technology carry the genetic codes of communities where they have been produced' (Reddy, 1983, p.105). A significant amount of technology is viewed as the products of affluent, developed countries. The design and development of many of these were driven by political motives, or example, the development of weapons by the military and computers like the Enigma Machine to decipher encrypted messages during World War Two. Once transferred into developing countries many technologies can appear as unfamiliar entities that have to be accommodated into the existing cultural framework.

A number of traditional societies import technology and attempt to weave it into their cultural fabric. As technology has not been produced and developed in isolation but within social contexts, it is easily contended that it, in turn, has a bearing on cultural values and the behaviour of communities. It can simultaneously directly and indirectly influences cultural values and traditions. It can especially influence endogenous cultures: jointly on the micro level – via the individual and the macro level – through the community.

For example, in South Korea phones are now seen as formidable political weapons though, in fact they are used to boost democracy. In the presidential elections in 2002, the winning candidate, Roh Moo-hyun, had little need for mass rallies or traditional campaign

tactics. Instead he sent text messages to almost 800,000 people urging them to vote. Much of the campaigning for and discussion about the elections were held on-line. In this land of 'e-politics', phones and the communication technologies they support are transforming the system as a global phenomenon. South Koreans are also avid Internet users to the extent that many of their web portals boast some of the highest traffic ratings in the world, although their content is entirely in Korean. It also has one of the world's fastest mobile phone networks. The race towards technological ubiquity is being played out globally and is pre-empting a challenging future in relation to the history's technological hegemony of the West.

Past the established discourse concerning the design disciplines social liability, the growth of multiculturalism in our civilisations and the hegemony of globalisation have constructed a drastically more problematic and complex setting for this political facet of design to unfold. Other than some isolated deliberation found in exclusive parts of the specialised design community there exists a right-wing stigmatisation of political correctness and the standing of design relative to the array of pressing political and social questions that pervade our information based societies, which do not yet invigorate the critical discourse about these issues. These issues need to be an on-going dialogue in design circles. A significant frame of sustainable and practical problem-solving stratagems tackling our political and socio-cultural responsibilities as designers and that of the design communities hasn't, as yet, materialised. Industrial theorists and practitioners need to direct a repositioning of the design profession in relation to the complicated socio-cultural frameworks it's situated within and the urgency of this debate should no longer be repudiated.

5.2   Design, values and cultural assumptions

Based on the findings of the literature search up to now; and the theory that the values of a society not only affect but are often influenced by technological innovations; it is not difficult to entertain the idea that consumers in developing nations who import technological artifacts produced and developed in Western countries can consequently have cultural codes of difference imposed on them without being aware of this on an entirely cognizant level. Also, certain patterns of behaviour associated primarily with the Western tradition and entrenched within a collection of Western discourses can take form in the productions of that society. For example, it can be contended that many western designers possess a relatively secular vision on technology use and this approach can consequently be embodied in the artifacts they produce, which then marginalise users from an alternatively more spiritually or religiously oriented mindset.

Logically cultural differences between technology providers and receivers mean difficulties can surface when technology is transferred across cultural boundaries. A logical progression of this issue would lead us to presume that cultural barriers arising from the aesthetic and usability features of a given technology may be reinforced and imposed via technology, an effect and outcome that isn't easily discernable with a cursory analysis. For example certain hierarchical structures, that are predominant within Western cultures, may be reinforced:

> The adoption of a given technical system brings with it conditions for human relationships that have a distinctive political cast – for example, centralized or decentralized, egalitarian or in-egalitarian, repressive or liberating. (Mackenzie and Wajcman, 1985, p.31)

Consequently, the realities and expectancies of any given society can be influenced considerably when a significant new technology is implemented. Any technological interface can be viewed as a structure of art, a window on culture and history. If the process by which a particular technology is utilised is partially shaped by the designer that participated in designing it, than it is reasonable to assume that it has the prospective to transmit the genetic codes of the designer's social characteristics which has been sculpted by the social, political and economical sphere of his or her specific environment. When a particular technology begins its proliferation

into a different cultural setting, the receiving cultural framework often defines the manner and pace in which it is adopted and the way in which it is used. Therefore, cultural patterns can appear to influence technology use.

In design history and theory, the four social and cultural considerations, namely material, design and technology, socio-cultural practice and emotional relationship were converted into product qualities namely utility, mediation and knowledge, gender and meaning and aesthetics in an attempt to develop user experience (Moalasi, 2010). Yang argues that 'Contemporary design should not only involve technical standards and functional needs but it should convey the philosophy, ideology and complicated cultural phenomena of the society' (Yang, 2003). This includes consumer behaviour, arrangements of working and living, collective culture, interests, views, combined with products' connections to design and the variant approaches that users might employ or engage with it through. Designs conceived through this process where social and cultural issues could be conducted iteratively and converted into functional qualities often denote, mediate, and produce knowledge, and more efficient aesthetic features.

Scientific disciplines arrive at theories often by isolating and analysing phenomena often irrespective of context and situation. However, it could be argued that design theories are dissimilar in that they often problem frame and analyse phenomenon more holistically, which in turn then makes it difficult to liberate them from preconceived notions. Design culture is an area discussed significantly by Nelson and Stolerman as 'a method of thinking and being, which allows for intentional change' (Nelson and Stolerman, 2005, p.2). We have at our disposal, qualitative research methodologies in design disciplinarity that help comprehend the contexts around product utility by borrowing methods and potentially, approaches advocated by disciplines such as social science, postcolonial theory and anthropology to evaluate key frameworks and theories in design thinking. We can do this by examining the confluence of ideas and thinking both within and outside of our design profession. This may evince

multicultural goals in terms of a comparative analysis of contemporary approaches and help extend our limited knowledge of design culture.

Heidegger's writings on technology exploring the technological condition tackle some of the issues that emerged, as technology became a fundamental part of our environment. Many of our presumptions concerning language, society and the material world we reside in are being put into question. We must position technology in the familiar context of aesthetic, political, engineering, and ethical concerns with metaphysical, and epistemological issues taking more of a centre stage and to build on our foundation of contemporary writings on the philosophy of technology.

> Productivist discourse is a story in which scientific and technological knowledge promise a happy ending to the problems of poverty, disease, and tyranny. The affluent West holds up itself and its history as both the example and the way forward. (Smith, 1998, p.34)

The discussion of productivism sits in a complex hegemonic system in which exists: 'the everyday material actuality of industrialisation and the concomitant metaphysical faith in its ability to improve the quality of human life' (Smith, 1998, p.5). Capitalist technology education on mass-production, devoid of socio-cultural issues, fosters terminal materialism. This is because the attention to an artefact's meaning is limited to concerns of transient market approval along with deliberate user manipulation. The concept of materialism that is terminal can be analogous with a worldview, which attempts to maximise every individuals assumed determination to mindlessly consume products.

The mechanism of adaptation plays an integral part in human psychology and our relationship to products; we are often inclined to get used to things and then take them for granted (Schwartz, 2004, p. 184). This in turn clarifies how in 1973, a 13 percent of Americans viewed air-conditioned cars as essential, then thirty years later, 41 percent believed so (Schwartz, 2004, p.169). Such reasonably swift 'trend' changes, within the cultural connotations of a technological invention, can have intense knock-on influences on society. History remains inundated by similar examples. Another form or verification of cultural

adaptation is when we consider the real-world example of the recent innovation in Korea by electronics establishments who have developed mobile phone software technology that alerts the possessor at prayer times, holds their calls for twenty minutes, and with a built in compass with GPS, orientates them towards Quibla, the Islamic direction of worship. It thereby becomes apparent how both cultural and religious values can shape the way technology is used and technology in turn can also help reinforce and enable religious beliefs in a reciprocal manner.

Compounding these issues are unsophisticated, inept design processes, which encrypt certain values that perpetuate accelerated waste and consumption, instead of ecological product literateness. Socio-environmental fairness considerations are almost entirely detached from our product cognisance. As educators of Industrial design we have an ethical and moral obligation to encourage budding future designers relink such matters to product design, product use, manufacture and life cycle.   We need to persistently re-signify the product and construct emotional attachment (Schor, 2004, p.172) by considering where ethical product design enters the picture when confronting rudimentary products through culturally aware product critiques. Such a method of analysis would confront ethical, social, and ecological dimensions of technology combined with the principles that guide design process.

The critics of technology ask what this means with its embedded values (interpretation and analysis), and the technology's worth or judgment (Petrina, 1998, pp.103-138) but the author argues it has become progressively indefensible for design education to disregard vital moral and ethical challenges or issues linked to our superficial desire to pollute and consume the resources of the planet in magnitudes larger than the inhabitants of the unindustrialised third world.   We need to circumvent the commonplace, negligent artefacts of technology and characterise and ascertain for ourselves the nature of the crude product solutions, which ubiquitously overspill from our retail outlets.   Designers and design students who are educationally empowered in these debates are unlikely to neither condone nor contribute to an environmentally destructive, substandard product philosophy.   Unless current and future designers seek to better comprehend crude product contributors to the false consciousness we will remain locked into this cycle.

Training industrial and product design educators to critically evaluate and confront the product paradigm will neither be simple, nor straightforward. Challenging world-views and value systems that have infused and replicated elements of the product paradigm make it even more problematic to interrogate its basic doctrines. Gladwell (2000, pp.5-18) proposed that ideas, products, messages, and behaviours spread just like viruses do: as cultural memes.

Therefore, we need to place a critical spotlight on the repercussions of the product paradigm to civic and global responsibility when we ponder the nature of the product form and its cultural impact, allowing it to productively inform the way in which we teach technology in design schools. Mitcham observation that: 'technology, or the making and using of artefacts, is a largely unthinking activity' which 'emerges from unattended to ideas and motives' to produce 'un-reflected-upon objects', is increasingly indefensible in the current global, multicultural climate (Mitcham, 1994, p.18).

More attention needs to be given to the tacit knowledge of the icon. As Donald Norman discusses in *The Invisible Computer*, tacit knowledge has a key role to play in product usability (Norman, 1999). Schon's research between the late 1980's to early 1900's explored theories of the reflective practitioner and his discussions on categorical rigour is also renowned in design circles. His displacement of ideas explored the ways in which concepts are examined via the use of categories and advanced the idea that these categories are not often themselves examined with the same rigour (Schön, 1985, p.27). Nisbett's work exemplifies a scientific endeavor to validate quite established discourse theory though in an effective sociological, ethno-methodological frame i.e. not simply discussed in literary circles but applied in daily life.

When we explore the ideas surrounding cultural assumptions, worldviews, and paradigms and thinking in a western or eastern tradition we find research on reasoning, which compares Westerners with East Asians:

> The argument has long been made that Westerners reason analytically, that is, they focus on the object (whether physical or social) and its attributes, use its attributes to categorise it and apply rules based on the categories to predict and explain its behaviour. Formal logic plays a role in reasoning, category construction and rule justification. In contrast, East Asians reason holistically - that is, they focus on the object in its surrounding field, there is little concern with categories or universal rules and behaviour is explained on the basis of the forces presumed to be operative for the

individual case at a particular time. Formal logic is not much used and instead a variety of dialectic reasoning types are common, including synthesis, transcendence and convergence. (Nisbett, 2004, p.72)

How these ideas affect design needs further investigation as many products' user interface embody linear, hierarchical usability factors, for example, the method of input historically being chronologic or singular numbers as a security passcode on an iphone as opposed to the latest more fluid feature of drawing a sign or symbol on the screen to unlock it.

Nisbett's study on how Asians and Westerners *think* differently discovered that:

> Westerners focus their attention on objects, often fail to see co-variations in the stimulus field, typically (and often mistakenly) explain objects' behavior with respect to their presumed dispositions. They also make substantial use of categories in inductive inference, learn categories readily, and reason using (and sometimes misusing) the rules of formal logic. East Asians focus their attention on the field, are sensitive to co-variation, and are likely to explain objects' behaviour with respect to situations or conditions in the stimulus field. They make relatively little use of categories for induction and find category learning to be relatively difficult and often reason using (and sometimes misusing) a variety of dialectic strategies. (Nisbett, 2004, p.75)

On this basis it becomes distinctly clear that products designed by designers from one cultural background would not always necessarily be an adept cultural 'fit' for another even if market research were conducted. There are some subtleties that would not be picked up by what is usually a superficial undertaking of research and development phase, unless a suitable postcolonial method or framework existed to guide the process in more depth. This thesis spearheads the case for this requisite.

Nisbett stipulates how Westerners 'focus on the object' (whether physical or social) and its attributes, use its attributes to categorize it and apply rules based on the categories to predict and explain its behaviour. Formal logic plays a role in reasoning, category construction and rule justification. In comparison, East Asian traditions of reasoning tend to be more holistic: 'focus[ing] on the object in its surrounding field, there is little concern with categories or universal rules and behavior is explained on the basis of the forces presumed to be operative for the individual case at a particular time' (Nisbett, 2004, p.86). These examples illustrate how cultural differences can make various technology users perceive their environment and reality

differently to the majority, therefore coming up against cultural demarcations in the usability and aesthetic values of western products.

In terms of design's positioning and ethical context it is evident that as designers we need to ask ourselves that although we may be 'conscious' of design, how 'aware' are we of its wider implications? The role of design theory in design research is integral and the purpose of design research is that it should inform design practice. High quality, outstanding research is critical for the development and maintenance of a globally robust design ethic and culture. Any such research into design should be useful knowledge for design practitioners in the real world. Much debate has been undertaken about the research-practice gap but it falls upon contemporary design researchers to attempt to close this gap by undertaking relevant scholarly work grounded in the practitioners lived reality of everyday life not set in intellectual ivory towers. 'The professional domain of design practice and the interdisciplinary field of design studies, presents designers with a challenging new context for professional practice' (Doordan, 2003, pp.3-8).

Design researchers are only beginning to formulate frameworks around how complexity and context impacts design outcomes by interrogating the values of design and reshaping methods, approaches and theories of product utilisation. The design discipline and community needs to continue developing its own domain-independent approaches, concentrating on 'the 'designerly' ways of knowing, thinking, and acting'; analysis of the processes and practices of design; and analysis of the structure and form of technological products as an embodiment of design knowledge (Löwgren and Stolterman, 1999, pp.13-20).

A number of design theories have emerged to aid in comprehending how users react and interact with technological artefacts. These have been informed by research methods and frameworks in disciplines such as design, philosophy, anthropology, cognitive science, and social science. The primary addressees for the research in this field are experts who undertake work in areas of cognitive psychology, ergonomics, new human factors and user-centered design. Human computer interaction originated with the concept of a 'user' and theorists developed core concepts that developed the discipline namely, 'usability', 'user-experience', 'user-centered design', 'user-empowerment', and 'usefulness' (Norman and Draper, 1986,

pp.12-44; Thomas and Kellogg, 1989, pp.78-86; Cooper and Bowers, 1995). Theory itself in a number of disciplines can be located along a wide continuum ranging from mature down to nascent (Edmondson and Macmanus, 2007, pp.1155-1179).

Although many design theories remain in the nascent phase they are very useful in helping understand complex issues. For example cognitive science includes variables such as memory, attention regulators, tacit knowledge personality variances, awareness and environmental influences, all of which can be cross-disciplinarily evaluated with design process to aid in designing efficient products and interfaces. This thesis posits that an additional layer could be added to this by conveying a postcolonial lens to design issues as an approach and subject in itself.

As artefacts are expressions and indicators of society and culture, the research argues that conceptual paradigms exist within these and influence our decisions without us being aware of them. Cultural assumptions may be present in the other documented forces or restrictions acting on a product such as desire, marketing etc., thereby subliminally reinforced repeatedly.

As the previous chapter and this chapter explores the nature of the contemporary product to analyse the vital role design plays in propagating the product paradigm, [22] the approach adopted cultivates conviction and knowledge to confront dominant western culture and to decolonise design education from contemporary preponderate western values whilst acknowledging the indigenous opinions in the creation of our postcolonial society.

It has long been argued that design innovations can manipulate subconscious thought. For example, Latour (1991, p.104) wrote how bulky hotel key rings were designed deliberately cumbersome to subconsciously force guests to return them to the desk, cumbersome. In this way artefacts can be consciously designed to pre-empt subconscious actions and thinking in the user.

A critical shifting of design theory and professional practices would require cross-disciplinary dialogue to facilitate a mapping of unchartered territory. This needs to be coupled

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[22] The term 'product paradigm' refers to a number of interrelated, implicit and explicit beliefs and assumptions regarding the nature of postmodern technological product culture that are increasingly problematic for technological education.

with critical dialogue debating the positioning of design and design practitioners within it whilst identifying and inspiring applied approaches and strategic theories, which address modern, socio-cultural and political design frameworks. Additionally, it is perceived that critical and creative campaigning for social progress could further ameliorate the crisis industrial design is currently facing in the advent of an increasingly homogenised global culture perpetuated by mass-produced, soulless products.

5.3   The designers' cultural capital

Cultural artefacts mean different things to different social groups. The term 'Culture Medium' refers to the concept that both individuals and groups embody cultural data in their make-up. Designers use intuition and implicit judgements as well as their own reserve of knowledge on previous design experiences; their personal ethical values and natural human inclination to pattern seek and solve problems. Considerations like these help enable the development of our design knowledge base and competency on style and aesthetic in respect to cultural context.

As designers we need to consider the ebbs and flows of socio-cultural landscapes to best understand how to view technological artefacts as instigators for change and acknowledge how they can have an influence on users, encouraging certain activities and mind-sets and discouraging others. The designers personal history, lifestyle, age, gender, cultural background, values, beliefs, role can play a part in their design decisions.   'Designers' own cultural values influence their design values'. Designers from a particular background often tend to focus on a certain facet of a product's design such as qualities that are perceived as significant in terms of their own cultural values. Press and Cooper (2003, p.80) assert that 'the works of designers are influenced by their own culture'. Values appear to be focused upon other elements of design features and it is argued that 'Cultural values form part of the causes of people's behavior, deeds and words' (Hofstede, 2003, p.6).

Throughout the initial stages of the design process designers have the challenging option to freely exert their innovative, divergent and inventive skills. The design activity usually becomes increasingly convergent towards the intermediate and end stages, thereby constraining designers to gear towards the physical limitations of engineering, production and marketing. Hofstede's model (2003, p.112) can easily be used as a method for examining designers' attitudes. This suggests that whatever stereotypical view of a potential user that is conjured up in the designers' cultural consciousness is initially all he/she has to go by.

Design research needs to further investigate both the specific function of designers in the creation and innovation of technological artifacts and how they integrate their own cultural paradigms to address design tasks. A combination of both quantitative and qualitative practices can help to illustrate an increasingly insightful image of design-and-culture relationships. Such a strategy should accelerate arrival at the ample knowledge needed to model such effects.

Press and Cooper (2003, p.58) assert that in order for a technological solution to be efficient, design practitioners require an in depth knowledge of the setting in which the said solution is intended to be utilised. This is reflected in the primary research undertaken for this project as indicated (see Chapter Six and discussion of findings in Chapter Seven). It is primarily within the initial phases of concept creation, that designers tend to depend on their own inherent creative skills and instinctual knowledge. In later stages of the design process, external physical and manufacturing limitations are applied, which then results in streamlining the product further.

In one of Hofstede's studies, professional industrial designers from two countries undertook design experiments wherein industrial design practitioners addressed an identical design brief but arrived at solutions that were completely contrary but founded on results from the respective countries. The study was grounded on the premise that designers' own cultural values can influence the development process of the technological concept throughout the initial phases of design. It is considered in discussions with designers and student designers that this influence is unconscious or largely subconscious (Hofstede, 1984, p.21).

In the mid 1980's the practice of contextual design was formulated to try and make better products suited to context. Donald Schön outlined the more intuitive and constructionist approach towards problem solving that occurs in design practices that are unlike approaches in the sciences (Schön, 1985). In 1992, Richard Buchanan published an article in the renowned journal *Design Issues* titled 'Wicked Problems in Design Thinking' in which he discussed wicked problems in design, which are unconstrained as opposed to tame problems, which are trivial and easily recognised and resolved rationally, practically, and efficiently utilising linear problem solving methods (Buchanan, 2002, pp.5-21). Designers refer to their own cultural

capital to address such 'wicked design problems' and this is the area of interest and exploration for this thesis. He also interestingly presented a conceptual tool he named the 'doctrine of placements'. If we were to accept Buchanan's placements as being some kind of special 'designer schema' locating the conceptual position from which industrial designers work, and accept too that they 'have boundaries to shape and constrain meaning, but are not rigidly fixed and determinate' and are 'sources of new ideas and possibilities when applied to problems in concrete circumstances' (Buchanan, 2002, p.10) then however unfixed any placement may be it would appear as if something in analogy rather like a Spirograph. Designers ideas appear to orbit, some invisible, unspoken locus and industrial design is thereby a critical vocabulary contingent relative to a network of determining vectors underpinned by traditions of reasoning.

Due to the differences between the cultural preferences of designers and users from separate cultures, how users and cultures respond to the products designers produce is not quite understood. Meanings and functions imbued in products by the designer originating from the cultural scope of the values of the societies in which the designer was native and raised may not be consciously recognised or acknowledged by users. Despite this issue, it is clear however, that with efficiently successful design, users can subconsciously understand meanings invested in artifacts by the designer/s and products can act as cultural intermediaries, which catalyse the communication process between the two. Without further research, conventional user centered design, market research is therefore only one often-superficial manner of incorporating user needs into artifacts and other avenues need to be sought out.

5.4   Culture medium: situating design as social construction

Design is understood as an extremely complex activity that entails drawing from significant reserves of knowledge outside that which is outlined in the design brief. It is a well-known fact that designers and design students acquire knowledge via the experiential exercise of designing, in action and doing (Schön, 1985).   Students are frequently required to use creativity in their design tasks and to research and understand the design task requirements and the target market or user profile by relating it to themselves or their innate knowledge and immediate environment. To dynamically construct a solution, designers often draw greatly on their former design experience. According to Strickfaden et al what is coined as the 'Cultural Capital can dramatically influence the design process' and:

> Design solutions do not occur in a vacuum. They are nourished by a breeding ground that embraces various substances, phenomena and traces, all of which function as raw material for concept generation and ultimately for design. Perhaps an appropriate name for this breeding ground is 'culture medium', which combines the notion of cultural baggage that individuals and groups hold as part of their make-up. (Strickfaden et al. 2006)

The concept of a 'culture medium' is an established one in fields of anthropology and sociology.   Pierre Bourdieu, a cultural anthropologist presented the concept of social reproduction namely 'cultural capital'. This idea is extended here to suggest that the 'cultural capital' personified in individual designers influences not only their design process but helps shape the outcomes (1984, p.73).

> When discussing the notion of 'culture medium', it is necessary to emphasise the values and assumptions attached to the study and understanding of culture.   Two basic assumptions made by anthropologists are particularly relevant:
>
> 1. That many facets of an individual's behaviour are gained through engaging in various social situations and interactions; and
>
> 2. That people learn a great deal that they are never taught explicitly, and that 'much is learned through simply being involved in situations, society and cultural activities. (Strickfaden et al. 2006, pp.97-107)

These ideas are critical to research as it assumes culture to affect individuals involved within the process of design. It commences from the opinion that social and cultural situations will and can affect the process of design. Consequently, doing and learning is often more than simply a cerebral endeavor. Ways of doing and knowing are unique to each social group, and can be

described as its individual culture.

Professional designers often interestingly refer to the 'culture medium' while designing, to describe the fact that every technological object is 'produced' within an environment that holds other objects alongside the experiences people have whilst interacting with them. In relation to design, such products and experiences abstractly connect the users and products to the designers' culture and lives. The research conveyed embraces the concept that social conditions and cultural norms not only influence people but are also transferred on as memes and sometimes essentially entrenched within the product, which acts as a carrier.

It is argued that designers' own cultural preferences and values are connected to their emotions and aesthetical, cultural inclinations and influence the design process, often maximising design risks to pose culturally hegemonic barriers to users. Products can often be understood to embody mainstream social progress and interpreted as the motivating impetus of cultural development. The value of the interactions we undertake with our diverse man-made products and how they alter human interactions are mostly still uncharted territories. Products are naively presumed to advantage all communities universally, cultures and socio-cultural groups equally and globally. The reality of technological advantages being disseminated differentially is common. Iconic commodities implying cultural advancement in one region, such as outsized petrol consuming SUV's become portents of approaching dystopian futures. Other than their practical and instrumental utilities products can act as transferors of particular worldviews, and a means of relating to others and our environment, both locally and globally. For many individuals the relationships they form with or via the technological products they possess and regularly interact with are very immediate and valid and help form their individual perceptions.

There has been a growing awareness of design culture, indicated by research such as that undertaken by Julier and Rodgers (Julier, 2007 and Rodgers, 2004). Based on interviews with renowned designers Rodgers proposes the idea of a certain 'cultural DNA' that is common

to all designers. User-centered design connects to the concept of culture medium to the extent of recognising the basic significance of context in design (Strickfaden, 2006, pp.97-107).

In his book *Design Culture* Julier discusses the way in which a clearer grasp of 'cultural contexts' enables designers to better comprehend how consumers interact with their products and built environment (Julier, 2007). 'There have been some studies on user-centered design which use information about 'cultural context' to create and market better objects' (Jordan, 2000, p.60). It is therefore argued the cultural values of the individual designer or design team can play a defining part in shaping the design outcome of end-products. In addition it is surmised that the infusion of cultural awareness and sensitivity into design processes could potentially result in the beneficial advancement of the practice along with substantial benefits to consumers.

Additional design scholarship is required to pinpoint the culture media that is utilised within design processes and the reasoning for it. In discussion with colleagues in the design educational context it is evident for example that:

> You immediately notice whether or not students have had 'from home' the opportunity—unfortunately, but that's reality—who have richer parents or have had the opportunity to travel more, and who, upon arrival in the second, third year, already have been to Firenze, to Paris, and to London and to New York. And you have others who have stayed in their own village and only have read the Panorama. That is, of course, a huge difference that shows that those who are more 'cultivated', perhaps filter and use what they know in a different way than those who join us on the bus to a museum for the first time. (Strickfaden, 2006, pp.97-107)

It becomes increasingly evident in design tasks in degree programmes that some students have a cultural resource to utilise, others have to develop this from zero and this shapes the design solution to a great degree, therefore it is only logical that it follows that local designers creating technological solutions for users in transcultural contexts can infuse their product solutions with their own socio-cultural values.

5.5   Technology diffusion across cultural boundaries

Most contemporary scholars and researchers in technology studies would agree that technology's benefits and use are mainly distinguished through the use to which man puts it to and that technology does not behave independently from human actions. However, the cultural repercussions of many products designed in the West and distributed within trans-cultural settings are inadequately comprehended and will be briefly philosophically discussed here. Technology can mirror the values and culture of the society wherein it was envisioned and developed. For instance, in various cultural studies literary theorists have clarified how historically, in the Western tradition, cultural emphasis on characteristics of individuality and independence partially encourages and aids in increasing the demand and development of both mobile phones and private transport. Advocates of technological progress vaunt improved efficiency and social progress but only by consuming more and exhausting the natural resources of the planet at a rapid scale. They propel the consumer logic for which Western society is unfortunately now renowned. This section will begin to investigate the potential effects of technology when it is transferred across cultural settings.

It is apparent from the literature investigations undertaken that the role and function of particular technologies designed in western countries and later disseminated into multicultural settings, diverse cultures and developing countries and their impact in social, political and psychological spheres has not been scrutinised in any satisfactory depth, thus leaving a significant deficit in design's historical and theoretical body of research. Cultural values wield an influential role on virtually all spheres of human life (Hofstede, 2003, p.15). A broad range of literature in the Humanities corroborates this fact. 'The International Council for Societies of Industrial Design', is endeavouring to nurture cultural diversity in response to world globalisation (ICSID, 2002). In light of this, the speculative aim of this section within the thesis is to examine the socio-cultural aspect of technology in order to survey whether technologies can potentially culturally disadvantage various social groups. Within this limited research, this can only be partially addressed through a discursive interpretation of the design process and the relationship between man and his designed technological entities.

Reflecting on the fact that artefacts have been frequently analysed historically as expressions and indicators of society and culture, can we then assume the prevailing notion that technology is culturally impartial? Is technology morally neutral and therefore devoid of values pertaining to race and gender? Do designed objects represent a given set of values? If we were to contemplate this question from a materialist perspective, such design solutions appear neutral. However upon closer inspection from a sociological perspective, they can seem to guide not merely the means by which we go about doing things, but also how we perceive these tasks and the nature of the outcome itself: 'Tools are not neutral and their use may contribute to shaping our purposes' (Chandler, 2000).

To assert that not all users and consumers of technology are white, male or middle class but in reality from all walks of life and cultural backgrounds would seem to be stating the very obvious. So how do designers cater for their multiple differences? Many technology theorists maintain that there exists an inherent universality within usability applied to most designed products, which addresses an innate human nature within us that crosses all cultural and social barriers. To put it simply, conventional models of usability argue that usability is a quality that can not only be designed into a specific artifact but can transcend all cultural barriers and be effectual in any cultural setting. I feel that this assumption, although widely accepted within design philosophy is somewhat problematic and is in vital need of further scrutiny.

Approaches to global products differ. When there is a distinct lack in demand for a particular product within a specific cultural setting or country, marketing companies are often erected locally to push products and to establish and cultivate demand via re-branding and advertising. We inhabit a culturally rich and diverse world in both social and cultural contexts. Our community encompasses people from various backgrounds but how does industrial design account for this in terms of its products of technology? Individuals and communities come with differing views and opinions, some with disabilities, others from differing socio-economic circumstances and also from various ethnic and cultural groups.

Technology, it has been claimed, often benefits or favours a particular group of individuals over others. It is not neutral in its inception as it is usually designed for a particular

problem and with a particular motive, culturally formulated desire, or particular user in mind. In addition to this, it is fashioned by a particular designer, design team, industry and/or cultural backdrop. Therefore, its assumed neutrality in relation to its influence on society is highly questionable, as we have found in the latter chapters. The history of technology is profuse with examples defining how political forces have shaped technology and how the very existence of particular products can embody political motives. For instance, the electric fridge was successful because the influential electricity companies championed it (Mackenzie and Wajcman, 1986, pp. 202-219).

5.6   Cultural hegemony and design education

This section intends to explore ideas on the influence of hegemony on industrial design education. It is incumbent for design discourse to break new ground by advancing the study on product design in cultural and social contexts in order to explicate the hitherto unknown impacts of design on human consciousness from an ethical perspective. It is important to improve the quality of design education, as the concern is that design education could be contributing to the destruction of cultural diversity and proliferation of culturally hegemonic modes of thinking. The lack of cultural differentiation in today's mass-produced products can be said to have a direct link with design education. We no longer appear to experience wide cultural variations within products, for it is argued that if we were to better utilise cultural knowledge to inform design we would no doubt produce increasingly useful, sensitive and pleasurable products.

The designer's role is not solely to pair user requirements to end products. We need to outline exactly what designers' responsibilities are toward culture and humanity as a whole. Investigations need to be undertaken on how homogenised and ontologically reversed design education can impact learners. The way in which product design is communicated in education and its pedagogical effects is a challenging issue that requires greater dialogue and the way in which industrial design is conveyed to and envisioned by society and industry is a separate issue; yet similarly vital for the discipline to advance. Design schools across the world model themselves on European methods and processes and their curricula and methods appear to be based on very similar models between Hong Kong, Italy, Germany etc.

So can hegemonic modes of thought influence the way product design is taught in the major design schools across the world? British sociologists of the curriculum, such as Michael Apple state that schools do not simply '*process people, they process knowledge*' as well and act as 'agents of cultural and ideological hegemony' (2004, p.44) or as 'agents of selective tradition and cultural incorporation' (Williams in Apple, 2013, p.23). Mass produced products may be similar across the world, but mostly due to the constricted, profit-driven perspective of industrialists. Education may arguably be the same across the world because many design professors are trained in the same few universities across the world, so they all belong to what

one might call an establishment of people, all of whom have converged upon the same design philosophies. This is at least true at PhD level, given the limited number of institutions offering PhD's in design.

Designers often avoid discussions on culture perceiving culture as typically exclusionary and cultural factors acting in direct contradiction of universalist design activities proposed to improve social inclusion. It is believed that infusing misinformed cultural concerns into design processes can erringly result in providing a biased distribution of resources and benefits to culturally privileged groups instead of catering for a mass-market that is more economically viable. This is one of many reasons why modern products are mass-produced, and distributed for use by millions of people across the world. This is impacting handmade crafts for localities and its drive is supported by the common argument that cultural difference is irrelevant and superficial or rather design has an essentialist quality and therefore can be implicitly a-cultural – clearly a fallacious argument.

Crafts are known as reflecting millennia of customs and behaviour cherished and preserved whilst standardised, identical, mass-produced products are known as homogenising culture and eradicating cultural difference. The original country of design and manufacture is seen as irrelevant as design theorists such as Donald Norman have argued that minimalistic usability and aesthetical values vie to an innate a-cultural humanity in us all beyond socio-cultural and geographical difference. For example, a CD Player, camera, or computer is argued to look the same wherever it was made. Woks and rice cookers originated from Japan and China but can now be found in kitchen appliance outlets globally. Italian, American and German products are being retailed in Asia and Asian products are being retailed in American, Italy and Germany. However, the concept of a-cultural design is clearly misguided as there are many examples of redundant products due to cultural implications and a breakdown of cultural communications between users and products.

Historically, educators have been the dominant class in terms of hegemony. Giroux interprets the pedagogy of schools as often 'an effort to transmit cultural tradition and ideology as knowledge of hegemonic groups in society' (Giroux, 1981, pp.41). Although this may appear a simplistic and dated interpretation, it is a given that universities do not simply process individuals but also process and produce knowledge, acting as generators of sociopolitical and cultural hegemony or agents of selective tradition and cultural unification. Apple pointed out that education is not a neutral enterprise, that by the very nature of institution, the educator was involved, whether he/she was conscious of it or not, in a political act (Apple, 2013, pp.89-93).

Industrial design education has a direct connection with issues of politics, philosophy economics, socio-culture, and, specifically, areas of teaching strategy and curriculum design. Schools are social sites characterised by an ongoing struggle between hegemonic and counter-hegemonic forces (Giroux, 1981). Design students can be unconsciously influenced by culturally hegemonic ideas. For example, when discussing design histories the voices of less privileged groups are often ignored as education has that selective, unwitting effect. Femia stated that: 'Gramsci especially emphasised the role of intellectuals in the creation of hegemony. The result is one of the most important, if elusive, concepts in contemporary social theory' (Femia, 1981), which leads us to believe that expanding educator awareness in this subject remains somewhat vital to this day.

In order to develop design curriculum we need to better understand issues of values, culture, ideology, and beliefs of design educators. An ethical reassessment of the contemporary practice of cherry-picking of values and culture and active inclusion of a more global history and philosophy of design could formulate a positive bearing upon the future of design education. Both hegemony and ideology represent vital concepts in educational practice and theory primarily because they expose the political nature of education and indicate that there are possibilities for designing alternative models of pedagogy (Giroux, 1981). Design philosophy that relates to the autonomic nature of hegemony and ideology should have a deeper influence on curricula, and in effect, future students to enable them to infuse industry with an enhanced intercultural competency.

Industrial design curriculum often differs to the physics or mathematics disciplines in terms of experiencing planned and unplanned learning throughout delivery, enabling a greater likelihood of hegemonic assumptions and cultural bias to become inculcated. However, there are many potential remedies for these issues. For example design training and education could integrate the knowledge that each individual educators influence (i.e. their beliefs, values and ideologies) will have some bearing and - either consciously or unconsciously - infuse the development of the curriculum design and teaching strategy.

Industrial design education can be influenced by hegemony in the following ways:

1. The selection of content and process of the curriculum design is governed by the design educator with his/her own values, interests, ideology, beliefs and the profession itself.

2. Students will naturally be influenced by the educators/instructors location, context, presentation style, gender, world-view, and other socio-cultural factors.

3. External forces such as technological preferences, availability and ideology will have an effect on the design programme and learning.

Further research into how the 'selection of a culture that is deemed as socially legitimate' is undertaken, the 'categories that are adopted to classify cultural content' and if these are seen as inferior or superior, and the manner in which 'access and distribution to various types of cultural knowledge by different social classes' are legitimised would open up greater insights into how hegemony could also operate in industrial design education (Giroux, 1981).

In conclusion, the existence of cultural hegemony in various areas of life including education is unavoidable, and will continue to exist throughout the design and delivery of curricula and mechanism of education. The teaching of design histories, practices, processes necessarily require the communication of various ideologies, concepts, and knowledge. In this light, hegemony may be more productively viewed as a tool such as any technology and therefore can be utilised more ethically in a variety of ways if educators are made aware of its

existence and role within their disciplines. With greater understanding counter-hegemonic forces may emerge to balance the status quo.

5.7 Critical Reflection

Chapter four provided a number of examples of suppressed bias and questionable assumptions about the world and society and by unveiling how products can illegitimately compel attention, belief or compliance to a particular mode of thought. Chapter five built on this by exploring the concepts of hegemony, cultural capital and technology diffusion across cultures. When designers are engaged in the design process it is often necessary to 'black-box' many issues out of sight and advance simply situation by situation, concentrating on the issue at hand. However, the process through these partial views has to be guided by a sense of context and connectedness, of locality and responsibility. With this awareness designers in their non-commercial positions can quite easily become advocates for social change and betterment.

Design has too long limited itself to being occupied solely on a reductive relationship between that of the user and the artifact. A products' symbolic role, identity, social function, or signification in a cultural context are rarely analysed in any depth. For example, cultural theorists have been using the superficial notion of taste and style to identify the culturally determined biases or conventions that make us evaluate and select a particular product over another. If taste is indeed formed via social conventions then designers are faced with new theoretical and practical challenges and research avenues. However, if neither taste nor form is objective then the modernistic idea of objective and logical design is truly a myth.

Mass-produced, uniform products are being situated or embedded within an ecology that is otherwise rich with meaning and nuance and arguably homogenising these. Designers' lack of cultural awareness training and its deficits make it evident that our current expertise in user needs analysis is not sufficient to meet this new design challenge. New methods and techniques for designing technology suitably for trans-cultural contexts need development combined with recommendations about how companies and research funders can develop

innovative approaches through deeper understandings of the social and cultural meanings of technologies. A trans-cultural product design method would stipulate, scrutinise and incorporate socio-cultural aspects within the design process.

What is essential is for design disciplinarity to debate the role of mass production, the nature of hegemony, the debilitating influence of modern, technological industrialisation and its invasion of the globe. Designers are instrumental in developing new products to be part of this expressive and interpretable world, but who determines what good form and good taste is and what is this based on? 'Design is the process by which abstract ideas assume concrete form and thus become active agents in human affairs' (Doordan, 2003, p.3).

It is imperative to comprehend how a combination of the power of market forces, such as consumer needs and demands, aesthetics and usability issues – whether real or perceived; designers and engineers themselves, and the structure of technology often determines design and technology outcomes. Technological development is not merely synonymous to economic fluctuations or financial incentives. Cultural and political factors are additional social influences that affect the nature of technology. Some technologies are founded upon a secular conceptualisation of the world and remain entrenched in a set of western discourses that disenchant and marginalize a huge percentage of the population who do not fit into the user ideal.

From this chapter it becomes clear that in light of postcolonial theory, culture has begun to be addressed in many fields of study yet it is still too often overlooked or undervalued (Young, 2007; Graham and Mayes, 2007; Thomas, Mitchell and Joseph, 2002; Rogers, Henderson, 1996). Different cultures are defined by a different set of dominant ideals, values and behaviours. Cultural awareness denotes being aware of our cultural values, beliefs and perceptions. It becomes vital when we have to interact with people from other cultures. Appropriate behaviour in one culture can be often inappropriate in another. Misinterpretations can occur when we lack cultural awareness of our own behavioural rules and project them on others. Becoming cognisant of our cultural dynamics is a difficult task as culture is not a conscious phenomenon to us. We have learnt to view and do things at an unconscious level.

By being made aware of some of our cultural boundaries particulars to our work as designers we can comprehend the impact that our culture can have on our behaviour, actions and work.

As an interdisciplinary field of study similar to design, cultural studies clearly provides us with the critical and analytical tools to deconstruct technological solutions from a unique perspective. Analysing technology from a cultural studies perspective permits a uniquely productive view. The humanities, like philosophy and history, deal with aesthetic, ethical and religious values and therefore the creative industries can be usefully analysed in relation to these perspectives, in my point of view. Rather than solely focusing on the instrumental facets of technology it could be progressive for mankind to investigate the idea of technological forms that function 'hegemonically' to secure the interests of particular social groups. Do products have the power to marginalise or privilege entire ethnic groups? Considering, many designed products are generally developed in response to specific cultural needs or desires and their genesis is geographically located, are they compatible with the differing values of foreign cultures? So that designers can go on to produce products culturally appropriate and equally usable and enjoyable for all potential users, I feel we need to productively enquire: in what ways can we co-ordinate technology with culture?

The idea of a ubiquitous and generic culturally cohesive design framework and the possibility of striving for culturally and socially neutral technology is a fallacious endeavour. However, the intellectual heritage of hegemonical design will linger with us just as the rapidly altering products of human creativity and industry will continue to influence us in ways we are not yet conscious of. Discerning how cultural patterns shape technology use is to a degree somewhat more difficult than distinguishing how technology affects cultural values and beliefs. This is due to culture being a highly complex, fluid, ever-changing phenomenon and exceptionally difficult to pin down long enough to critically analyse. It is not an absolute, but is relative within its own series of connections; only existing in relations. Regardless, cultural theorists do consider it to be dissectible and analysable and it is clearly integral to our understanding of technology and its long-term effects on the human psyche and the future of mankind.

5.8   Section III Summary

In summary, chapters four and five in section III of the thesis built on the preceding section by using examples to illustrate the malaise under scrutiny in design, investigating the crisis design faces with globalisation and technology diffusion, and evaluating the role of cultural values, enculturation, hegemony and the impact of the designers' cultural capital. It questioned whether these issues are acknowledged and taught in design education. The chapters explored a number of inter-related concepts:

1. How conscious and unconscious hegemony function in design.

2. How the technology and culture relationship is abound with navigable complexity.

3. How a postcolonial lens is useful to formulate new research questions within this complex cultural global ecology.

4. How the role of the designer is changing into that of an interventionist in terms of engagement with political activism, inclusivity, global issues, widening participation, designing for contexts of use, acknowledging the power of technology to manipulate subconscious thought, and decolonising design homogenisation from hegemonic thought.

The main finding being taken forward from the literature searches is that there is a hegemonic set of practices and expectations that influence Western design disciplinarity and these can spread without reflection into postcolonial contexts. Thesis findings that helped inform and formulate the next stage of research, namely the primary research design are stipulated as follows:

1. Professional design practices and formal design education appears to be in crisis: due to challenges such as globalisation, multiculturalism, and cross-cultural markets.

2. The literary search and illustrative examples begin to evidence that this malaise identified by the thesis exists.

3. Mass-production, generic ergonomics, designing for the majority etc. are all issues contributing to the negative aspects of globalisation, homogenising culture and eradicating difference and diversity.

4. Glocalisation, adaptive design, subversive design, co- and participatory design etc. may have emerged as unconscious, counter-hegemonic models to this crisis. For example, mass produced industrial products are being customised and subverted by end users to cater for spiritual, cultural, geographical and metaphysical needs.

5. Designers are responsible for the production of culture and values through their products whereas with co-design and participatory design *both* designer and user are. The designer is not necessarily always the author of his/her product - but often a conduit – the socio-cultural system is often the greater factor. The designer's role could be more usefully viewed as a political activist who filters though various qualities of the product accordingly.

6. Products can challenge or reinforce certain values and worldviews. Products may unwittingly marginalise some users, imposing a cultural fracture, subconscious enculturation or alienation and dispossession.

7. Although it can be argued that foreign products imported into western markets may have similarly problematic effects, this thesis primarily focuses on hegemonic practices and forces.

8. Designers are not formally educated or trained about the importance of their latent cultural preferences, culture medium, cultural capital and socially ethical design and how they may relate to professional design processes and practices.

Chapter six builds on these findings by developing related hypotheses that can test the issues to uncover whether designers and educators are aware of culture and hegemony and the role of their own conscious and unconscious cultural preferences. Occluded design frameworks are illustrated using research into designers' awareness.

Section IV: Primary Research Investigation

Chapter Six

Primary research studies

Chapter Six

6.1   Primary research summary

Study question

What are the cultural processes, preferences and assumptions both conscious and unconscious, that designers work with and are they formally trained to acknowledge these exist?

Hypotheses

A. Product designers are not explicitly trained to understand or overcome their respective cultural constraints.

B. Design education both nationally and internationally is not equipped with the tools to acknowledge and confront this.

Key words

Design process, education and training, products, multi/cross-cultural, globalisation.

Dual aims

A. To explore the effect of the product designers' cultural predilections which have been formed within his or her individual contexts.

B. To undertake an analysis of design training in relation to cultural awareness comparing the syllabi and methods used in examples from a number of countries and contexts.

6.1.1 Respondent statistics

During May and June 2014 primary research was undertaken to explore the conscious and unconscious cultural processes; preferences and assumptions that designers work with and if they are formally trained to acknowledge these exist.

Whereas the literary research completed for this thesis had broadened understanding of hegemony in design and cultural archetypes in design it was deemed necessary to discuss whether these outcomes had been achieved through the training of the designer/practitioner. It is recognised that the scale of the research would offer only a small insight into the often-complex academic or vocational pathways that designer/practitioners may have undertaken. However, it was hoped some common findings would be established in regards to enabling or inhibiting mechanisms. Individual responses were not taken as representative of the training provision available within a country but as an opportunity for reflective analysis of how the designer/practitioner may have been influenced, either subconsciously or consciously.

Throughout the quantitative data collection (Appendices 7.6.2 and 7.7.2) one hundred and five responses from a variety of professionals associated with product design were received. Table 1.0 establishes the international representation of respondents.

Table 1.0:
Representation of
respondents

Country of Birth	%	Country of current Residency	%	Country of training	%
Australia	8	Australia	7	Australia	18
		Austria	1		
Brazil	2	Brazil	1	Brazil	4
				Belgium	1
Canada	3	Canada	3	Canada	3
China	1			China	2
Czech Republic	1				
Egypt	1				
Germany	1	Germany	4	Germany	6
Greece	1			Greece	1
India	3	India	1	India	5
Indonesia	1	Indonesia	1	Indonesia	1
Iran	1				
Iraq	1			Iraq	1
Italy	2	Italy	1	Italy	1
Japan	2				
				Jordon	1
Kenya	1	Kenya	1	Kenya	1
Korea	1	Korea	1	Korea	1
Malawi	1				
Malaysia	1	Malaysia	1	Malaysia	2
Malta	1	Malta	1	Malta	1
Mexico	3	Mexico	3	Mexico	1
		Netherlands	1	Netherlands	1
New Zealand	1	New Zealand	3	New Zealand	9
Portugal	1	Portugal	1	Portugal	4
Romania	1				
Saudi Arabia	1	Saudi Arabia	1		
Serbia	1			Serbia	1
Singapore	1				
Sweden	1			Sweden	1
Trinidad & Tobago	1	Trinidad & Tobago	1	Trinidad & Tobago	1
Turkey	2	Turkey	2	Turkey	8
				UAE	2
UK	44	UK	55	UK	72
Ukraine	1				
USA	10	USA	13	USA	30
Zambia	1				

Please note that for the purpose of this research reference is made to the data collated through the online surveys and percentages are rounded up to the nearest whole number. Free text responses have been edited for clarity and elements that might identify the person have been removed so should not be seen as verbatim quotes.

From this data it is possible to establish that many respondents from this sector could be considered socially mobile for both training and employment in their field. Although the drivers of this are not being explored within this thesis, it does establish that the data is representative of cross culture experiences and training provision within the design sector. To further understanding case study interviews were undertaken with four men and two women at varying levels of seniority and differing disciplines within design and design education who were trained in six different countries a series of qualitative interviews (Appendix B): China, India, Mauritius, Spain, UK and the USA.

The respondents of the survey were both female and male and data was collated from a satisfactory range of age groups, which can be representative of the sector.
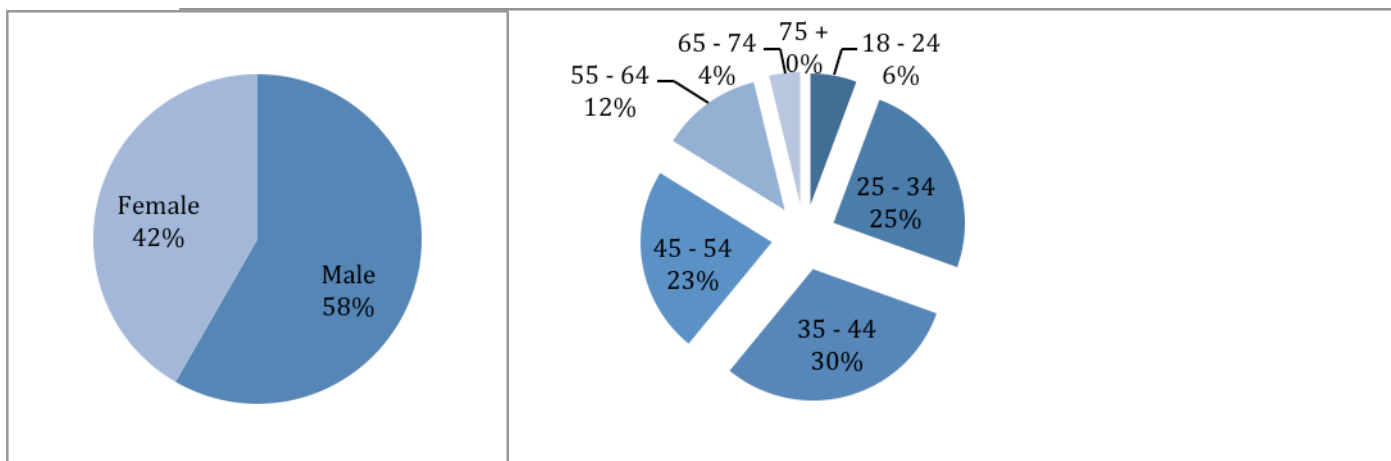
As the thesis investigates a subject that could apply to a large range of occupations within the design sector the data collection was not restricted to a specific role or area of design. Thus ensuring information was captured from those who had multiple roles, for example many academics were also active design practitioners. Initial informal discussions prior to the survey established that many

professionals had crossed design platforms through the course of their career progression therefore it was decided to not investigate solely students or trainees who could be representative of one higher education programme.

When asked to identify the area of design they were currently employed in, or experienced with, respondents effectively covered a wide range of specialisms within the sector.
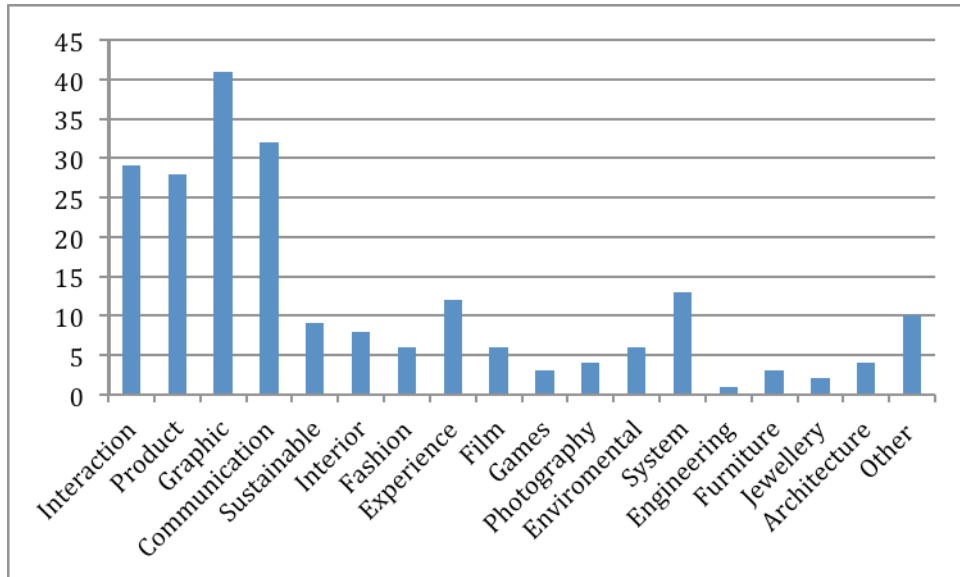
Of the respondents 85 % considered them self to be active as a designer/practitioner, the remaining 15% were solely employed in design as an academic, research or training role.

6.1.2   The formal and informal educational experience

Respondents had followed a variety of formal and informal educational routes into their profession: with the degree and masters being notably the preferred route whereby both theory and practical skills were learned.

How were you trained?
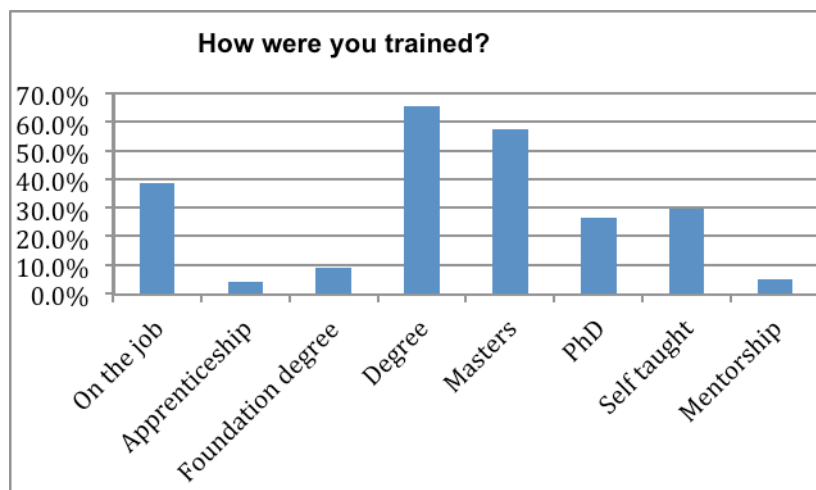
It was possible to choose multiple answers for this question as initial enquiries identified how it was often a combination of formal and informal training, which enabled practitioners to gain the key skills they required. However, by establishing that a high percentage had undergone formal higher education it is feasible to state that, for the majority of respondents this method of training would in some way contribute to the design theories, planning or development methodologies that they had learned and consequently applied post education in their own work. As 92% of respondents confirmed they had been trained by academics, the question regarding the content of the lectures and whether any hegemonic aesthetic and cultural archetypes had been taught becomes measurable. These aspects could also be taught through technical lectures of which 64% had received and where the understanding or implementation of these attributes could be included within the assessment criteria.

The length of training recorded was variable, as many respondents considered their informal training, mentoring or employment as a contributory factor to their knowledge and skill development. This was reiterated through the interviews where 'on the job' learning was identified as being influential to their progression. However, this will not be explored further within the remit of this thesis: although it is presumed probable that there would be some correlation between the method and location of the informal learning and transference of the thesis subject into their work. The thesis has explored the relationship between male versus female product design gender stereotype and ergonomic requirements and critiqued postcolonial and cultural design issues. The data confirmed that within a higher education curriculum due to the diversity of the programme structures these aspects could have been taught through a variety

of modules or session titles. For example: design theory, pattern cutting, modelling, trends, and marketing or consumer analysis. This is particularly interesting as 80% of respondents answered that their training had no cultural, political or religious perspectives taught; yet a high percentage of respondents were taught design theory and history.

Demonstrating how students were not relating these concepts to their own products and design process was often captured with statements such as:

- 'Games/New Media are not considered to align with both religious/cultural values' (Appendix 7.7.2: Q.14, 2014).
- 'In terms of art history it seemed more dependent on a discourse of art history developed mainly in Europe. I wouldn't say though that this 'cultural' aspect was conscious. There was no alerting to possible religious, cultural or political bias within the training itself' (Appendix 7.7.2: Q.14, 2014).

These could be considered single viewpoints, which were not indicative of the industry, or undergraduate programmes in this subject area. However it could indicate that these subjects are being taught but not within the context that the thesis supports which would enable students to evaluate their own and others work through alternate perspectives and a greater cultural awareness and sensitivity. The qualitative data identified that these discourse subjects were emerging when they undertook their higher education study but were not yet fully implemented. When considering this statement against the age profiles of the survey respondents there is a small correlation between age and awareness of subject matter taught. However this is not consistent from an international perspective and could be related to the trend of emerging themes within the higher education subject area at the time.

Of the 20% who did consider they had been taught some of these elements the additional information established that this was often self driven through their own practice or previous convictions, either politically or culturally: with reference of being taught Euro American and localised opinions.

What did your training incorporate?

A bar chart titled "What did your training incorporate?" with a y-axis ranging from 0.0% to 90.0%. The categories along the x-axis are: Techniques (~82%), Design history (~75%), Design theory (~80%), Manufacturing (~31%), Functionality (~49%), Aesthetics (~76%), Marketing (~37%), Material sourcing (~24%), Production methods (~59%), Socio-cultural trends and (~42%), Economics and/or budgeting (~31%).

During their training 84% of respondents confirmed that their design processes changed. With the majority relating this to the processes learned rather than marketing or consumer requirements. It is possible to look within this data and see whether there is a correlation between those who considered themselves having received cultural, political or religious theories taught to them and the change in their product. One such respondent who had considered herself taught in this way evolved her designs to, 'develop a critical language even though there was a very small audience for it,' and two others changed to 'consider environmental aspects' (Appendix 7.7.2: Q16, 2014).

If you believe the design process changed, identify the reasons for the changes

A bar chart titled "If you believe the design process changed, identify the reasons for the changes" with a y-axis ranging from 0.0% to 80.0%. The categories along the x-axis are: Where it would be sold (~17%), Processes you learned (~72%), To meet social expectations (~31%), Socio-cultural influences (~45%), Demonstrate technical skills (~41%), Meet a budget of buyer (~24%), Meet budget of self or design team (~27%), To meet fashion demands (~11%).

From the data a conflict of opinion is beginning to emerge, as 45 % of respondents considered their design outcomes to change due to socio cultural influences yet this does not correlate to those that consider that they were taught these aspects. Whether knowledge in these areas were expanded due to the

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environment, resources or other influences such as subconscious adaptation which enabled peer or staff expectations to be met cannot be determined through the quantitative research. However, the qualitative research does mention both scenarios whereby:

- 'Although we briefly looked at the cultural parameters of design it was very basic' (Appendix 1:I1, 2014).
- 'Cultural styles were rarely discussed' (Appendix 1:I1, 2014).
- 'Cultural styles were not implied because nobody we knew considered it important at the time, nor was it in the curricula' (Appendix 1:I1, 2014).

Where marketing modules had been taught the requirement for adaptation to meet the needs of the consumer, in relation to the product design was noted. From an international perspective anthropometrics were identified as being taught. Whether the product designed met the cultural aspects of the end user through the assessment criteria was also identified, although both the quantitative and qualitative research raised a more prevalent theme of superficial considerations that could become considered counterproductive:

- 'We were designing for the end user but did not have the know-how or tools to actually 'know' the end user and had to go on gut instincts often! Culture-related issues are very hard to confront for some too. Our training did not incorporate these issues' (Appendix 1:I1, 2014).

- 'Designing for an ambiguous user group such as 'internationally' undermines the whole process; the vague, faux catch-all might as well be called non-user-centred design or all-user-centred design. Using gross generalization we can mitigate many international faux pas of design. However this reductive positioning of design process appears to be more crippling than of practical use. Understand your users!' (Appendix 6: U1, 2014).

The qualitative research offered an opportunity to discuss how and which of these aspects could be implemented in design training and a stronger case for change began to emerge due to a perception that: 'design education is seriously struggling to keep up with the velocity in which things change' (Appendix 4: B1, 2014).

Across both sets of research there was predominantly recognition that further discourse on this subject was required to ensure awareness and greater critical reflection of individual design processes as indicated by these quotes:

- 'My view is that design needs re-designing. All of these fragmentary offshoots need bringing together in what Fuller called a "Comprehensive, Anticipatory Design Science' (Appendix 6: U1, 2014).

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- 'Designers will collaborate more with end users and create solutions that work far better than a top down, hierarchical process which fails to gather crucial data about the end users and audience' (Appendix 1: I1, 2014).

- 'It's getting industrial designers and design educators to realize that the one-size fits all model does not work for all products. Co-designing with your target audience can help create a product that will have a higher chance of being more positively received and have a high success rate of adoption' (Appendix 5: M1, 2014).

- 'Design education is broken. These techniques are interesting but do not solve the real problems faced in industry. Also in industry they are considered old hat, it's a bit like teaching sketching as a tool for communication; it's something that should be taught but everyone is simply expected to be able to draw. Designers ... are poorly equipped for real roles' (Appendix 2: S1, 2014).

- 'We need a better framework of thought that is inclusive of all players' (Appendix 1: I1, 2014).

- 'We are defined by our cultures, how we read and write, our understanding of the world, what we find funny, sad etc. Without knowing these things how can a designer create delightful engaging products? Or simply how can designer layout visuals with any hierarchy? These things need to be embedded deep within a product, it's not a superficial layer added later' (Appendix 2: S1, 2014).

From this data and the literary review it would be expected that a model of provision could be explored further.

6.1.3 Post education progression

To determine if respondents were consciously evolving their designs, through inclusion or removal of a cultural element, to extend their market it became essential to establish where their products were currently being sold, displayed or promoted. This enabled the global worth of cultural aesthetic or style and the adaptability of the designer for different markets to be investigated further. Only designers who had international professional experience in design completed all the interviews.
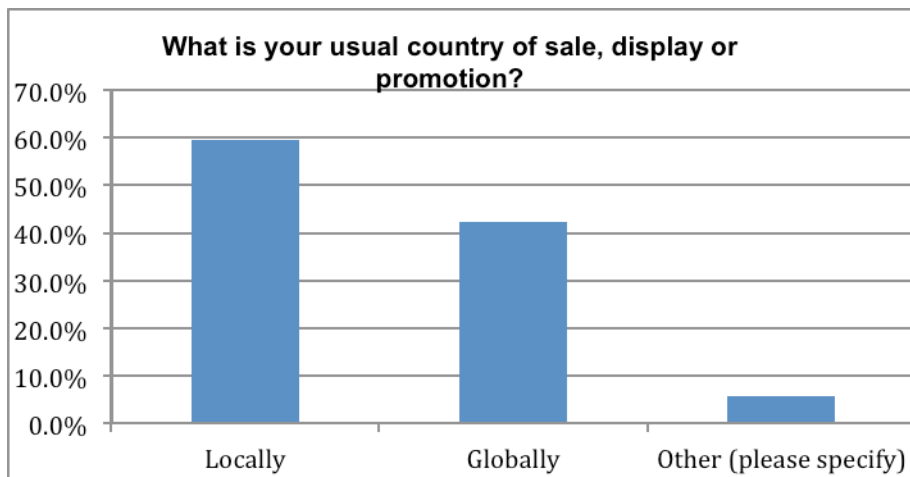
Currently 42% sold globally yet 89% would like to be able to successfully sell, display or promote their work internationally. Some respondents commented on why they would not expand globally. For example:

- 'People view design differently around the world. It needs adjusting to a particular audience' (Appendix 7.7.2: Q.18, 2014, p.318).
- 'Designed for very narrow specific cases' (Appendix 7.7.2: Q.18, 2014, p.318).
- 'Political borders' (Appendix 7.7.2: Q.18, 2014, p.318).
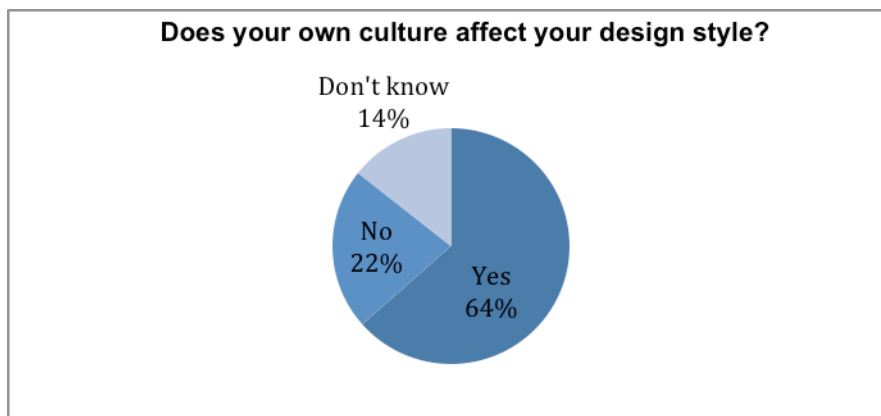
With 64 % of respondents confirming that their culture does affect their design the question of whether their products are able to become successful on a trans global scale and whether they have attributes, which are seen to be culturally desirable, internationally, could be questioned further. Additional comments received:

- 'All of these things are embedded in the work I produce' (Appendix 7.7.2: Q.19, 2014).
- 'Impartiality is a difficult thing to truly have' (Appendix 7.7.2: Q.19, 2014).
- 'All of our cultures affect the way in which we work. The habitus and the field' (Appendix 7.7.2: Q.19, 2014).
- 'I strive to design with objectivity' (Appendix 7.7.2: Q.19, 2014).
- 'I must communicate in the local language to be understood' (Appendix 7.7.2: Q.19, 2014).

- 'In every way. My culture influences who I am as a human being, I am the result as well as a creator of my culture' (Appendix 7.7.2: Q.19, 2014).

Although the thesis claims western style has greater global dominance one example from a case study identified this as sometimes being in reverse revealing counter-hegemonic forces at play:

- 'They have made, western culture at least, question deep-rooted values like privacy, mobility and ownership. Most of culture and our beliefs are shaped by the world around us' (Appendix 2: S1, 2014).

This is where issues surrounding glocalisation and co-design emerge as pertinent which are further unpacked in the thesis.

This does conflict with the theory raised in the thesis whereby postcolonial attributes were established as western ideologies being placed within eastern cultures; whereas this suggests counter-hegemonic cultural forces are also at play indicating a greater complexity.

Having an increased awareness of these design attributes has been established as an enabling factor although whether there is opportunity to voice these considerations within a professional environment was cautioned due to 'fears that it would appear discriminative or as sweeping, generalising statements' (Appendix 5: M1, 2014).

Asking respondents to undertake this type of reflective evaluation of their own work began to identify further relationships. Whereas 64 % of respondents had previously identified a correlation between their designs and their culture, 87 % could now identify how their product caters to meet specific cultural, social or political requirements. The questions were purposefully developed to approach the relationship from different perspectives as the subconscious and conscious decisions were not always apparent to the designer/practitioner. It is only when asking someone to examine their design process alongside the consumer or user profile that these may emerge, as expressed in the interview data:

- 'Yes, possibly on gender, race, religion and age (particularly my own) and predilections for, and assumptions about, certain kinds of technology' (Appendix 1: I1, 2014).

- 'Sometimes though this cannot be helped, as it is an unconscious act and hard to isolate or separate' (Appendix 1: I1, 2014).

- 'We always don't quite see the things in front of our faces, they are simply too close. Only when we step back, and try to make sense of our work and summarise it do we see those things' (Appendix 2: S1, 2014).
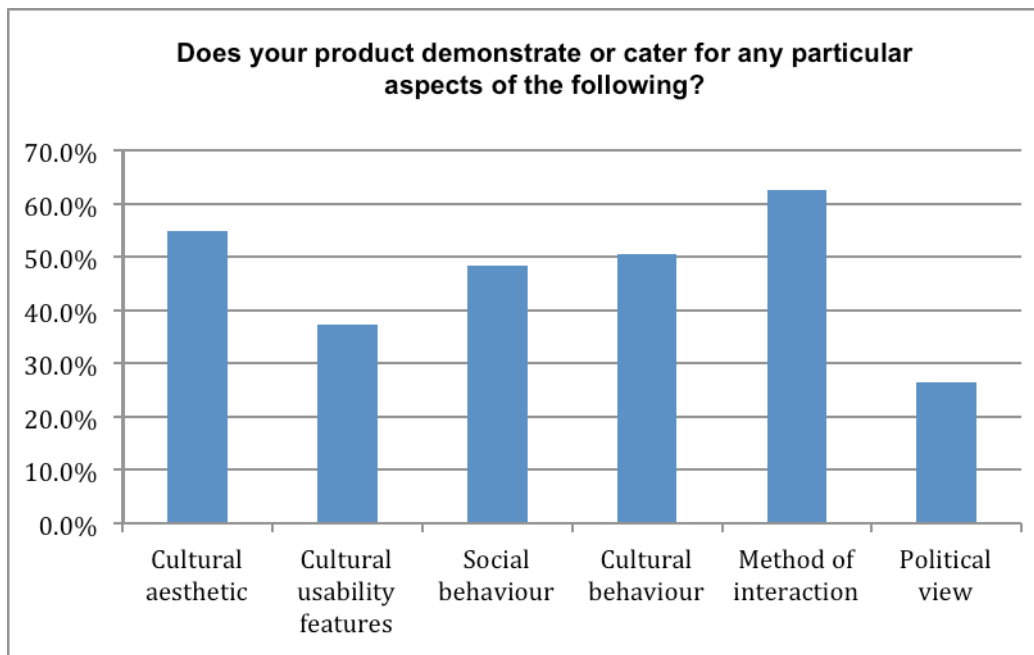
As the respondents were able to identify ways in which they may apply these elements into their design it does signify that there is some awareness and understanding of them: even if they were unable to identify how these were learned or if they were correct.

Whether they were prohibitive to progression was not questioned within the survey although mentioned as a positive factor within one case study:

> Though from my experience working on design teams with other designers from various backgrounds, hidden cultural bias can still exist in product cycles. This is not always a bad thing or deliberate even. The products we use in our own lives allow us to become aware of their cultural connotations and bias otherwise it is often invisible. (Appendix 5: M1, 2014)

In relation to the thesis this raises the question of whether students would benefit from learning how to critically reflect on these attributes during their education. Thus furthering their own understanding of conscious and subconscious design decisions, their relationship to these subjects and the consumers within a trans-global arena. [23]

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[23] Trans-global - 'Moving or extending across or round the world' (Oxford English Dictionary, 2013).

In what ways may you consider applying a cultural, social or political element when designing your product?

A bar chart titled "In what ways may you consider applying a cultural, social or political element when designing your product?" with a vertical axis ranging from 0.0% to 90.0%. The categories along the horizontal axis are: Size (approx. 28%), Price (approx. 38%), Style (approx. 61%), Functionality (approx. 57%), Aesthetic (approx. 84%), Materials (approx. 43%), Shape (approx. 26%), Colour (approx. 40%).

It may be said that if a designer has a specific consumer in mind who has the same cultural identity as themselves then the option or consideration of changing any aspect of their design to meet an external brief may not occur. The design process would evolve from intrinsic rather than extrinsic drivers: yet the importance of how these intrinsic ideologies had been developed remains questionable. How fixed these values are remain questionable and 89% of respondents chose to answer this question and begin to establish which aspects of their design they would change. Traditionally from a descriptive perspective the style, aesthetic qualities and materials may be considered to have a stronger cultural connection, yet over 50% of respondents would change the style and aesthetics to appeal to a global market. However, the size, shape and materials are the least likely to be changed although it is these factors, which may create the greater obstacles due to cultural perspectives or genetic attributes. For example: the use of seals skin or furs, or shorter people being unable to sit comfortably on higher/wider chairs which would not support their posture effectively due to size differences.

The case studies were less prescriptive of their own identity being applied to their designs:

> The design is rooted in the users world not mine. They will have undergone some culture analysis and definition from the requirements gathering stage... I aim to be objective and gender and culturally neutral. (Appendix 6: U1, 2014)

> What I've found now is that the more I've grown as an international designer I've become more consumer focussed and aware of cultural sensitivies and you lose your own cultural identity and rigidity. (Appendix 3: C1, 2014)

It was very evident without meaning to be when I initially designed but now I produce for the mass-market my products are less culturally obvious so as to cater for broader sensibilities. Many Indian designers allow their personal cultural influences to affect their outcomes and decision-making sometimes without even realising. Cultural diversity is big in India and a lot of onus it placed on it. When you do market research you do not bring your own cultural influences, opinions and agendas into the product design but rather that of the target users. (Appendix 1: I1, 2014)
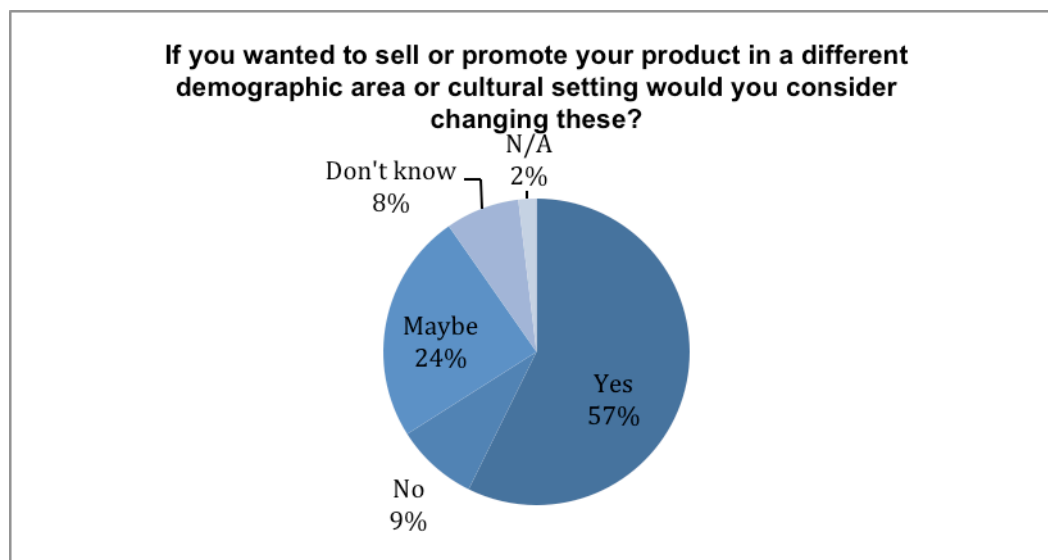
The survey supports the context of these statements, as the majority of respondents would be willing to change design attributes to increase sales. Yet how or whether they could adapt their original designs, whilst maintaining the integrity of their design principles has not been investigated and this is an area which additional discourse is required. Thus generating awareness of how the cultural, political or religious values of a designer can become imbedded and be beneficial, yet balancing this with enabling national or international growth and protecting cultural diversity.

6.1.4   Understanding consumer requirements

Within the design industries understanding how a product must be developed to meet consumer needs would commonly be gained through marketing intelligence. (For example accessing, Mintel, WGSN and alternate trend forecasting data analysis companies). However, less than 40 % of the respondents claimed to have received any teaching in this area although the correlation between understanding consumer requirements in elements such as shape, size and materials and the success of a product is undeniable. A higher percentage of respondents confirmed they have acquired this skill post

education and have identified this as an enabler to the adaptation of their product to trans cultural international markets. Within this research only a 30% identified their training as preparing them to be versatile in this way.

The qualitative research expanded this enquiry further and reiterated the importance of understanding these aspects as key to their product development:

> Through qualitative analysis during requirements gathering'. 'Requirements gathering' within the field of information systems is an extensive and expensive process. Within this, an often extensive qualitative process is undertaken to ensure that the system can and will address its needs. With projects running costs often into the billions of any currency, highlights the importance of designing things well. Our times are littered with information systems that carry the weight of society within its servers and that have failed to addresses many cultural problems. Conversely, there are examples that have heightened and contributed positively within their cultural design practices. (Appendix 6: U1, 2014)

> 'I need to know all about them right down to what colours and materials I can use to be culturally sensitive' (Appendix 3: C1, 2014).

> It was not a one-size fits all product and did not take well. I had to learn the hard way what my training had failed to provide and how crucial cultural awareness was for product success. I began to learn the skills necessary by doing qualitative needs analysis using interviews and focus groups to redesign my product. (Appendix 1: I1, 2014)

> I joined a research institution for a while thinking that it would help me, however it didn't. I was frustrated with the academic approach to understanding people. So when I joined XXXX I took great pains to be part of user studies and in context research. Ensuring I was involved at all stages. Basically learning through doing. Taking what works for me and evolving my design practice. (Appendix 2: S1, 2014)

However, the qualitative research did raise the issue of the cost, in money and time, of this knowledge for the design team, and how cultural awareness is less likely to be incorporated if there were constraints on either.

Do you undertake any market research before designing and making a product?

- N/A 4%
- Sometimes 28%
- No 15%
- Yes 53%

Did your training prepare you for this?

- N/A 2%
- Don't know 6%
- Maybe 22%
- Yes 30%
- No 40%

Could you name a culturally, socially, or politically 'neutral' product or label?

- Don't Know 6%
- Yes 23%
- No 71%
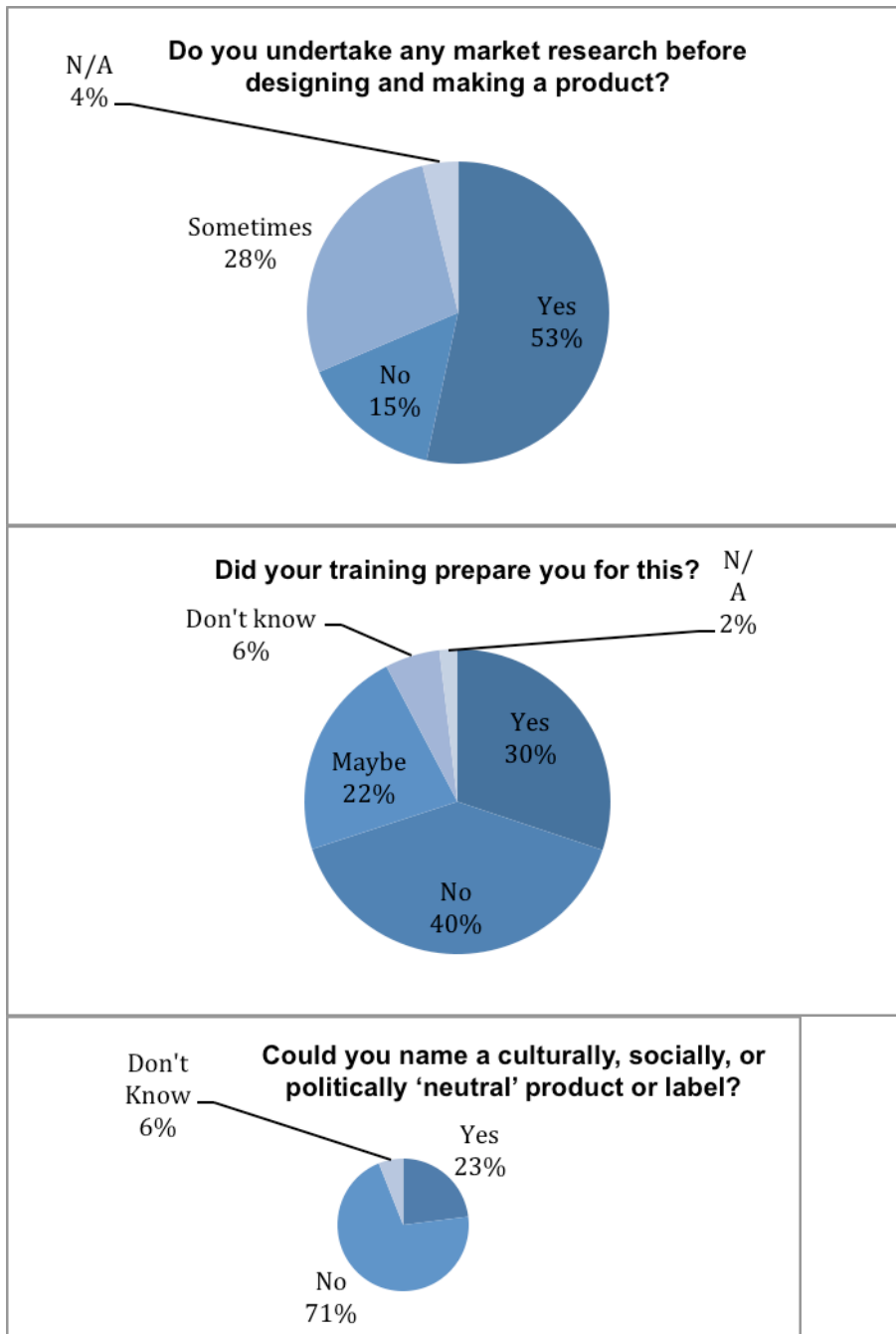
The quantitative research also identified the difficulty in producing a product that respondents considered neutral. Within the answers some of the products, which they suggested as neutral, were in fact culturally laden. Whereas the respondents to the qualitative data gave a greater insight into the perception of a neutral design:

> 'I think the major difference between being culture neutral vs. culturally aware is by tackling the erroneous belief that culture-neutral products happen by accident or chance' (Appendix 1: I1, 2014).

> 'Too many design companies think it's far easier to produce what one might consider a neutral design with a broader market than a culturally specific one and far more profitable too. This is often how generic, bad design comes about' (Appendix 4: B1, 2014).

'These issues mostly overlap with brand issues so there are often trade-offs between marketing and design over the needs of the brand and how something is laid out' (Appendix 2: S1, 2014).

'I know it sounds contradictory however it's more pedantry; I believe it's impossible to be culturally neutral, due to a product being of somewhere, sometime and someplace. However I always strive to be as culturally neutral as possible. After all, everything is subjective' (Appendix 6: U1, 2014).

If you mean no cultural effects are integrated, then no. That's impossible. In considering the product cycle from idea generation, to funding, development and selling, upon closer inspection there are many instances where unintended cultural bias affects design decision-making. Gut instincts determine the end product in many ways. Multiple decisions are made by members on the team, which are influenced by their own personal backgrounds, experiences and ideas. Decisions such as the features are voted on to make it onto the prototype. In order to address diverse representation minority views are often relegated and perceived as a wasted vote. Another example is when securing funding from investors and executives from a particular background; products are often pitched and customised in a manner they will relate to without realising this is even occurring. (Appendix 5: M1, 2014)

'Neutrality is impossible. But you can strive to be understood by as many people as possible.' (Appendix 4: B1, 2014).

Within the thesis there is neither an argument for or against the production of such a product, however, as the literary research has demonstrated it is the awareness of knowing what is universal and the ability to critically evaluate an item from alternate global, cultural and gender perspectives which has value.

When looking at products, which are available on an international scale, it is possible to identify numerous successful international trans-cultural products or brands that are profitable, and on closer investigation it can be stated that these are embedded with their own cultural values and may be seen as aspirational items to own in some regions. Although consumers will be required to adapt, or in some cases be independently adapting the product to meet their personal requirements. 73% of respondents recognised that it was a common phenomenon for products to change cultural, social or political conventions and 24% were unsure: 3% denied this was possible. The literary review discusses this in more detail and the qualitative responses raised some interesting perspectives on this:

'They can cross cultures, and they can in themselves too become part of culture' (Appendix 2: S1, 2014).

'There are a lot of societies and cultures. And they are not all the same and treat and use new products differently' (Appendix 6: U1, 2014).

'I'm not sure culture is ever resilient to change; it's continuously evolving and changing. When new products come along that resonate with people I think they are quite happy to try them out, see how they fit into their lives and adapt' (Appendix 2: S1, 2014).

'I think that the influence of a product on a culture in most cases has more to do with the problem it is solving. I'm not sure about traditions or beliefs, but the design of a successful product can affect design sensibilities' (Appendix 4: B1, 2014).

The marketing of a product through cultural associations and aspirations and the effectiveness of the product in meeting the end users needs were identified as the contributing factor to this in the qualitative research.

The opportunity to identify how their product could now be viewed as having a stereotypical, cultural, social or political element to it was declined by 62% of respondents. From those that chose to answer three reoccurring themes emerged and identified how their designs may be viewed in this context, due to:

- Targeting specific socio-economic groups of people.

- Being regional lifestyle products.

- Endorsing and promoting regional identification.

The interviews conceded this was a subjective topic, which included aspects such as logistics, availability, politics and how products have the ability to: 'redefine entire cultures by supplanting the status quo' (Appendix 2: S1, 2014).

6.1.5 Primary Research Conclusion

The primary research summary has begun to explore many aspects of the hypotheses and successfully identified many correlations that support both hypotheses.

Hypothesis A

Product designers are not explicitly trained to understand or overcome their respective cultural constraints.

Hypothesis B

Design education both nationally and internationally is not equipped with the tools to acknowledge and confront this.

From this data it has been possible to establish that many respondents from this sector have been socially mobile in either or both their training and employment and as whole would have gained opportunities to engage with alternate cultures to their own. It identified how respondents had followed a variety of formal and informal educational routes into their profession: with the degree and masters being notably the preferred route whereby both theory and practical skills were learned. By establishing that a high percentage had undergone formal higher education it is feasible to state that, for the majority of respondents this method of training would in some way contribute to the design theories, planning or development methodologies that they had learned and consequently applied, post education, in their own work.

The data confirmed that within a higher education curriculum due to the diversity of the programme structures there were many opportunities for the design considerations outlined in the thesis to be taught through a variety of modules or sessions titles. The majority of respondents confirmed that their design processes changed when they entered education, although the majority of students were not aware of learning these cultural ideologies to their own products or their design principles. Thus the higher education curriculum would be an ideal time and platform when the discourse on postcolonial conceptions and individual cultural values could be explored further.

Just under half of respondents considered their design outcomes to change due to socio-cultural influences during this time yet this do not correlate to those that consider that they were taught these aspects. Whether knowledge in these areas were expanded due to the environment, resources or other influences such as subconscious adaptation which enabled peer or staff expectations to be met could not be determined through the quantitative research. The qualitative data identified that these areas if discourse may have been taught on a superficial level or it was often self driven through their own

practice or previous convictions, either politically or culturally: with recognition of being taught predominantly Euro American and localised opinions.

When considering this statement against the age profiles of the survey respondents there is a small correlation between age and awareness of subject matter taught. However this is not consistent from an international perspective and could be related to the trend or emerging theme within the subject area at the time. It could be argued these were isolated or minority viewpoints that were not indicative of the undergraduate programmes on an international scale in this subject area. Yet it could also indicate that these subjects are being taught but not in a way that endorses them as active enabling tools which can be applied in principle by the students. Or within a context whereby students were able to evaluate their own and others work through alternate cultural perspectives and identify their own values upon an international platform.

It is possible to look within this data and see whether there is a correlation between those who considered themselves having received cultural, political or religious theories taught and the changes in their designs. However, the majority that related these changes in their design practice believed them to be closer linked to the processes they were taught rather than marketing or consumer requirements. Where marketing modules had been taught the requirement for adaptation to meet the needs of the consumer, in relation to the product design was noted although the concept of a whether the culture of the end user could be a constraint to using their product, was not identified: except from an international perspective anthropometrics were taught and could be considered in this context

The requirement for students designs to meet the cultural needs of the end user through the curriculum assessment criteria was also identified, although both the quantitative and qualitative research raised a more prevalent theme of superficial considerations which could be considered counterproductive: For many respondents their personal predilections had not previously been evaluated in this critical analysis and as they responded to the questions it was notable how they became further aware of the triangulated and complex relationship between consumer, culture and designer.

The majority of respondents were aware of post educational changes in their design process and how these would require further development if they were to enter an international sales arena. Developing the skills to adapt to another cultures' taste, fashion or style to transfer their own culture into a trans-global arena was identified as enabling factors which would be required but many felt they were unequipped to do so.

From those who were already working internationally it was identified that they learned these skills once in employment from colleagues. Those already working internationally had an increased awareness of cultural influences and were aware that some products could be recognised as change agents in this context. As the respondents were able to identify ways in which they may apply these elements into their design it does signify that there is an increased awareness of these design attributes and this is established as an enabling factor to their career success. However, whether there is always an opportunity to voice these considerations within a professional environment was also raised and could begin to question the autonomy of design or if it was led from certain countries, as the thesis suggests. The qualitative research did raise the issue of the cost, in money and time, of this knowledge for the design team, and how cultural awareness is less likely to be incorporated if there were constraints on either.

In this thesis the research continues to establish whether designers would benefit from learning how to critically reflect on these self critical evaluations and attributes: this tool of cultural consideration. Thus furthering their understanding of conscious and subconscious design decisions and their product users in a trans global arena. The research has also identified that if a designer has a specific consumer in mind that has the same cultural identity as them then the option or consideration of changing any aspect of their design to meet an external brief may not occur, nor be required. The design process would evolve from intrinsic rather than extrinsic drivers: yet the importance of how these intrinsic ideologies had been developed remains questionable as is how fixed these values are as over half of the respondents would change the style and aesthetics to appeal to a global market. However consideration of changing the size, shape or materials were the least likely to be changed although it is these factors which may create the greater obstacles due to cultural perspectives or genetic attributes.

How or whether the respondents could adapt their original designs, whilst maintaining the integrity of their design principles has not been identified and would be considered an important factor to be taught if this was within their discourse. When looking at products that are available on an international scale it is possible to identify numerous successful international trans-cultural products or brands that are profitable, and on closer investigation it can be stated that these are embedded with their own cultural values and may be seen as aspirational items to own in some regions. Consumers are often required to adapt, or in some cases independently adapt the product to meet their personal requirements and nearly three quarters of the respondents recognised that it was a common phenomenon for products to change cultural, social or political conventions which makes this topic critical. Further discussion on the findings of the primary data for this research is presented in the following chapter of the thesis under the sub-heading '7.2 Discussion of primary research findings'.

Section VI: Conclusions: An epistemological recovery:

Empowering and incorporating the silences

Chapter Seven

Thesis Summary

Chapter Seven

Conclusions: Thesis summary

7.1   Discussion of theoretical research findings:

7.1.1   The imperative of postcolonial and cultural theory to design

The thesis' literary discussion was conducted using postcolonialism as a lens through which to evaluate design history and discourse. The illustrative expositions in chapter four, section 4.1 provided a focused and contextualised interpretation of artefacts to paint a philosophical and cultural understanding of the identified malaise in design. The application of theory was performed through primary research designed to test the research aims and hypotheses. The primary research findings supported the hypotheses to an extent and are presented in chapter six entitled primary research and further discussed in this chapter.

7.1.2   Main findings

Key finding one: Postcolonial and cultural studies are useful as a lens to evaluate design.

The theoretical and critical element of this research found that cultural theory is relevant past a solely theoretical analysis or social commentary and has an imminent applicability to inform and guide design education and praxis. Postcolonial discourse as an approach helped to drive, conduct and analyse the quantitative and qualitative socio-cultural studies undertaken (see chapter six). The research data collated revealed an valuable insight into the episteme of current designers and design educators who self reported their experience, training methods and skills and how these affect their practices. The thesis discourse shaped this enquiry by successfully re-contextualizing approaches from cultural and postcolonial theory into evaluating real world practice and design training.

The literature search found how technologies are created within cultural contexts and utilised in the framework of users with values, desires and intents. Although superficially, design governs the way objects appear, function and feel there are also deeper, more subconscious and metaphysical impacts. There is evidence that hegemony does function in design and has historically done so in all its institutions from industry to education where once women and 'the other' were even more substantially

marginalised. Every design influences its surroundings in multiple, often inconspicuous ways, and hegemonic cultural factors in design. This needs to be more widely acknowledged in design literature and discussion. Although the cultural setting where our design fits is complex and in a perpetual state of change, designers can guide that change to be a more deeper, ethical and positive one. Analysing design discourse and history via a cultural studies lens allowed the formulation of novel research questions and enables design training and education to evolve to better equip future designers and educators for the changing world we live in.

Key finding two: The technology and culture relationship is complex and industrial design needs to better address both this and the metaphysical aspects of design.

Secondary research uncovered the complexity of culture and technology and how no single solution will or can remedy the crisis. ICSID is however trying to foster diversity and ethical practices in the face of globalisation. Technological development has historically been driven solely by 'bottom-line' form and function considerations also reconfirmed by the research data responses (chapter six). This has to change. The inevitable deduction is that our systems of industrial consumption and production cannot continue. What is required are significant advances in cultural design knowledge to make design more inclusive, ethical and sustainable. The metaphysical, symbolic and social dimensions of products have long been overlooked and designers rarely question whether a certain technological artefact exhibits the values it embodies, as supported by the survey data (chapter six), instead, focussing on global dissemination. Deprived of a critical, post-colonial and cultural perspective towards this the research concludes that industrial design will remain in a moral and ethical quagmire.

Key finding three: Greater unity is required in industrial design

The design discipline and global intellectual design community is fragmentary in nature and greater inter-disciplinary cohesion is a potential route forward. Linear design histories have previously fixated on western hegemonic accomplishments occluding reality and alternative contributions and views. A products history can present limitations on its own development; therefore inter- and cross-disciplinary

work will open up new avenues, insights and a cross-pollination of ideas for development. Cultural studies and design is just one possible hybrid connection to infuse design with fresh insights.

Key finding four: Industrial design is in crisis facing new global challenges

Hegemony has historically functioned in all aspects of society, including design production to secure the interests of particular social groups. Mass produced design homogenise our culturally diverse landscape. As a hegemonic force, many products cross over cultural and geographical boundaries and can transfer inherently embodied views and values with them from the hegemonic culture. The design discipline needs a greater awareness of this and its potential impact for the future.

Key finding five: The changing role of the designer

There exists a great ambiguity in how designers arrive at finalised solutions and in particular the role of their own personal predilections in this. The designers' cultural capital and the culture medium is not understood sufficiently. Technology is a social emergent as culture and technology are reciprocally interacting and mutually co-arising within a multi-causal relationship. Technology operates and is imbedded in complex social matrices and design needs to address and engage with this. Contexts of use are important. Many designers now have new responsibilities that entail responding to globalisation and diverse markets/users with pressing issues of accessibility, ethics and inclusivity requiring factoring in. In turn ethical design, values and identity formation are also affected by technology design. Design and technology can reinforce or break or make cultural taboos, genderisation and stereotype formation. Feminist evaluation of technology has proven these issues are pertinent and a postcolonial overview is now required to balance out hegemony. Culture and gender diversity need incorporating into international and global design education. Glocalisation, en-culturalisation, meta-design, adaptive and co-design can usefully be viewed as additional counter models to design hegemony that are yet to become mainstream.

7.1.3 Potential solutions to these findings

7.1.3.1 Cross-cultural real world briefs

As the thesis demonstrated within the illustrative expositions section, cultural ignorance on the part of the designer or design firm increases the potential of product failure. Global competency can be defined as a designer that 'work/s effectively with people who define problems differently than they do' (Mello, 2001, p.110). Although the motivations behind many designers and stakeholders vary, designers of the future who aim to design for international cross-cultural solutions should logically acquire skills to enable global competence and efficacy and their formal education and training should ideally be a springboard for these skills. Various stakeholders in the primary research survey shared this sentiment. The well-meaning intention of designers to cater for their users needs may be disempowered either consciously or unconsciously without such skills. For this reason, it is argued that it becomes crucial to foster students' cultural awareness levels in order to address these considerations throughout their design process. One potential solution is to engage students in problems outside of their comfort zone and cultural backdrop and in international contexts. This would possibly help expose them to social, intellectual and cultural diversity and develop levels of cross-cultural understanding and competence.

Discourses and dynamics of globalisation affect traditional views of design in regards to how it may be taught and practiced both locally and internationally. The design industry propels paradoxical rationales of collaboration, community, global citizenship, competition and the promotion of global outreach to signify this. In response to these challenges, there appears to be an unspoken demand for trans- and cross-cultural prowess in a rapidly altering world being propelled by technical and social changes. Designers need to better comprehend the impact of their design solutions in a global, societal and ethical context and develop an awareness of socio-cultural issues. As the interviews overwhelmingly indicated, designers working globally need this prerequisite understanding to be competent in successfully navigating across cultures.

7.1.3.2 Addressing the metaphysical and social elements of products

The thesis highlights how throughout the course of the past 50 years, disciplines such as the social and cognitive sciences have begun to contemplate the situated nature of human cognition. Popular viewpoints

have ranged from the extremely situated and contingent character of cognition (Suchman, 1987) to cognitive conceptualisations that explain the various interactions between artifacts and humans (Hutchins, 1996) to elucidations of cognition acutely rooted in socialisation and culture (Shore, 1998; Wertsch, 1988). Accordingly, research in design studies has only begun to consider how design is in fact a social construct and designers are only now departing from the concept that they are the fountains of all innovation (Rowe, 1995, p.110; Lawson, 2005, p.17-30) to the acknowledgement that they are a participant of a collaborative socio-cultural process (Brereton et al. 1996, pp.319–341; Cross and Cross, 1996, pp.291–318; Le Dantac and Do, 2009, pp.119–137). Social negotiation plays a major part in design process, as the efficiency of the design solution is therefore contingent on the designers', engineers', and manufacturers' cultural cohesion and collaboration during the design process an understanding of the user/s. As an example, Daniel Miller's study on the uptake of the internet in Trinidad in the book *Material Cultures* drew out the conclusion that technologies are often not imposed as such but are far more complexly received (2002, p.p.3-24). Media anthropology has tackled this issue somewhat but further culture-driven design research would be beneficial for its evolution into a more inclusive practice and discipline.

By incorporating relevant research from cognitive, emotional and physical human-factors into the design processes we use, users and consumers can better empathise with products and designers can create artful ways of generating potent emotional attachments, comprising resonant narratives and profound user experiences. The thesis thus supports that we need a model that confronts how products are devised for diverse cultures and trans-cultural markets on a deeper level.

> Products succeed only when they resonate with users' values, attitudes and behaviours, even if they result in changes to the same values and behaviours. This consideration should occur at the very early stages of conceptual development when the concept is still relatively fluid. A culture-orientated design model is offered as a complimentary rather than an opposing view to existing design methodologies. One implication of this study is that culture-driven research provides new knowledge, ways of thinking and dealing with design issues and thus laying the groundwork for creativity and erecting the structure for product innovation. (Moalosi, 2010, p.17)

Although technology may be transferable and increasingly accessible to all cultures more research needs to be undertaken to evaluate the ways in which a technological artifact can mediate our perceptions of culture and value systems. In *Philosophy of Technology*, Donald Ihde discusses the relationship and

intertwining of both *subject* and *object* and the relevance of 'experience'. He outlines the third type of human-technology relationship as the 'background relation' in which technological artefacts shape our relation to reality but do so by remaining in the background, i.e. without our intervention or awareness (Ihde, 1993, p.124). This needs to be further investigated in design research, as human survival is almost unthinkable deprived of the plethora of objects that define our constructed environment. Consumers and users located inside this context find it progressively challenging to envisage environmental alternates to the prevailing product-inspired existence, thereby making it arduous to unpick its environmentally problematic scope. Alternative points of view could open up a whole new way of perceiving the technologies we design and use that impact on our behaviour, values and the geo-political global landscape. The thesis crucially found that cultural and postcolonial theory are very relevant to design and a greater amount of research needs to be undertaken in this area by design writers to infuse design disciplinarity with alternative, more inclusive points of view and means of practice.

7.1.3.3 The development of a postcolonial discourse of analysis for design

Design schools do have at their disposal a number of methods to engage with cultural issues and cultivate culturally aware designers. Among these methods are ethnography, user-centered design principles, ergonomics and glocalisation. However these all have various limitations and constraints and lack an over-arching discourse for analysis – one that postcolonial discourse would potentially provide. The thesis argues that design practice and education need to engage on a deeper lever with the issues in postcolonial and cultural studies and could benefit from this approach as presented in this research. In this increasingly globalised, multicultural world products are disseminated into trans-cultural markets apparently without much thought and designers need to be aware of the implications that their solutions potentially perpetuate.

Important postcolonial questions that designers, scholars and theorists could address include:

1. How can we redeem western design from residual notions of cultural myopia and historical transcendence?

2. How are technological progressions defined, who defines them and how are the benefits of this progress distributed?

3. Is there a gender or race gap in the adoption and use of the technology?

4. Which issues should design address for so it may evolve into an inclusive, socially responsible and culturally aware practice?

5. How can we design things culturally suitable and pleasurable for all potential users in a global, multi- and cross-cultural market?

6. How can the design industry reinvent itself with a greater awareness of its socio-cultural role?

An additional number of concepts and ideas emerged from the literature studies. These ideas were quite anecdotal and provocative at times but included:

1. The methods and materials of design can give form to 'communication'. Pivotal products can naturally be discussed as communicating ideas.

2. Cultural imperialism can be analysed through products and research into the promotion of one culture in another with design. How populations are absorbed into the dominant cultural artefact and how they can acquire the attributes indirectly by adopting a general attitude.

3. If historical worldviews can be formulated through our cultural artifacts, there is a distinct probability that cultural artifacts can in effect be reinforcing subtle unconscious worldviews in a cyclical fashion, through enculturation, for example.

4. Through an analysis of current frameworks of knowledge production we can begin to investigate how certain worldviews shape our practices and assumptions defining the field of industrial design and its constituent body of knowledge.

It is therefore proposed that an effective postcolonial design strategy could involve many design processes to accordingly incorporate some of the following conditions:

(i)   The method of human interaction with the product interface should support the users culture on a deeper level.

(ii)   The product's usability and aesthetic significance should communicate to its cultural backdrop and product life cycle.

(iii)   Elements of flexibility and adaptability should be built in to meet the end users culture.

(iv)   Cultural context, sensitivities and difference should be more focally taken into account in the design process.

(iiv)   Critical self-analysis should be undertaken on the designers' cultural capital and preferences and how this may have impacted or manifested itself in the design outcome.

The following is a summary of the hypotheses and findings of this research from all phases of the research:

To outline, this research posits that:

1. Professional design practices and formal design education is in crisis: due to globalisation, multiculturalism and trans/cross-cultural markets.

2. A postcolonial understanding can help expand and account for the unacknowledged limitations in the designer's paint-box.

3. Mass-production, generic ergonomics, designing for the majority etc. are all contributing to the negative aspects of globalisation and homogenising culture and eradicating difference and diversity.

4. Glocalisation, adaptive design, subversive design, co-design etc. have emerged as unconscious counter models to this crisis.   For example, mass produced industrial products are being customised and subverted by end users.

5. Designers are responsible for the production of culture and values through their products whereas with co-design and participatory design *both* users and designers are. However, the designer is not necessarily always the author of his/her product - but often a conduit – the socio-cultural system is often the greater factor. The designer's role could be usefully viewed as a

political activist who filters though various qualities of the product accordingly via his/her own unconscious predilections and preferences.

6. Industrial designers have been long fixated with the functional and physical impacts of products at the expense of metaphysical ones, such as connectedness, emotion, pleasurability, experience, spirituality, symbolism, cultural and historical contexts of use etc. Usability with the enculturation fallacy and the visual aesthetic elements of products are often prioritised over their metaphysical, psychological and emotional qualities.

7. User-centered design needs to discuss the place of *culture* at a deeper level.

8. Products can challenge or reinforce certain values and worldviews. Products unwittingly may marginalise some users by imposing a cultural fracture and dispossession whilst unconsciously privileging others.

9. Foreign products imported into western markets may have a similar effect.

10. Designers are not sufficiently formally educated about the importance of culture medium, cultural capital and socially ethical or inclusive design and how they may be incorporated as part of their design process.

11. Designers are not always aware of how their own unconscious personal preferences and predilections can have a formative effect on their products and subsequently on their users.

12. Design history has long occluded the various contributions to invention and innovations that were anti-hegemonic. Design appears to be the remit and discourse of dominant groups, however this is changing as design evolves.

13. Qualitative research undertaken in this research demonstrates how designers in the field confirmed their formal education provided very superficial training in cultural issues and how this subject is crucial to product success in cross-cultural contexts and markets. This deficiency forced them to learn such skills whilst in the industry via trial and error.

14. With issues such as globalisation, multiculturalism and products destined for trans and cross-cultural markets this is a pressing issue in design and design education should cater for this training need.

15. The thesis argues for a more culturally-aware and driven design practice and education

both nationally and internationally where academia and educational institutions have the potential to extend awareness in this subject to train designers of the future to be better equipped to deal with global, cross- and multi-cultural contexts.

7.2   Discussion of primary research findings and strategic solutions

This section is a discussion of the primary research findings in chapter six (sections 6.1 - 6.1.5) and their links to the thesis. A number of potential research avenues were identified during the thesis exploration stage. One hypothesis emerging from the literature review was that product designers aren't trained to comprehend nor surmount their respective conscious and/or unconscious cultural constraints. Primary research therefore took the form of an 'exploration of the effect of the product designers' cultural predilections that have been formed within his or her individual cultural contexts' and 'an analysis of training, comparing the syllabi and methods used in a number of countries and contexts'; as the most appropriate means of testing the specific theory and to substantiate and ground the thesis in its entirety. A programme of data collection was thereby devised and undertaken and the evidence collated and critically analysed. Pertinent issues relating to the research methods selected and utilised are further extrapolated in depth in chapter one (section 1.2). Survey and interview designs and related data and documentation have been attached in the appendices for reference.

Usefulness for design practitioners

It is believed this research may be of particular relevance to design practitioners and educators. In-depth key insights and findings are presented in chapter six containing the primary research data, report and discussion of findings. As practitioners and educators were both key stakeholder groups they were included in the field research performed across 33 countries and numerous educational institutions and may find the following findings useful.

7.2.1   Main findings

Key finding one: Designers' cultural preferences

Designers are not always aware of how their own unconscious personal preferences and predilections can have a formative effect on their products. The research identified how this subject is under-researched and issues of designers' cultural capital and culture medium need to be brought into design discourse and curricula.

Key finding two: Poverty of cultural engagement in formal design education and training

In the mixed methods approach, both the quantitative and qualitative research that demonstrated designers in the field confirm their formal education provided very superficial training in cultural issues and how this issue is crucial to product success in cross-cultural contexts and markets. Students would benefit from critically reflecting on socio-cultural attribute during their education as only 30% of the survey respondents felt their training prepared them for trans/cross-cultural and international markets.

Key finding three: Design education frameworks are unprepared for global, cross- and trans-cultural design issues

Generally speaking internationally, formal design education frameworks do not appear to be sufficiently addressing the role of culture in their syllabi beyond superficial market research and user needs analysis. Many survey respondents were considered socially mobile, based on the data, so therefore assumedly be producing cross-cultural work. However, 80% of survey respondents who were taught design history and theory believed their training had no cultural, political or religious perspectives taught. 84% of these respondents felt their training changed their design process and 45% felt their design process changed due to socio-cultural influences, yet they were not taught these.

The interviews further ascertained that industrial designers who are designing across cultural boundaries and demographics and in multicultural settings in an increasingly globalised era are having to address this deficit and lacuna in their knowledge and training by learning on the job in order to be proficient and successful in their profession. 64% of these interviewees acknowledged culture as affecting their design and one interview even showed awareness of counter-hegemonic forces at play.

Tellingly, 87% identified how their products cater to meet specific cultural, social or political requirements. This major research finding presents a substantial argument for the need of a more culturally-aware design practice and design education both nationally and internationally where academia and educational institutions exert their potential to extend awareness in this subject and train designers of the future to be better equipped to deal with global, cross- and multi-cultural contexts.

7.2.2 Strategic potential solutions to findings and future directions:

Navigating deficits in design syllabi and methods

7.2.2.1 A view towards multidisciplinary and multicultural cognizance in curricula.

Design pedagogy and curricula is long overdue a radical shift. The primary research highlighted contemporary education requires a multi-disciplinary approach. With such an approach traditional disciplinary boundaries become more permeable, so new connections can be forged. This would encourage future designers to contemplate their work in the larger context with a greater emphasis on integration and sharing social well-being:

> Design becomes the leverage point of determining a product's impact on our lives. In this sense, when we educate any of our students engaged with the incorporation of technology we must instil in them not only technical expertise but we must also lead them to examine and question the goals and value-system of the society they are being prepared to build. (Bordogna, 1997)

We need to integrate an adequate expertise into the curriculum on how products shape social and cultural relationships and the way in which these relationships moreover in turn can shape products. It is difficult for arts-oriented students to address this reciprocity between technologies and culture due to fear of its complexity. For educators, the task is to provide training and experience in integrating three kinds of expertise as equal constituents of design education: the aesthetic, the technical, and the socio-cultural. Being able to see or read the mutual shaping of technology and society, the art of analysing a culture, a comprehension of how a product will be (or is) situated in our lives, rather than simply the art of reading an end user/consumer; or basic market and human factors skills analysis. Giving students multiple modes of understanding and delving into a variety of design processes may encourage questioning the norms that should be retained and bolstered and those that should be challenged and substituted.

(I)   For pedagogy, having a design faculty that are themselves multi- or trans-disciplinary and understand the associated issues would be beneficial to shape the education of future designers able to integrate diverse perspectives into creative design solutions.

(II)   For design firms providing training in and hiring cross- and trans-disciplinary designers who have the sensitivity for designing globally across markets, would resolve some issues.

Increased awareness, sensitive communication, adapted training on cultural awareness in design processes, and efforts to address the most critical cultural preferences and differences are proposed as potential remedies.   The research findings contained in this thesis could have the following applications or future outcomes:

1. It could inform design discourse, technical learning and pedagogy.

2. A move towards a more enquiry based recognition of the cultural positioning of writers on current discourse.

3. A cross comparative critical evaluation of whether these are still true assumptions (i.e. west on east etc.)

4. Through design application: a critical evaluation identifying values and how they emerge through design practice, process and education.

5. A study on how important cultural preferences are to design: would design solutions produce cross international markets or do they need adapting somehow? Understanding how users experience technologies necessitates a concern with social and cultural meaning: what does the product mean to the user, what does it mean in the context of particular cultures, and what does it mean in terms of its wider impact on the social and global environment?

6. A critically evaluation of other products through these criteria and analysis of de-contextualised design outcomes in comparison.

7. Users could be engaged in culturally meaningful social practices through new technologies that address the disconnect between use and meaning in cross-cultural technology. This is a call for change in cross-cultural design practices to move from simply applying superficial socio-cultural conventions in design and moving to engaging with social affordances grounded on a deeper understanding of meaningful contextualised use and activity.

7.2.2.2 Adaptation requirements for design education

An outline of the malaise in design education, that arises from and is specifically supported by the primary research data evidenced in the previous chapter, with recommendations to remedy it follows. Factors such as the globalisation of industry, expanding world trade, cheaper and wide-spread telecommunications and a growing preference towards teaching and learning across cultures are producing a world where cross-cultural interactions happen more often than at any time in the past (Friedman, 2007). The progressively multi-cultural nature of educational environments and training settings, as well as markets, necessitates that we deliver programmes of study that produce designers who are better able to face such issues and succeed. This is crucial in order to maintain both a valid connection to learning environments with a connection with the local, global and multi-faceted culture in which the student graduate may eventually intend to work. By addressing the cross-cultural challenges faced by novice designers who embark into their profession fresh out of formal education, we can better equip them with the skills necessary to deliver culturally sensitive and culturally adaptive design solutions.

In light of this and despite the mounting flatness that is reported by Friedman (2007), cultural diversity remains evident amongst learners, possibly owed to deeply rooted cultural values and modes of thinking which are difficult to isolate from learning processes (Nisbett, 2004). A mounting appreciation of cultural diversity is demonstrated by a desire to preserve diversity as a valued asset for addressing the many challenges faced by the global community presently as well as in the future. Moreover, there is a resilient desire to preserve diversity in reaction to the risk of loss of cultural identity in the face of

globalisation. As students in a multicultural context not aligned with their own culture may experience substantial conflict, learning experiences that are culturally sensitive and adaptive may logically be more accommodating to differing needs.

Education and design process itself are inherently social processes (Schwier, Campbell and Kenny, 2004). It is argued education providers can no more adopt a neutral position in developing their materials and programmes. Educators must be cognisant of their learners' cultures and how such cultures may manifest themselves in learning preferences (Nisbett, 2004) as well as how this cultural awareness instruction prepares them for an increasingly globalised industry. This may necessitate a critical need to embrace the culture within which the student is embedded (Henderson, 1996). This is a major challenge, as cultural sensitivity is not just one-directional – i.e. simply being sensitive to the needs of the user/consumer. It is evident from the research data (see chapter six) that many designers are not being explicitly taught the relevance and impact of cultural values within their formal training. Design educators should be acutely aware of their own culture because their worldviews can't be detached from the training, which they cultivate (Mitchell, Thomas, and Joseph, 2002). They should also be cognisant of the way in which their own socio-cultural perspectives may be reflected in the design choices they make.

Although numerous challenges to practicing multicultural education and training in design contexts exist, a variety of strategies, tactics and direct recommendations for adapting educational practice follow.

They include:

1. Appreciating and understanding the cultural differences of students and designers working in the profession;

2. Increased awareness of one's own cultural preferences and acknowledgement that they may not in fact represent the 'correct' way to think; a deconstruction of the need to teach those from other cultures to adopt new learning behaviors to learn and think properly.

3. Acceptance that design syllabi and methods of process and design cycles of choice are also unavoidably culture-based and therefore may be at times be in need of adaptation or be inappropriate;

4. Increased consideration of cultural differences in each phase of the design process (using user centered design principles) with extra attention applied during the analysis phase;

5. Refining the ability to determine design solutions that unintentionally represent hegemonic cultural values and subsequent modification of these in line with target users' cultural needs on a deeper level.

6. Design instruction and syllabi adaption to integrate such issues beyond superficial market research or basic needs analysis techniques, and

7. Accepting the dual responsibility of design educators to acculturate yet respect individual student cultural behaviours and backgrounds and allow these to flourish.

The next section summarises perspectives that may potentially lead to effective multiculturally sensitive design education and practice.

7.2.2.3 Cultural cognizance for practitioners and educators

In order to better integrate consideration of cultural diversity in both practical and educational arenas the following recommendations are advocated:

Design practitioners

Designers who design across cultures can no longer make overarching judgments about the demographics of their consumers and users prior to having the opportunity to interact with them.

1. They should carefully consider and interact with the target user population beyond superficial enquiry during the analysis and development phase of any design to better comprehend their needs and preferences.

2. A questioning of design intentions throughout design processes to ensure designers remain culturally sensitive. Unfortunately, culture is frequently disregarded because the analysis phase of teaching design process is one of the most commonly skipped phases as the primary research denotes. Mitchell, Thomas, and Joseph (2002) reiterate that, 'culture is so much a part of the construction of knowledge that it must underpin not only the analysis phase but all phases of the design process' (p. 41).

3. They could consider involving a sociologist or cultural expert as part of the design group or sourcing a representative user/participant to help plan a product, course, or training event before implementation occurs (Thomas, Mitchell and Joseph, 2002; Young, 2008). Designers' ignorance of such biases may aid to preclude them from considering alternate opportunities or more effective design solutions that are better aligned with the target users cultural needs.

Design educators

1. A greater reflection and introspection on own beliefs and attitudes toward other cultures. Design educators engaged in pedagogy must become more cognisant of cultural biases rooted within their design teaching, methods and syllabi. Reviewing one's own practices as an educator or a designer can facilitate a higher degree of sensitivity and awareness to cultural issues that may emerge.

2. To assist in increasing awareness, educators could succinctly communicate the cultural sources of their approaches to design education and could provide opportunities for student designers to

voice their own cultural proclivities and their views on issues of globalisation and transcultural product design.

3. Trainee designers in educational settings can be made conscious that their approaches to the design process are culturally dependent in the first instance and may be hegemonic in nature unless consciously curbed.

4. Self-analysis surveys, questionnaires or evaluation tools could be developed and implemented on design programmes for students and trainees as well as educators to identify personal cultural preferences and how they may differ to those of end-users. This would not be to make judgments on values but to illuminate the range of possibilities and potential strategies to cater for such issues. This would help them become aware of their own biases. Results could be analysed as a group.

Increased cultural awareness, culturally sensitive communication, and modifications to the design process may lead to greater knowledge about cultural diversity. The knowledge discovered would arguably lead to making design decisions that actually address diversity on a less superficial level, as current practice appears to signify. Substantial additional research would be necessary to specify further breakdown of the types of adaptations national and international design syllabi should undergo to achieve these culturally sensitive aims.

7.2.2.4 Alternative counter-hegemonic models: multi-cultural approach or co-design approaches

One suggestion would be that module design would need to comprise a multiple cultural approach incorporating greater awareness of both predominant and minority cultures. Students should be able to pursue their individual constructivist path or a prescribed instructivist one with cross-cultural learning with use of 'low-context' content (Hall, 1983). It is the view of the author that in this era of

participatory culture, design process should be taught with greater emphasis on cultural adaptation, co-design and adaptive design approaches to minimise cultural faux pas.

A proportion of respondents to the survey research asserted that their design solutions were in fact culture-neutral and therefore transcended culture in their views. This indicated a general lacuna in their training and reflected that the majority of syllabi content lacked the element of training required to design across geographical and cultural boundaries at various levels from local community to national. The author argues through the thesis that this limits the designer in obvious critical ways within and across cultures and is the reasoning behind the remedial solutions offered in this section. The intention is to open the minds of future designers in formal educational levels thus making them more effective in future cross- and multi-cultural settings. Unintended messages and unintended intentions can be found embedded in most products as the illustrative examples prove. Culturally insensitive technologies and an improved awareness of this issue may improve overall communication skills across cultures (Hall, 1981). It is argued that this increasingly globalised world requires advanced techniques and strategies for creating culturally sensitive, participatory design when designing across cultures at all levels.

In summary, a number of suggestions for future directions on both design practice and education have been posited. It is hoped that this research may be further extended and built upon and prove to be useful by perhaps influencing educational practices or encouraging designers to reflect on their cultural assumptions. Design practitioners and educators who were both engaged with in field research are equally viewed as stakeholders in this research. Resistance to the hegemonic model has been identified in interview and survey responses, which has illustrated it as more of a complicated and nuanced issue than initially surmised and this is wholly acknowledged but requires further in-depth research to expound and lies outside of the remit of this project due to time restrictions.

7.3   Contribution to knowledge

The findings of the literature review supports the concept that there is a hegemonic set of practices and expectations that influences design and this can spread without reflection into postcolonial contexts. Primary research then explored the cultural processes, preferences and assumptions both conscious and unconscious that designers work with and if they are formally trained to acknowledge these exist. Additionally, data collected successfully identified many correlations that supported and illuminated the complexities being navigated. From the findings of the survey data it becomes evident that many industrial designers have a distinct deficit and lacuna in their knowledge and training in how to design across cultural boundaries and demographics and in multicultural settings and have to learn the importance of this on the job. Formal design education frameworks both nationally and internationally are not sufficiently addressing the role of culture in their syllabi beyond superficial market research and user needs analysis.

The major findings and original contribution to knowledge that were highly significant in terms of research in this field were the following concluded from a combination of quantitative, qualitative and literary data:

1. Skill and experience in multi-cultural awareness is vital for international designers in terms of the successful design of transcultural products within the discipline and profession.
2. Currently the majority of designers in the profession primarily only learn this post-formal education.

A potential solution to this malaise would require 'cross-cultural awareness discourse' to be integrated into design pedagogy, training and process internationally as is argued throughout the various strands of this research.

In a more holistic sense the entirety of the research's contribution to knowledge can be outlined with the following points:

1. This research has identified a malaise and limitation in the designers paint-box. It goes on to present the beginnings of an evidential base for this, which although is not completely conclusive, is however prima facie evidence and therefore very valuable. The empirical investigation tested the training, assumptions, opinions, syllabi and methodology used in a number of countries from the perspective and experience of designers and design educators alike and came to the same conclusion as the literature review in that there is a great deficiency and absence in industrial design's academic material on the topic of how 'designers aren't training to identify or overcome their own cultural constraints.' This was the thesis' major contribution to knowledge.

2. The interview data indicated international designers already working in culturally diverse markets had a richer approach and understanding of cross-cultural issues in contrast with the poverty of cultural issues awareness taught during formal training in the majority of survey respondents. It is concluded that design education and training should address this deficit.

3. The previous section entitled 'potential solutions' (section 7.2.2) outlined a number of recommended changes that are behavioural and curricula based, which might relieve the malaise identified. In the section entitled 'future directions' (section 7.5) alternative and emerging counter-hegemonic models and areas of design such as participatory design, adaptive design and embodied action are also discussed.

4. It appears no explicit existing research currently exists on the relationship between cultural hegemony and industrial design practice, products or education. Using postcolonial and cultural studies as a lens to evaluate industrial design is a novel approach not hitherto undertaken therefore a contribution to knowledge in terms of its uniqueness of approach.

5. Engaging stakeholders, practitioners and educators in the field to test the research hypothesis produced new data evidence hitherto not discovered. Their insights and experiences are now documented for other researchers into the subject to consider. The key stakeholders would also

deem the findings of particular relevance and use as many requests for access have been received for the research findings report.

7.4 Limitations of research

7.4.1 Theory and the issue of granularity

There is a distinct emphasis in design research circles on attempting to better understand the rich detail of the lived world. The problem with studying culture is that culture is allusive and dynamic with the notion of context at its core. Dealing with chaotic, indeterminate situations is undoubtedly greatly challenging. Manuel De Landa argues it is difficult to work out cultural forces, as culture is not only a fluid term but also a fluid phenomenon which at specific moments in time is dense and can solidify, but then continue to be fluid always on the move through a very highly complex series of connections (2003). Analysing cultural influence can therefore be troublesome from a data collection viewpoint as it is difficult to pinpoint the source of cultural data, however legitimate research methods do exist to isolate initially confounding variables enough to reach viable conclusions and new knowledge.

Designers have had many similar problems when discussing design also due to its ever-changing, multifarious nature. Design histories primarily analyse cultural forces as determining the design facets of a product at the time of its inception. De Vries however, acknowledged a 'number of observable design factors relevant to the development of a particular product. These included scientific, technological, market, political, juridical and aesthetic factors' (1997, pp.21-32). When a cultural narrative discerning a product does not exist it is often constructed with new cultural associations and context being produced and material and cultural analysis undertaken from both etic and emic approaches. [24]

It is evident that this under researched area represents a major challenge for current and future design researchers, theorists, educators and practitioners. Design history translates our conditional understanding of design practice as a single continuum with artificially imposed boundaries such as

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[24] Neologisms coined by the linguistic anthropologist Kenneth Pike (1954) who suggests that there are two perspectives that can be employed in the study of a society's cultural system, the emic perspective focuses on the intrinsic cultural distinctions that are meaningful to the members of a given society and the etic perspective relies upon the extrinsic concepts and categories that have meaning for scientific observers.

categories of design, invention, development etc. Although categorisation is necessary to comprehend phenomena it also poses many problems too. A holistic understanding of these issues is unlikely in the absence of a more cohesive body of knowledge. Just as Bioscience is heavily dependent on the proximity of perception and lens it is being inspected through, as it shifts in 'topological domains'; similarly, designers also encountered many difficulties when analysing design, products and culture as any conclusions drawn were mostly contingent on the proximity or level of granularity phenomena is analysed at. An acknowledgement of this from within the design discipline would greatly help its future trajectory. In addition, there also appears to be a distinct scarcity of methodological guidance for the hard-pressed researcher to facilitate understanding culture-technology settings usefully to enable the gathering of requirements or the effective matching of technology to user needs. Therefore, it is crucial to foster more appropriate discussion and methods of analysing human-technology activities and interactions as a means of informing design.

7.4.2   Data quality issues

Sample size guidelines in qualitative research: Interviews

Whilst saturation determines the majority of quantitative sample size, other factors can dictate how quickly or slowly this is achieved in a qualitative study. Guest, Bunce and Johnson (2006, p.59) suggest that 'although the idea of saturation is helpful at the conceptual level, it provides little practical guidance for estimating sample sizes for robust research prior to data collection'. In their literature search for the background to their study they discovered 'only seven sources that provided guidelines for actual sample sizes' (p.61). Of these the phenomenological approach was adopted where: Creswell (199, p.64) states five to twenty five samples are sufficient; and Morse (1994, p.225) states at least six. Whilst quantitative application requires data for preferably ten or more countries, qualitative application is possible for any comparison of two or more countries (Hofstede, 2001).

> The point of saturation is, as noted here, a rather difficult point to identify and, of course, a rather elastic notion. New data, especially if theoretically sampled, will always contribute something new, but there are diminishing returns, and the cut off between adding to emerging findings and not adding, might be considered inevitably arbitrary. (Hofstede, 2001)

Therefore, with this rationale strategically six qualitative interviews were undertaken as a method of data collection in this research. As saturation might not always be the only way to design and perform qualitative studies, this sample size and its representativeness were intended to provide consistent criteria with the use of in-depth one to one personal interviewing. Further constraints dictated this, including the availability of participants, sample size, time, cost, resources and energy. This approach was deemed the most educative in terms of depth and value towards the thesis aims.

Generalisability and representativeness issues - Interviews

Enablers

Generalisability: In regards to data quality issues, qualitative research interviews often present concerns regarding the generalisability and transferability of findings as they tend to utilise a small and unrepresentative number of cases. Nevertheless, these can be disputed with the view that a well-completed and rigorous interview is far more likely to be useful than research projects that amass varied quantitative data beyond saturation point. Particular views at particular points in history and illustrations can be made quite validly with such methods.

Locality: The interviews involved participants from across geographical borders rather than one locality, who had been trained around the world rather than one country, thereby more likely to be useful in alternative contexts. The survey carried out was also not restricted to one locality as most surveys are but rather globally dispersed due to the nature of the research questions. Bryman elucidates that 'within the case study a wide range of different people and activities are invariably examined so that the contrast with survey samples is not as acute as it appears at first glance' (Bryman, 1988, p.90).

Theory: The significance of an interview approach relates to theoretical propositions (Bryman, 1988, p.90; Yin, 2003). Where the research project relates to existing theory the findings have a wider theoretical significance than the cases that form the basis of the work (Marshall and Rossman, 2010). Theoretical propositions can thereby be tested in this context. For this reason, the identification and

application of existing theory were necessary before embarking on the collection of data. Bryman indicates how this has positive implications for the relationship between theory and research.

Response rate: The use of personal interviews, where appropriate, may achieve a higher response rate than using questionnaires. Both were utilised in this study as a mixed methods approach and to ensure responses. Healey also makes the point that 'the interviewer…has more control over who answers the questions' in comparison with a questionnaire, which may be passed from person to person (1991, p.206).

Complexity: Interviews are stipulated as the most advantageous approach to obtain data in the following circumstances (Easterby-Smith et al, 2008; Jankowicz, 2005) factors all of which applied to this study where:

1. There are a large number of questions to be answered.
2. The questions are either complex or open-ended.
3. The order and logic of questioning have to be varied.

Inhibitors

Generalisability: In terms of generalisability non-standardised, qualitative interviews allow a higher level of validity in relation to quantitative data if the questions can be clarified, meanings of responses probed and topics discussed from a variety of angles. However, adopting a case study strategy using semi-structured or in-depth interviews didn't allow statistical generalisations to be made about entire populations where this was based on a small and unrepresentative number of cases (Yin, 2003).

Bias: Interviewer bias may occur when comments, tone or non-verbal behaviour of the interviewer create bias in the way that interviewees respond to the questions being asked (Silverman, 2007). The possibility of imposing the researchers own beliefs and frame of reference through the questions asked and demonstrating bias in the way responses are interpreted can undermine reliability (Easterby-Smith et

al, 2008). Interviewee or response bias may also be caused by perceptions about the interviewer, and the intrusive nature of the process. This was acknowledged and minimised by the author as far as consciously possible.

Reliability and validity – survey

Inhibitors and enablers

Major criticism towards Hofstedes view on the influence of culture state that surveys are not a reliable method to measure cultural differences and studies that employ them cannot be representative for entire national cultures. In his 2001 book he concedes however stating surveys should not be the only method used and other research methods should also be employed. He argues that samples in cultural comparisons do not have to be representative if they are well matched. His findings have been validated by other researchers (Hofstede, 2001; Sondergaard, 1994; Hoppe, 1998, in Schneider and Barsoux). Old data is not necessarily out-dated. Hofstede (2001) therefore indicates it unnecessary to have a representative sample of the population when doing comparative studies. To ensure the reliability of the results, particular care was taken to ensure the questions were clear and easy to answer. Most questions were closed in the sense that choices were pre-printed with the opportunity to incorporate additional dimensions. All potential respondents received the same information. Although altering e-surveys during the course of data collection is a possibility, Survey-Monkey restricts the ability to change a question completely to retain robustness.

Reliability and validity – interviews

Inhibitors and enablers

Reliability is concerned with whether alternative researchers would reveal similar information (Easterby-Smith et al. 2008; Silverman, 2007). Findings from non-standardised research methods are not always intended to be repeatable and often only reflect reality at the time of collection in a changeable situation (Marshall and Rossman, 2010). The assumption is that the circumstances to be explored are complex and dynamic therefore replication of this type of research and its findings are not necessarily feasible or realistic without undermining the strength or value of such research.

Credibility was promoted through the supply of relevant information to participants before the interview. Participants were delivered with a list of the interview themes before the event to promote validity and reliability by enabling the interviewee to consider the information being requested. The value of allowing participants to ready themselves for the dialogue in which they are to engage was upheld.

Participants were sampled and proactively solicited by selection from a larger population and notified of the opportunity to participate. Interview questions were formulated from the literature review, theoretical data, and discussions with designers and colleagues; fellow students, academics and research from phase one. It lists topics to be covered in the interview along with the initial question and probes that may be used to follow up responses and obtain greater detail from the participants (King, 2004). During interviews questions were phrased clearly, in a neutral tone of voice with the use of open questions, factual and opinion-related questions and questions were organised in order and sections to avoid bias.

Audience, target population and sample - survey

Enablers:

a) The resources, cost and ease of reaching large number of potential respondents.

b) The turnaround time, quick delivery and response time.

c) Multiple question formats could be used.

d) User-friendliness.

e) Educators were seen as potentially more intellectually generous, willing to contribute and supportive of research and Ph.D. missions than many other sectors.

f) A larger sample size meant avoidance of bias as wider global distribution meant there is a variation in the type of people responding from different ages, sex, occupational groups, disciplines and countries.

Inhibitors:

a) Limited time available. A lengthy survey will mean they are likely to question why they need to complete it.

b) Multi-disciplinary. Respondents may be design academics, designers or educators or a combination of these data needs greater analysis.

c) Potential presumptions in research premise. There may be presumptions concerning the consumer, the market level and the concepts of 'culture' and 'global'. The conclusion or hypothesis being tested has been arrived at from a 'theoretical' perspective so what is being tested is if the participants mirror this. Therefore, there is a stronger emphasis on avoiding leading or biased questioning towards research hypothesis and effort to keep them short, direct and easy.

International research

Enablers:

a) Instant Global distribution.

Inhibitors:

a) It is understood that participants may have limited English language skills especially in a global or cross-cultural study such as this therefore, the questionnaire and survey questions need to be clear, concise and easily understood or translatable.

b) Minimal responses that are collated from each culture are not representational of the general views of the area and this is declared in the post survey dissemination. It is an initial insight and not representational of a country or area due to the small scale of the study.

Access, distribution and security

Enablers:

a) Data quality checking; time, resources, cost

b) Database captures data directly.

c) Various techniques to improve response rates - wide online network distribution on design groups and forums, email distribution and large sample size.

d) Survey-Monkey mediated the delivery and distribution of the web-based survey to potential respondents and the collection of survey data from actual respondents. Respondents were chosen using sampling methods including selection from a larger population, notified of the opportunity to participate and directed to the survey's website.

e) Ease of ensuring confidentiality - ethical issues and privacy concerns associated with how and when data is captured and stored – survey engine collects all data auto-anonymised. A short introduction to the survey reassured potential participants.

f) A sampler is more viable with the limitations of time on the research as a vast array of global outcomes would be unmanageable.

Inhibitors

a) Online access means no further information or explanations were available to support understanding.

b) Time-consuming in development need for careful design, development and testing.

c) Potential for limited access within target population.

d) Potential for technology problems and accessibility.

e) Security issues could threaten validity or decrease return rate.

f) Lack of control over sample.

g) Potential for bias in the sample.

Language

Inhibitors and enablers

a) Survey monkey does not have a translate key so the surveys needed to be in an easy to read format. References may be misunderstood due to cultural and language differences. All presumptions of knowledge or compliance with a cultural perspective (whether gained academically or implicit) had to be removed from the survey. This was in order to collate participants' interpretations to be collated rather than my interpretation be supported or not supported.

b) Basic English language used for ease of understanding and space was provided for any comments or additions participants chose to leave, as the survey is an insight into how others think – an exchange of opinion and collation of thoughts.

c) The disadvantage of a questionnaire is that it is not possible to clarify the questions when they are not well understood by the respondent or to further a line of enquiry when the respondent has given a short or ambiguous answer.

7.4.3   Ethical considerations and access

Cooper and Schindler describe ethics as the 'norms or standards of behaviour that guide moral choices about our behaviour and our relationships with others' (2008, p.34). In order to maintain good research practice ethical principles process and protocols were strictly adhered to throughout the studies encompassing approaching participants appropriately and sensitively, keeping the interviewees anonymous and ensuring the privacy and security of data.

The following are ways in which this was ensured:

1. A covering letter and consent form outlining verbatim informed consent (Appendix C and D) was obtained in writing from all interviewees either pre-interview or post hoc.

2. The voluntary nature of participation was stressed and the option to withdraw partially or entirely from the process without penalty was given.

3. The anonymity and privacy of all participants, as well as the maintenance of confidentiality of identity and data provided by individuals throughout the conducting and reporting of the research was assured. (Appendix A, D and E). Survey-Monkey auto-collected all data and presented them anonymously for the internet-mediated surveys.

4. All transcriptions of the interviews were encoded so no written records of the participants' names and data existed in conjunction. Records on computer were protected by the data protection act 2013. In the report respondents were referred to by codes rather than using their

names to maintain confidentiality. Geographical locations are stated at the country or regional level only.

5. The researchers own actions, expectations and levels of objectivity in terms of generating and analysing data and publishing results were kept in check as far as possible. An examination of the researchers own values and suitability for the project was carried out in order to protect all involved. Ethical codes and guidelines from the University of Plymouth, Social Research Association and Market Research Society were followed. These are listed in the bibliography.

6. One research motive was to contribute to the community as participants were informed of the specific purpose of the study from the outset and offered an optional debrief upon completion of the study.

7.4.4 Limitations of research

'An exploration of the effect of the product designers' cultural predilections that have formed within his or her individual contexts' and 'an analysis of the training, comparing the syllabi and methods used in examples from a number of countries and contexts' were pursued. This was undertaken to increase insight into the cultural processes, preferences and assumptions both conscious and unconscious, that designers work with: a central theme of the thesis.

The assumptions formed by and omissions of design training was part of a wider philosophical debate about the value of lived experience that can be turned into empirical data, which is arguably the aim of social research. Such research potentially enables the rich complexity of lived experience to be drawn out and can also draw in assumptions created by postcolonial theory. Postcolonial and other theories enable us to see how our thoughts, actions, assumptions, processes, values and more are formed. The initial research was primarily about the structure of education and the rhetoric employed in it rather than about lived experience per se. However, the empirical research carried out has consolidated and grounded the thesis addressing these issues head-on. As the project evolved the new primary research sought, undertaken and integrated has transformed the thesis bringing valuable new insights in terms of lived experience of designers and design educators and situating the research in real-world practice.

It was not possible to draw conclusions on the influence of culture on syllabi due to the complexity of cultural forces and influences and inability to isolate these given project limitations. The nature of the training provided in countries and their counterparts were difficult to ascertain. Although more course conveners could have been directly engaged with for more in-depth interviews about syllabi and methods employed for a discussion on design process in relation to cultural issues, there was substantial difficulty in drawing respondents willing to participate for various valid institutionally linked confidentiality reasons. Future research could attempt to circumvent these issues.

Although the interview sample is small and the conclusions are limited, the data discovered is nevertheless valuable and meets the aims and objectives to provide a unique contribution to knowledge. After all, the purpose of interviews is to provide details and offer a buffer between the unique and general and they infuse the thesis with a rich, multi-faceted insight into the deficits in the professional practices and training of industrial designers in higher education.

7.5   Future directions

7.5.1   Propositions for future directions

Future directions in terms of design practice and education are outlined in the sections entitled '7.1.3.1 to 7.1.3.3 and 7.2.2.1 to 7.2.2.4: Potential solutions to findings'. In terms of other areas for further research, the initial working assumption was that there is a hegemonic set of practices and expectations that influences design and that this spreads without reflection into postcolonial contexts and some of the findings presented greater complexity than envisaged. Interestingly, this research highlighted existing counter-hegemonic influences to western dynamics and this is certainly an interesting avenue for further research. Further research using postcolonial and cultural studies as a critical lens to analyse design technology will help us broaden our understanding and uncover designs unmapped effects on culture. This would hopefully help humanity guide itself towards a more culturally and socially ethical future that is inclusive and fairer for all.

Human-centred design attempts to 'recognise the social and political aspects of the design process and their relationship with technology' (Pain, et al, 1993). It emerged out of a combination of traditional design, social science and engineering and aims to involve tacit knowledge, acknowledge socio-cultural values and empower users. In theory, the four human elements of this address each of the forces that shape people's interactions with products, such as the cognitive functions, physical capabilities, social settings and cultural backdrop of the user. However, the primary research evidences that the socio-cultural context in which product design locates itself is seldom investigated, questioned or debated in any depth at the designing, manufacturing or marketing stages (chapter six). This leads to a distinct superficiality and a perpetually increasing entrenchment of the current situation in respect to gender, culture and technology. Therefore, the thesis advocates remedying this by the adoption of a trans-cultural design approach being constructively incorporated into design process and curricular with questions exploring the design challenges posed by the transcultural experience such as:

1.   What does it mean to be a designer in a transcultural context?

2.   How can a student apply the design methods and processes acquired in one cultural

environment to another one?

3.   How does one blend the methods and processes of different cultural, economic and social contexts to create hybrid and innovative responsible design practices?

Further potential solutions to help address the malaise industrial design faces in designing for global, transcultural products and markets, could include:

1. Prioritising and funding design research and theories focused towards addressing contemporary social and cultural ethical concerns; by finding ways to make designers and technologists increasingly socially aware;

2. Democratising design and technology so it is more accessible usable, inclusive and ethical for all;

3. Broadening our comprehension of the psychological, emotional, environmental and cultural effects of our technologies;

4. Asking provocative questions on design, technology and culture and taking a proactive critical approach towards our currently emerging and future technologies.

Radical and emerging technological advances should not be implemented devoid of foresight and proactive groundwork. Empirical investigations into technology and philosophical debate need to go hand-in-hand if we are to advance further knowledge of the long-term effects of technology. Such knowledge is not beyond our comprehension or grasp but is in fact integral to constructing a better technological future. Only by elucidating the structures of the relations between design, technology, globalisation, humans and culture and accepting the situatedness and contextuality of humans and products can we begin to advance into a celebrated culturally diverse future for all.

In the last few decades' industrial design has experienced many theoretical transformations affecting product development processes not least, considerations of production process for reduced production costs, ethical choice of materials for sustainability and durability and diverse usability considerations. With crucial advances in the understanding and needs of users, traditional design

techniques have begun to merge with novel theoretical and practical approaches from other disciplines. The outcome has been a gestalt-like synthesis of increasingly diversified procedures and methods, and the development of project-based approaches to design objects, environments and systems. In the light of such often-contradictory evolutions, it is perceived the industrial design discipline would benefit from being further consolidated with a clearer ethical direction sought out in terms of its socio-cultural standing to avoid further fracture and dissent amongst its writers, theorists, educators and practitioners.

Within an increasingly multicultural environment with increasing global mobility and migration we need to question the role culture plays in our technological world and how we understand the role technology plays in defining our cultural realities. We need to encourage a multicultural sovereignty over our technologies and recognise their profounder effect on society. We also need to keep in mind that, 'Design has a critical role to play in making technology accessible at all levels and its impact on people and vice versa' (Southwell, 2002, pp.181-189). In my view, only by constructively asking how we can invent an improved future for mankind as a whole and seeking to clarify the moral and political angles of technology, can we begin to re-consider, re-imagine and re-conceive how we want to progress in designing the future. A technological future that is inclusive of all, regardless of gender, race, age or religious and cultural orientation.

Future directions for research could also explore a number of questions that have emerged pivoting the topic of trans-cultural design such as:

1. How can a fluctuating nexus of cultural myths become wrapped into designed technological artefacts?

2. What impact could technologies developed in the west have when disseminated into external cultural contexts?

3. Does the designed object model a given set of values and how can conscious and subconscious ideas be engendered as products?

4. What are the symptoms and expressions of culturally hegemonic thought embodied in design solutions?

5.	Can technology unwittingly contribute to the disadvantage of people from particular minority backgrounds?

To conclude this section, the thesis recommends a development of the theoretical basis of this research with a number of stipulated additional issues to be addressed through future research avenues in the discipline of industrial design. Critical questions posed on the nexus between product, culture, ideology, and the social environment are further suggested routes of knowledge seeking requiring further exploration along with the implicit assumptions in the dynamic relationship between technology and culture. This research asked many questions that are yet to be addressed within the theoretical discourse and the contemporary situatedness of industrial design as a discipline. The research serves to highlight a critical discussion that needs to continue in order to develop thoughts on both contemporary and historical debates around the effect of products on human identity and consciousness and how design can be understood in a meaningful, holistic sense as well as the effects of its cultural impacts.

In summary, the thesis in its entirety contributes to an emerging awareness of cultural hegemony within design; the literature search assessed hegemonic influence design has had by analysing design history, discourse and its specific conceptualisations in the history of technology. The research extended the work that has been done in postcolonial studies to reveal the way in which cultural assumptions can also affect design in a poignant way similar to literary criticism and textual analysis. It departs from a solely critical examination of texts by embarking on a deeper, logical and conceptual examination of current design process and education. The primary research explored design training in syllabi and the methods used in different countries and their cultural views and preferences to expand design disciplinarity with new insights to influence educational practices and encourage designers to reflect on their cultural assumptions and raise awareness of hegemonic and counter-hegemonic practices. It advocated a transcultural approach to industrial design practice and pedagogy.

7.5.2   Existing counter-hegemonic areas and developments in design

There are a number of emerging areas of design that appear to be counter-hegemonic in ethos. These are areas that could prove useful in the ethical and inclusive evolutionary direction of design combined with the approaches and recommendations put forward by this thesis. They are briefly outlined in this section as key approaches for growth if design is to move forward in the right direction.

7.5.2.1 Participatory design

As designers we are only beginning to rethink how we think of design and now have to interact with the world, when prior to the Bauhaus, the world had to interact with the designer. With the progress of new media, it is no longer sustainable to have a demarcated world as we find we inhabit a multitude consensual mixed reality. The contemporary designer has to learn from the world strengthening the growth of co-design, meta-design and adaptive design methods. The most obvious solution to the crisis that industrial design faces is through viewing the world itself, in its incredibly diverse form, as its own best interface and model to mirror. By taking this position, it is possible to begin developing a strategic model that designers could utilise as an aid with which to practice and reflect on their own formative interactions between users and products.

In the voyage towards democratising innovation, participatory design members (putative, potential or future) are usually invited to cooperate with designers, researchers and developers during an innovation process. 'We are currently observing a shift from consumer cultures to participatory cultures' (Postman, 2010). Emerging areas of design discourse include co-design, participatory design and design democratisation. In participatory design stakeholders, either potential or future, who are impacted by design are invited to co-operate with designers and become active participants within the design process. End users are empowered to contribute to the structure and direction of the design, regardless of their design expertise. This opens design up to include users and other stakeholders as idea generators, decision makers and partners with designers, researchers and developers. The rise of participatory design is not merely the insertion of public dialogue within technological design practices but more a model for critical practice. With the argument that design is an action-based practice and best explored through experiential rather than theoretical means, it recognises that the approaches taken by participants

are shaped differently and considerations are often context driven. The core of this approach is negotiating meanings amongst various stakeholders and prototyping as collaborative future making and aimed at forming a basis for reflective practice regarding collaborative issues of participation and citizen engagement.

Approaches such as participatory design, collaborative design, co-design and meta-design [25] are cited as inclusive approaches as they fulfill powerful democratic ideals of citizen participation and user empowerment breaking down the hegemony of the all-powerful designer. This can allow traditionally marginalised voices to participate in the design process. Solutions are arguably more responsive and appropriate to their users' cultural, emotional, spiritual and practical needs. It is important to note that this is still an emerging methodology, which although has the potential to become one of the few research approaches to come out of design itself is still in its infancy. The postcolonial, cultural lens approach cultivated and driven by this thesis would be an addition to the move towards this mutual goal of making design more culturally aware, inclusive and sensitive.

7.5.2.2 Adaptive design

In terms of usability issues subliminal power relationships exist between designer and user – the increasingly complex the design, the more parameters attached that need negotiating so as a result the less imagination and room for movement can be exerted on the users part. Hence the designer retains absolute control. The restriction on the degree of freedom the designer has in providing a solution to a need or problem is known as his or her constraints. Constraints may impinge on tool use. Design needs to ideally be neutral and flexible, to leave space for the users self-expression. Adaptive design involves transferring agency from the designer to the user.

Adaptive design can be summarised as:

> In essence, adaptive design is about designing to enable the user to change things. You strive for 'good enough' as a starting point, such that the user feels they have a 'way in', almost an implicit goal of working through the finished design themselves. It sees design as a social process, developing over time, via a relationship with the user. (Hill, 2011)

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[25] Meta-design is an emerging conceptual framework aimed at defining and creating social, economic and technical infrastructures in which new forms of collaborative design can take place within interdisciplinarity. It consists of a series of practical design-related tools for achieving this and is inspired by the way living-systems work. (Fischer and Giaccardi, 2006).

With the idea that:

> We should be able to state that the design of a system should extend to thinking through the after sales service. Again, the importance of looking at the device as a social production - whose real life begins, not ends, at the point-of-sale.

Interaction designers have already turned to qualitative, ethnographic research methods to understand product-centred frameworks. Introducing a theoretical culture-aware design framework such as that taken by this research could help describe how products can evoke particular social behaviour and articulate occluded factors such as theories of cultural experience and emotion. Industrial design discourse is only beginning to see design outcomes as social products interwoven and imbedded in cultural backdrops. We need to better understand context and user experience and generate novel products that change that experience for the better.

7.5.2.3 Embodied action and a cultural cognition of design

Another developing area of design research that aligns with the ethos of this research posits the view that objects don't exist in an abstract domain and that there's a bodily, active dimension rather than a solely cognitive one as many claim: identifying design as an enactive and embodied process where the field of the user is integrated with the field of the object. Despite the core user and object there's an amalgam of activeness, hardware, expectation etc. Consciousness is constituted as the enactment of our capacity for attention, memory, speech, reflection, intention, learning, imagination and reasoning. It is by exercising these things that we develop them and ourselves, therefore it can be argued that consciousness is realised by what we repeatedly do in our daily activities. Design as a process, is better understood as action through its use. Artefacts should not be interpreted in isolation but in context. '[Y]ou cannot separate the individual from the world in which that individual lives and acts' (Dourish, 2004b, p.18). There exists an erroneous conception of activity as something that exists quite independently of the context in which it happens. All activities are patterns that are interwoven with threads of culture that can be either local or global or glocal in nature (Dourish, 2004b).

Designers determine how well a particular design operates in a system or in society as a whole as every designed artefact influences its surroundings. Integration into a system means contributing to its current state, therefore logically certain cultural assumptions [embodied in the world] can often be enhanced or made more prevalent. Local conditions and peculiarities can influence theories of technological development in a decisive manner. They can also create adaptations to views. As this thesis surveyed how artefacts have consequences, products are argued to both mediate our actions and construct our perceptions of the world we inhabit. A designed product can never be disassociated from the political, economic, and cultural matrices within which it exists. As such, it cannot and does not exist as a neutral thing unto itself. Therefore, all design (being economically and culturally situated) either creates and fosters novel economic and cultural relationships, or reinforces existing structures. There is no such thing as a-cultural design. Design cannot attempt to be value neutral as it rarely is in practice and the thesis is based upon this important premise.

Research (Kaptelinin and Nardi, 2009; Dourish, 2004; Bozalek and Ng'ambi, 2014) investigating differing perspectives of design, culture, and activity theory also outlines the cogency and persuasiveness of the counter arguments. Our current climate of mass-production and mass-produced products raise valid concerns as to how important context, culture and consciousness is. Artefacts, such as cars, musical instruments, educational tools, mediate between the subject and the object of the activity impacting both in the interactions.

> Risk, advantages and disadvantages, are the only three features that constitute university level expertise in design. And all three features concurrently pertain to artefacts, crafts or mass-produced, and they cover both aesthetics and functional preoccupations. Aesthetics are essentially cultural manifestations in/on artefacts, whereas functionalities constitute, only partially, a socio-cultural factor, in addition to essential being chemical, physical, and biological mechanisms. (Nsenga, 2011)

Other cultural bends may dictate different uses to those prescribed by designers. For design discourse, the critical issue still in need of thoughtful enlightenment is still how:

> Comparative studies are needed providing respective stakeholders with evidence of the most useful artefacts in any given context. That is material culture, in need of all the above-mentioned types of knowledge and more in a transdisciplinary node of 'production' of such evidence. This kind of culture does matter for product design. (Nsenga, 2011)

This research has helped elicit the following concepts that could be developed further:

1. Products can have certain custom-made features that encourage particular modalities of use or manners of relating to others.

2. Development itself is a socio-cultural process. Although the individual isn't abstracted to culture or society; it is important to understand and emphasise the socio-cultural matrix within which individuals develop and account for the interconnected processes of opposition, creativeness and reflexivity of the individual.

3. The dialogical nature of processes of internalisation–externalisation enables individuals to transform culture through their activity: 'These processes take place in part within individuals as people have the capacity to radically restructure cultural conceptions, transcending culture in unpredictable ways' (Kaptelinin, 2009, p.24).

Embodied and situated action and interaction theories offer alternative perspectives of the role and use of technology and may be applied to industrial design products for useful analysis. All artifacts have consequences and sit embedded in the socio-cultural tapestry we inhabit. Far-reaching cultural issues are often homogenising but most design practitioners do not foresee or predict them and further still remain unaware of the global impact of their solutions due to a lack of training in these issues. This was evident in the research findings on designers who design locally in multi-cultural settings rather than internationally, yet, international designers were far more culturally sensitive and aware as the interview data illustrated having learnt such skills on the job rather than in formal training as expected. As such there was evidence supporting the two main hypotheses – that product designers are not explicitly trained to neither understand nor consider respective cultural variances, and secondly that design education is not equipped with the tools to acknowledge or confront this issue as of yet. A trans-cultural cognition of design process and products integrated into curricula could in time enable design to evolve substantially.

In conclusion to the thesis, literary searches undertaken for this project made it evident that scarce little critical writing has attempted to locate product design in relation to the emergence of

postcolonial cultural sensibilities.   Whilst addressing hegemonic shifts in disciplines have been crucial elsewhere (such as economics, science, semiotics, literary and cultural studies etc.) in thinking about balancing power-relations and patterns of culture, writing on design has yet to develop a strong conceptualisation of theoretical paradigms for design praxis and pedagogy.   This is despite the fact that the designer's role has begun to move from individual producer to the designer as a member of integrated product development teams in design praxis.   However, there still appear to be few counter-hegemonic design practices that exist to tackle this malaise bar the practices stipulated in this section.   It is argued by the author of this project that these may be deepened and complimented via the utilisation of a postcolonial lens of analysis, critique and reflection as submitted by each of the various chapters, sections, and theoretical and philosophical research strands of the thesis.   Culture can be pinpointed as the site for hegemonic struggles, a view that has gained currency over the last few decades.   By bringing the periphery into critical contact with the centre we can begin to suggest a concept of design praxis based on a strategic maneuvering of cultural meanings and challenge the dominant tactics of cultural hegemony.

Although this is by no means an easy task for the discipline to undertake, by developing a design framework to address these provocative discussions and understanding that meaning can no longer be conceived as a fixed entity with immutable values and thereby rethinking our roles in meaning production we can uncover the coded visual rhetoric of marginality and the culturally zeitgeist associations it invokes so we can give the people who have consistently been left out of such discussions their voices back as capitalisms continual appetite for new markets is not likely to be satiated any time soon.   A postcolonial designer would thereby reclaim cultural authority by 'reversing, displacing, and seizing the apparatus of value coding' (Spivak, 1990, p.228) that is the technological hegemony that assigns certain cultural values to certain design solutions.   It is envisioned that such an approach would aid us to better understand design hegemony, rebalance the writing of design histories, look anew at the meanings of empowerment, progress and development, as well as to inform the training of industrial designers both in higher education curricula and within their professional working practices in a complex cultural ecology.

7.6 Appendices

7.6.1 Appendix A – Survey invitation

ONLINE SURVEY REQUEST

Dear XX

I am currently undertaking PhD research in the discipline of Product Design and Culture at the university of Plymouth and am hoping you may be kindly prepared to spare a few moments of your precious time to complete an online survey at the website: https://www.surveymonkey.com/s/designinfluences to help me with my research.

It will take approximately a few minutes to complete and you may leave comments. The research generally aims to understand the relationship between globalisation, the designers' cultural predilections and our understanding of culture and the design process. The opinions of design educators, researchers, practitioners and students will be compared as a result.

In particular, the study investigates 'the effect of the product designers personal preferences that have been formed within his or her individual cultural contexts'. It looks at the inconsistencies between designers' culture and globalisation and if designers are explicitly trained to understand or overcome their respective cultural constraints and whether design education nationally and internationally is equipped with the tools to acknowledge and confront this.

Your time and kind insights from your own experience would be greatly appreciated and be beneficial to this research. My findings will solely be used as part of my study for academic research purposes so may be published in the thesis, however all data will be anonymised and thanks will be published within the document to those that contribute. By participating voluntarily you give your consent unless stated otherwise.

I hope to hear from you soon and many thanks in advance

T. Begum

7.6.2 Appendix B – Survey

<div align="center">

SURVEY INTRODUCTION

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The dual aims of the research

A. To undertake an analysis of training comparing the syllabi and methods used in examples from a number of countries and contexts.

B. To explore the effect of the product designer's cultural predilections which have been formed within his or her individual cultural contexts.

The purpose of this survey is to gain an overview of international design training and the influences this may have on product outcomes. The results will be analysed to support my PhD thesis due for completion in 2014 and all data collected will be used anonymously for academic purposes only. By participating voluntarily you give your consent and thanks will be published to all those who kindly contribute.

The survey is open until the 2nd June 2014 and has 29 questions, which should only take a few minutes of your time. Open answers can be typed in the spaces provided. Any questions please contact me at the following email address: taslima.begum@plymouth.ac.uk

Yours sincerely

T. Begum

SURVEY

An analysis of international Design training comparing the syllabi and methods used in examples from a number of countries and contexts

1. Design and Culture Survey

Survey Introduction

The purpose of this survey is to gain an overview of international design training and the influences this may have on product outcomes. The results will be analysed to support my PhD thesis due for completion in 2014 and all data collected will be used anonymously for academic purposes only.

The survey is open until the 30th May 2014 and has 29 questions, which should only take a few minutes of your time. By participating voluntarily you give your consent and thanks will be published to all those who kindly contribute.

1. Which of the following best describes your current occupation?

- Academic
- Artist
- Craftsperson
- Designer
- Educator
- Engineer
- Maker
- Practitioner
- Project Manager
- Student
- Technician

Other (please specify)

[   ]

2. Are you male or female?

- Male
- Female

3. Please select your specialist area/s of design

- Industrial
- Interaction
- Product

- Graphic
- Communication
- Sustainable
- Interior
- Fashion
- Experience
- Film
- Games
- Photography
- Environmental
- System
- Engineering
- Furniture
- Jewellery
- Architecture

Other (please specify)

[   ]

4. Which category below includes your age?

- 18 to 24
- 25 to 34
- 35 to 44
- 45 to 54
- 55 to 64
- 65 to 74
- 75 or older

5. Please state your country of birth

[   ]

6. Please state your country of residence

[   ]

7. In which country (or countries) were you trained?

- United Kingdom

- Japan
- USA
- China
- Germany
- Turkey
- India
- Brazil
- Australia
- New Zealand
- Egypt
- Italy
- Malaysia
- United Arab Emirates

Other (please specify)

[   ]

8. Do you create design outcomes or products?

- Yes
- No

9. How were you trained?

- On the job
- Apprenticeship
- Foundation degree
- Degree
- Masters
- PhD
- Self taught
- Mentorship

Other (please specify)

[   ]

10. Were you trained by academics?

- Yes
- No

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11. Were you trained by technicians?

- Yes

- No

12. What did your training incorporate?

- Techniques

- Design history

- Design theory

- Manufacturing

- Functionality

- Aesthetics

- Marketing

- Material sourcing

- Production methods

- Socio-cultural trends and norms

- Economics and/or budgeting

Other (please specify)

```
                                                            
```

13. Was the training you took for a specific length of time?

- Yes

- No

If yes state length of training in years

```
                          
```

14. Did your training have a religious, cultural or political perspective?

- Yes

- No

If yes, explain how

```
                                                            
```

15. Did your design process change due to your training?

- Yes

- No

16. If you believe the design process changed, identify the reasons for the changes

- Where it would be sold
- Processes you learned
- To meet social expectations
- Socio-cultural influences
- Demonstrate technical skills
- Meet a budget of buyer
- Meet budget of self or design team
- To meet fashion demands

Other (please specify)

[   ]

17. What is your usual country of sale, display or promotion?

- Locally
- Globally
- Other (please specify)

[   ]

18. Would you consider selling your product internationally?

- Yes
- No

If no, what is your perception of the barrier?

[   ]

19. Does your own culture affect your design style?

- Yes
- No
- Don't know

If yes, in what way?

[   ]

20. In what ways may you consider applying a cultural, social or political element when designing your product?

- Size

- Price
- Style
- Functionality
- Aesthetic
- Materials
- Shape
- Colour

Other (please specify)

┌───┐
│   │
└───┘

21. Do you undertake any market research before designing and making a product?

- Yes
- No
- Sometimes
- N/A

22. If you wanted to sell this in a different demographic area would you change any of the following features?

- Size
- Price
- Style
- Functionality
- Aesthetic
- Materials
- Shape
- Colour
- N/A

Other (please specify)

┌───┐
│   │
└───┘

23. Does your product demonstrate or cater for any particular aspects of the following?

- Cultural aesthetic
- Cultural usability features
- Social behaviour

- Cultural behaviour
- Method of interaction
- Political view

Other (please specify)

[   ]

24. If you wanted to sell or promote your product in a different demographic area or cultural setting would you consider changing these?

- Yes
- No
- Maybe
- Don't know
- N/A

25. Did your training prepare you for this?

- Yes
- No
- Maybe
- Don't know
- N/A

26. Could you name a culturally, socially, or politically 'neutral' product or label?

- Yes
- No
- Don't Know

If yes, please specify

[   ]

27. Do you believe that products can change cultural, social or political conventions?

- Yes
- No
- Maybe
- Don't know

28. This is an opportunity to tell me how your product may be viewed as having a

stereotypical cultural, social or political element to it

[   ]

29. Please leave any queries and I will respond within 28 days

[   ]

Done

7.6.3   Appendix C – Interview covering letter

INTERVIEW INVITATION LETTER

Dear XX

As an academic researcher working within higher education at the university of Plymouth, I am currently undertaking PhD research in the discipline of product design and culture. I am hoping you may be kindly prepared to spare a few moments to undertake a telephone or Skype interview with me to help with my research. The interview is part of a series I am arranging with a selected sample of international designers and/or design educators.

The research aims to understand the relationship between the designers' cultural preferences, globalisation and their impact on our understanding of the design process. It particularly asks if product designers are explicitly trained to understand or overcome their respective cultural constraints and whether design education nationally and internationally is equipped with the tools to acknowledge and confront this.

An outline of my proposed interview structure and themes to be covered is attached, although it is not my intention to follow this slavishly. I am hoping to conduct these interviews in June and July and envisage that they will take between 15-20 minutes.

Should you wish to participate, your time and kind insights from your own experience would be greatly appreciated and be beneficial to this research. My findings will solely be used for academic research purposes so may be published as a report in the thesis, however all data will be anonymised and treated with the utmost confidentiality. No source, individual or organisation will be identified and no comment attributed without written permission of the originator. Heartfelt thanks will be published within the document to all those that contribute.

If you require any further information, or to arrange a mutually suitable time for interview, please do not hesitate to get in touch. You can contact me by telephone on (0044) XX or email me at XX.

I hope to hear from you soon and many thanks in advance

Yours sincerely

T Begum

7.6.4   Appendix D – Interview consent form

<div align="center">

INTERVIEW CONSENT FORM

</div>

Name and position of researcher

Taslima Begum, PhD student, University of Plymouth, United Kingdom.

Title of research study

The purpose of this survey is to gain an overview of international design training, the understanding of culture and the influences this may have on product development and outcomes.

The dual aims of the research

A.   To explore the effect of the product designers' cultural predilections that have been formed within his or her individual contexts.

B.   To undertake an analysis of design training comparing the syllabi and methods used in examples from a number of countries in relation to cultural awareness.

Please initial box

1.   I confirm that I have read and understood the information document for the above study and have had the opportunity to ask questions.

2.   I understand that my participation is voluntary and that I am free to withdraw at any time without giving a reason.

3.   I agree to take part in the study.

Please tick box

4.   I agree to the interview being recorded.

5.   I agree to the use of anonymised quotes in publications.

Name of participant: **Date:**   **Signature:**

T. Begum (researcher)   **Date:**   **Signature:**

<div align="center">

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</div>

7.6.5   Appendix E – Pre-interview introduction

PRE- INTERVIEW INTRODUCTION TO INTERVIEWEES

Thank you for agreeing to the request for interview. It will take the form of a semi-structured interview about your experiences as a designer from your own unique standpoint and should only last around 15-20 minutes.

As you may already be aware from the interview information and themes document sent to you, the overall purpose of this research is to understand the relationship between the designers' cultural preferences, globalisation and their impact on our understanding of the design process. It particularly asks if product designers are explicitly trained to understand or overcome their respective cultural constraints and whether design education nationally and internationally is equipped with the tools to acknowledge and confront this.

The dual aims of the study are:

A. To explore the effect of the product designers' cultural predilections that have been formed within his or her individual contexts.

B. To undertake an analysis of design training comparing the syllabi and methods used in examples from a number of countries in relation to cultural awareness.

- To make you aware, all your data, views and identity will be kept confidential and full anonymity will be given and anything said by you will not be attributed to you without seeking and obtaining your permission first. My findings will solely be used for academic research purposes so may be published in the thesis.

- You do have the right not to answer any questions posed to you and the interview may be stopped at any time if you so wish.

- A summary of the research findings can be sent to you should you request it once all the research has been concluded.

- This interview will be recorded electronically and all data will be protected under data protection laws.

- A consent form has been sent to you outlining these issues which you will need to kindly sign and return to me.

- I am very grateful for your time and invaluable insights from your own experiences and am hopeful that it will be greatly beneficial to this research.

INTERVIEW THEMES AND QUESTIONS

Participant Information Code: (interviewer use)

Date and Time: 2014; GMT

Interviewed by:

Location:

Interview Setting: Skype/telephone interview

<u>**Core**</u>

1. Occupation:

2. Gender

3. Type of product /designer:

4. Age range:

5. Place of birth:

6. Place/s of residence:

7. Place/s of training:

8. Whether you have current products that you design and produce:

9. Usual place of sale/ display or promotion:

Overall impression of interview:

Interview aims:

1. To explore the effect of the product designers' cultural predilections that has been formed within his or her cultural contexts.

2. To undertake an analysis of design training comparing the syllabi and methods used in examples from a number of countries in relation to cultural awareness.

Themes:

Type of training

1. Can you tell me a little about the training you had and whether your training was formal or informal?

2. Did you undertake varied modules or was it focussed towards one specialism?

3. Was it predominantly technical, theoretical, marketing based (directed at certain consumers) or supportive of whichever direction you wished to explore?

4. Was there a 'house style' or a cultural style that you were encouraged to adopt?

5. If yes, can you explain what it was like, what was the reason for it?

6. How was this taught or implied to you?

Prominent and conventional design concepts

1. Was cultural awareness in relation to design development taught within your training?

2. During your training, was it important to demonstrate an awareness of the needs of other cultures, for example through styling, sizing or another aspect?

3. How did you cater for this if your formal training did not involve any cultural analysis understanding or teaching? How did you bring this into your design process and practice?

4. Do you consider these aspects in your work or practice now or undertake any cultural needs analysis?

5. Would consumers globally be able to recognise your own culture from your products?

Products as change agents

1. Have you come across products that you don't think travelled well in relation to their role, style or use?

2. How well do you think your products would travel?

3. Do you think your consumers would be able identify your cultural background from your designs?

4. Would you consider changing your designs for the products to become more internationally desirable to a more diverse market or should people embrace the differences?

5. Do cultural restraints inform your thinking?

6. How much do you feel you know about the effects of mass-produced designed products on culturally diverse users?

7. As a designer how do you reconcile designing products locally within specific cultural contexts with designing them for global, transcultural markets and consumers/users?

Subconscious or conscious decisions

1. In your opinion can products be culture-neutral?

2. Can you give an example of another global design that is universally suitable across cultures and demographics?

3. How important are cultural values in the product design cycle?

4. What do you consider to be the main influences on your designs, and more specifically are there any of your own political, cultural or social aspects to be found in your designs?

5. When explaining your style do you ever change the language or reference points so people understand you?

6. In hindsight if you were to examine your products could you identify underlying socio-cultural aspects that you didn't realise were there? Please expand on this if possible.

7. **Is there anything else you would like to add in relation to this subject or interview in general?**

7.7   Appendices

7.7.1   Interview Transcripts 1-6

Interview Transcript 1: I1

Participant information code: I1

Date and time: 16th June 2014; 10:30 GMT

Interviewed by: Begum, T

Location: Delhi, India.

Interview setting: Online via Skype; Company office

Core

1. **Occupation:** Product designer and academic

2. **Gender:** Female

3. **Type of product /designer:** Instrument designer

4. **Age range:** 35-44

5. **Place of birth:** Delhi, India

6. **Place/s of residence:** Delhi, India

7. **Place/s of training:** Indian Institute of Technology, Delhi, India; Royal College of Art, United Kingdom

8. **Whether you have current products that you design and produce:** Yes.

9. **Usual place of sale/ display or promotion:** Locally and globally.

Overall impression of interview:

Reticent at first but confidence grew as interview progressed. Background office noise interfered somewhat so additional questioning and subsequent transcription was difficult and some parts inaudible afterwards. Notes were kept to rectify this somewhat.

Interview aims:

1. To explore the effect of the product designers' cultural predilections that have been formed within his or her individual contexts.

2. To undertake an analysis of design training comparing the syllabi and methods used in examples from a number of countries in relation to cultural awareness.

Themes:

Type of training

1. **Can you tell me a little about the training you had and whether your training was formal or informal?**

   I did my undergraduate at the RCA in the UK and I did my Masters of Design (M.Des) in Industrial Design at IIT in Delhi. They were both formal and modular, and interdisciplinary in nature.

2. **Did you undertake varied modules or was it focussed towards one specialism?**

   There were varied modules throughout the MA course and this cumulated in a specialist area of ones choosing with two Major project works. We engaged in lectures, tutorials, and practical/laboratory based work involving materials, design methods, instrument design, product usage, interfacing, electronics, applied ergonomics and much more. My undergraduate was more creative and flexible.

3. **Was it predominantly technical, theoretical, marketing based (directed at certain consumers) or supportive of whichever direction you wished to explore?**

   It was mostly technical and theoretical. There was very little on marketing or consumer research methods and although we briefly looked at the cultural parameters of design it was very basic. The major project work allowed us to specialise and explore an area of our choosing.

4. **Was there a 'house style' or a cultural style that you were encouraged to adopt.**

   Not really, no. Cultural styles were rarely discussed. It was mostly technical-based such as things like CAD, engineering, interface design and prototype development.

5. **How was this taught or implied to you?**

   Cultural styles were not implied because nobody we knew considered it important at the time, nor was it in the curricula.

Prominent and conventional design concepts

1. **Was cultural awareness in relation to design development taught within your training?**

   Not explicitly, as I recall. Cultural and other contexts were invoked implicitly but this meant when working in industry we weren't exactly prepared for the fact that the cultural facets of our designs could adversely affect our end users and consumers. This had to be learnt the hard way through trial and error on the job.

2. **During your training, was it important to demonstrate an awareness of the needs of other cultures, for example through styling, sizing or another aspect?**

   Design nominates specified recipients, stakeholders and clients. Although we were aware of this there was a clear lack of training in cultural needs analysis or market research skills. We were designing for the end user but did not have the know-how or tools to actually 'know' the end user and had to go on gut instincts often! Culture-related issues are very hard to confront for some too. Our training did not incorporate these issues.

3. **How did you cater for this if your formal training did not involve any cultural analysis understanding or teaching? How did you bring this into your design process and practice?**

   My interests moved into eco-design because I saw a specific need for ecological-centred technologies. I began by making instruments for one demographic, which then evolved into mass-produced products. However it was a not one-size fits all product and did not take well. I had to learn the hard way what my training had failed to provide and how crucial cultural awareness was for product success. I began to learn the skills necessary by doing qualitative needs analysis using interviews and focus groups to redesign my product.

4. **Do you consider these aspects in your work or practice now or undertake any cultural needs analysis?**

   I learned much from the ability to work across usual boundaries of practice and thinking i.e. marketing, mathematics, philosophy, art, design, poetics etc. whilst on the job within my role in a well-known design company in Delhi. Though my BA and Masters were interdisciplinary, I feel I learnt far more from training on the job.

5. **Would consumers globally be able to recognise your own culture from your products?**

   I'm not sure. I think it was very evident without meaning to be when I initially designed but now I produce for the mass-market my products are less culturally obvious so as to cater for broader sensibilities. Many Indian designers allow their personal cultural influences to affect their outcomes and decision-making sometimes without even realising. Cultural diversity is big in India and a lot of onus it placed on it. When you do market research you do not bring your own cultural influences, opinions and agendas into the product design but rather that of the target users. I don't think many designers

are trained to realise how they bring their own preferences, political and cultural views to the table when they design or make design choices and how this can unintentionally affect the final outcome. Hidden cultural bias in product cycles -whatever the cultural origin- clearly exists and failed products are testimony to this fact. Everyone is too concerned with the product specifications, budget and timescales.

Products as change agents

1. **Have you come across products that you don't think travelled well in relation to their role, style or use?**

   Many, largely because our economic culture has no way to think outside economic growth paradigm. Therefore it cannot see beyond very short timescales. Many products are forced onto unsuspecting consumers then rejected.

2. **How well do you think your products would travel?**

   With the redesign to suit mass-market, quite well I think. I think unbiased design is possible regardless of the background of the designer, if the onus and focus is entirely on the user or consumer.

3. **Do you think your consumers would be able identify your cultural background from your designs?**

   Not with my specific product but generally I believe you can often unravel products to reveal things about their designer or creator. Whether we like to admit it or not personal cultural opinions influence design decision-making all the time. Unless we make an overt and conscious decision not to let it.

4. **Would you consider changing your designs for the products to become more internationally desirable to a more diverse market or should people embrace the differences?**

   I don't see it in 'consumer'/'market' terms. I feel design educators need to radically change the language and assumptions within design education.

5. **Do cultural restraints inform your thinking?**

   I am interested to identify blind-spots that sustain the lethally dysfunctional (consumer) culture.

Subconscious or conscious decisions

1. **In your opinion can products be culture-neutral?**

   Probably not entirely, no. I think the major difference between being culture neutral vs. culturally aware is by tackling the erroneous belief that culture-neutral products happen by accident or chance.

2. **Can you give an example of another global design that is universally suitable across cultures and demographics?**

   Everything is provocative to everyone but we are educated not to notice how barbaric the economic system is. Product design is only one part of the whole system.

3. **How important are cultural values in the product design cycle?**

   Important aspects of design, as opposed to art, are its need for an empathetic approach. Ideally, this means respecting cultural and other differences and not trying to mash them up for marketing purposes.

4. **What do you consider to be the main influences on your designs, and more specifically are there any of your own political, cultural or social aspects to be found in your designs?**

   I try not to let my own cultural views impact on the design process unless it will be of benefit to the end user. Sometimes though this cannot be helped, as it is an unconscious act and hard to isolate or separate.

5. **When explaining your style do you ever change the language or reference points so people understand you?**

   Yes – it is an integral part of my methodology especially learning/teaching/assessment strategies. We need a better framework of thought that is inclusive of all players.

6. **In hindsight if you were to examine your products could you identify underlying socio-cultural aspects that you didn't realise were there? Please expand on this if possible.**

   Yes, possibly on gender, race, religion and age (particularly my own) and predilections for, and assumptions about, certain kinds of technology.

7. **Is there anything else you would like to add in relation to this subject or interview in general?**

   Good luck with your mission.

Additional questions

1. **In your opinion, in terms of new product adoption and use, how resistant are cultures and societies to change?**

   This question is too large and diffused to give a useful answer although a huge variety of examples are visible in newspapers etc.

2. **If a product's salability is contingent on the particular market's reception and assimilation of it, can it still be imposed into a given society or market to make it successful?**

Advertising industry is very clever and its very nature and existence proves it can.

3. **In what ways can designed products impose, reinforce or threaten moral or political values?**

A very subjective topic. Some cultures try to be 'liberal' and others try not to be distracted from their (oftentimes dogmatic) beliefs.

4. **In what ways are user agency, adaptive design and co-design having an impact on industrial design and design education?**

These are the future of design. Designers will collaborate more with end users and create solutions that work far better than a top down, hierarchical process, which fails to gather crucial data about the end users and audience.

Interview Transcript 2: S1

Participant information code: S1

Date and time: 16th June 2014; 19:00 GMT

Interviewed by: Begum, T

Location: San Francisco, U.S.A.

Interview setting: Online via Skype, Office setting

<u>Core</u>

1. **Occupation:** Designer

2. **Gender:** Male

3. **Type of product /designer:** Interaction, User Experience and Design Strategy

4. **Age range:** 34

5. **Place of birth:** Wales, United Kingdom

6. **Place/s of residence:** San Francisco, U.S.A

7. **Place/s of training:** U.S.A, University of Art and Design Helsinki, University of Wales

8. **Whether you have current products that you design and produce:**
   I work on the Android System Design Team and I just launched Aether (aether.com)

9. **Usual place of sale/ display or promotion:**
   Sort of everywhere I guess for Android and Aether is online only and Boutique stores

Overall impression of interview:

Very enthusiastic interviewee who spoke with the confidence extensive experience provides. Showed exceptional awareness of subject and own abilities, both strengths and weaknesses. Gave examples throughout to highlight views and opinions based on experiences and know-how. Expanded on questions voluntarily and viewed line of research as crucial.

Interview aims:

1. To explore the effect of the product designers' cultural predilections that have been formed within his or her individual contexts.

2. To undertake an analysis of design training comparing the syllabi and methods used in examples from a number of countries in relation to cultural awareness.

Themes:

Type of training

1. **Can you tell me a little about the training you had and whether your training was formal or informal?**

   I am formally trained I guess. My undergraduate degree was focused on how to break down problems, how to create solutions and how to tell stories and communicate those ideas. It was informal in the sense that the things people are taught as 'skills' today were self-taught. My Masters degree was a little different in that there were formal courses, but having already learnt those skills previously I focused on how to communicate narrative, ultimately doing more formal training around narrative and story.

2. **Did you undertake varied modules or was it focussed towards one specialism?**

   My undergraduate degree was project based with several auxiliary modules around art history and theory. My Masters was modular.

3. **Was it predominantly technical, theoretical, marketing based (directed at certain consumers) or supportive of whichever direction you wished to explore?**

   I was free to explore at both levels.

4. **Was there a 'house style' or a cultural style that you were encouraged to adopt.**

   I believe that my undergraduate degree did have a way of thinking I was encouraged to adopt but there was no style. My Masters was wide open.

5. **How was this taught or implied to you?**

   It was enforced on the BA through the project reviews.

Prominent and conventional design concepts

1. **Was cultural awareness in relation to design development taught within your training?**

   On my undergraduate no, but on my MA it was.

2. **During your training, was it important to demonstrate an awareness of the needs of other cultures, for example through styling, sizing or another aspect?**

It was always enforced through project review, where one of the most important aspects of the project was identifying the problem and explaining how you solved the problem. Thus a problem had to take into account other cultures. Also because I was an expat, surrounded by other expats, there was a lot of discussion around culture. Things like size then are simply anthropometrics for the group of users being targets. Styling is not design, at least in how I have been taught design and how I think about products. Things like color, trends, etc. are important but were often overlooked during my MA.

3. **How did you cater for this if your formal training did not involve any cultural analysis understanding or teaching? How did you bring this into your design process and practice?**

   Like much of my skillset I grew to understand my own limitations and then put myself in a position to address it. I joined a research institution for a while thinking that it would help me, however it didn't I was frustrated with the academic approach to understanding people. So when I joined XXXX I took great pains to be part of user studies and in context research. Ensuring I was involved at all stages. Basically learning through doing. Taking what works for me and evolving my design practice.

4. **Do you consider these aspects in your work or practice now or undertake any cultural needs analysis?**

   Much of what I do is about understanding people and their problems. Whenever a new project starts there is a lot of desk study, and when I can, there is travel and in context research. Mostly done to deconstruct my understanding of the issues and pull out the larger issues I will work through. I'm lucky now that I have formal research teams who can then go do large ethnographic studies across many countries. I often help breif and plan those trips, and take part when I can.

   I'd say one of the biggest discussion points during a project revolves around pulling out what is cultural behaviour that should be designed for, vs. what is behaviour that is a result of the limitations of current technology and solutions.

5. **Would consumers globally be able to recognise your own culture from your products?**

   Probably. I think anyone who claims otherwise simply isn't aware enough to know. We can only imagine and work with what we know and our influences. Those are going to impact our work if we like it or not.

Products as change agents

1. **Have you come across products that you don't think travelled well in relation to their role, style or use?**

   I think devices like the iPhone don't travel well initially. They really require a lot of local support in terms of local services and localisation that goes beyond simply translating strings.

2. **How well do you think your products would travel?**

Of the the ones that are public not so well, they have all been made for specific audiences. I have done a lot of work on financial services that was never made public I feel would have traveled well. However it was designed to be simple, small and super flexible. It would have been up to the different markets to take, use it and extend it.

3. Do you think your consumers would be able identify your cultural background from your designs?

There would be a scale from probably to absolutely. Again because even working for Nokia or now Google, the products are designed for specific markets and segments and as such identifying where I come from would be possible. I think sometimes it would be harder than others. However products like Aether Cone are super obvious, but that's ok because it is meant to resonate with specific people.

4. Would you consider changing your designs for the products to become more internationally desirable to a more diverse market or should people embrace the differences?

I'm a big believer in hyper localisation. Meaning I try to think about targeting products to big cities first, then countries. I think anything more generic simply doesn't work. So for me I would be totally into changing everything on a city by city basis, however the industry simply doesn't scale that way currently. It's hard enough to scale to EN-US and EN-GB.

5. Do cultural restraints inform your thinking?

Yes. On a basic level we think about the tone of voice, vocabulary, color use, visual hierarchy in relation to the target market. These issues mostly overlap with brand issues so there are often trade-offs between marketing and design over the needs of the brand and how something is laid out.

On a bigger level as explained elsewhere the target audience for something is going to inform a lot of the big initial design decisions over how a product works.

6. How much do you feel you know about the effects of mass-produced designed products on culturally diverse users?

I know more than most. I worked at a company that shipped 750 million products in a single year. Each design decision has major impact that changes region to region Nokia was many things, but it was incredibly well informed through it's research. Each year Nokia commissioned a study (it was always the single largest research study ever done) to look at the effects, trends and cultures it made devices for. So anyway I feel rather informed about the effects, however I don't know enough and no one person can.

Now here is a small rant, none of that mattered. If there is an argument that research is a blunt instrument it's Nokia.

7. As a Designer how do you reconcile designing products locally within specific cultural contexts with designing them for global, transcultural markets and consumers/users?

No one can claim to design locally whilst still being global. Either you design for a specific group of people with a common need or you make a platform and let others build the local things for you. So my answer is I don't and I can't.

Subconscious or conscious decisions

1. **In your opinion can products be culture-neutral?**

   No, but they can cross cultures, and they can in themselves too become part of culture. Twitter would be a good example of not being culture neutral but is something that crosses culture and becomes part of culture.

2. **Can you give an example of another global design that is universally suitable across cultures and demographics?**

   No. They only thing I can think of would be the original Nokia phones that just made calls, or touch screen devices today that can run and emulate anything they want. In the Nokia case it's because numbers are fairly universal and being numerate is easier than being literate. In the touch case it's because it can become what these varied people need.

3. **How important are cultural values in the product design cycle?**

   Incredibly. We are defined by our cultures, how we read and write, our understanding of the world, what we find funny, sad etc. Without knowing these things how can a designer create delightful engaging products? Or simply how can a designer layout visuals with any hierarchy? These things need to be embedded deep within a product, it's not a superficial layer added later.

4. **What do you consider to be the main influences on your designs, and more specifically are there any of your own political, cultural or social aspects to be found in your designs?**

   I'm not sure. Not thought about it really. I'd say though my upbringing until 18 has a large impact on me. I am always the loud voice in the room telling people that normal people simply don't care about some pretentious idea only highly privileged people can think is normal. Which is funny because now I am the one that many would see in that position. Hell my bus to work is the subject of protests, which I find hugely ironic. I'd say Helsinki and Scandinavian design practice has had a huge impact on me. I couldn't call out someone specific but the way design works in scandinavia is super interesting to me because it's meant for everyone; it's not a pretentious upperclass thing. Even the homeless drunk guy could name a designer in Helsinki. He also speaks four languages and probably has a BA though. Also not to be cliché but I think Apple between 2000 - 2011 had a big impact on me. Watching a company rise through design was inspiring and also helped me in my own career. 2011 - 2014 not so much, I even turned down a job there because of the way the company changed.

   I think you'd find my liberal-libertarian-socialist bent in my work. I default to giving people control, and not filtering or mothering users. I'd rather let social conventions

moderate and police things like security rather than some technical solution that's too dense for regular people to understand. However you'd also find in my work a sense of 'made for the everyman' to steal IKEA's phrase. A sense that the things I design should be approachable and for everyone.

5. **When explaining your style do you ever change the language or reference points so people understand you?**

Always. I try to explain my design through references that people can understand. I will change the way I explain the key values accordingly so as to focus on the things that are relevant to them. I will also editorialise the points I make. Without doing these things how can one create a connection to other people? On occasion there are things so deeply rooted in a particular value that I keep as it is, these tend to be things that either have no cultural equivalent or cross cultures.

6. **In hindsight if you were to examine your products could you identify underlying socio-cultural aspects that you didn't realise were there? Please expand on this if possible.**

Of course but I think I have covered them above. We always don't quite see the things in front of our faces, they are simply too close. Only when we step back, and try to make sense of our work and summarise it do we see those things. Maybe when I am much more experienced, so when I hit 30 years as a designer rather than just 15 I will be able to do a better job of it.

7. **Is there anything else you would like to add in relation to this subject or interview in general?**

No thank you.

Additional questions

1. **In your opinion, in terms of new product adoption and use, how resistant are cultures and societies to change?**

I'm not sure culture is ever resilient to change, it's continuously evolving and changing. When new products come along that resonate with people I think they are quite happy to try them out, see how they fit into their lives and adapt.

2. **If a product's salability is contingent on the particular market's reception and assimilation of it, can it still be imposed into a given society or market to make it successful?**

Samsung shows it can be through a combination of Marketing with a big M and Logistics with a big L. Samsung and before it Nokia were giants not because their products are good or best but because they knew how to tap into a markets desires and not just trigger a sense for wanting a product but they could put that product everywhere. Samsung commissioned a study in 2008 to find out why Nokia outsold them so well, turned out it was simply logistics. Like buying a Coke one could by a Nokia anywhere in the world.

3. **In what ways can products have direct and indirect effects on culture, cultural values, traditions and beliefs?**

They can redefine entire cultures by supplanting the status quo. The iPhone/Android Devices, Twitter and Facebook show this directly. They have made, western culture at least, question deep-rooted values like privacy, mobility and ownership. Most of culture and our beliefs are shaped by the world around us. When a product made by two people can have an instant reach of 3 billion people it's going to have an effect.

4. **In what ways can designed products impose, reinforce or threaten moral or political values?**

I'm not big on hyperbole but Egypt's use of Twitter during their civil unrest shows the power of well-designed products.

5. **In what ways are user agency, adaptive design and co-design having an impact on industrial design and design education?**

Design education is broken. These techniques are interesting but do not solve the real problems faced in industry. Also in Industry they are considered old hat, it's a bit like teaching sketching as a tool for communication; it's something that should be taught but everyone is simply expected to be able to draw. Designers in industry today who leave school are poorly equipped for real roles. Junior designers spend their time managing assets, completing documentation and flows. Dealing with a multitude of mundane, rote design tasks. There are times when they get to engage in the upfront design process but often they are ill equipped for it. They don't understand how to run a brainstorming session. How to perform a quick desk study of an area and summarise it in a 30 min presentation. Generally they are poor at filtering their own ideas against a design brief

and unable to condense and communicate clearly. The biggest thing is that they often don't know how to build prototypes of their ideas, or talk to engineers.

Participant information code: C1

Date and time: 4th June 2014; 16:00 GMT

Interviewed by: Begum, T

Location: China

Interview setting: Online via Skype; Office setting

<u>Core</u>

1. **Occupation:** Fashion Designer and academic

2. **Gender:** Female

3. **Type of product /designer:** Fashion

4. **Age range:** 45-55

5. **Place of birth:** United Kingdom

6. **Place/s of residence:** China

7. **Place/s of training:** China, Wales, United Kingdom

8. **Do you have current products that you design and produce?:** Yes, products being designed for International companies; the Arab marketplace and European marketplace.

9. **Your usual place of sale/ display or promotion:** they are normally shown in Tradeshows then sold and bought by department stores usually within Europe.

Overall impression of interview:

The interviewee was generally forthcoming and volunteered information effortlessly and freely gave examples from on-going international projects. Interviewee is clearly reflective of both formal and informal training undergone and experiences that have shaped and informed their knowledge of design process and cultural implications. Minimal probing was necessary but time limitations disallowed greater depth of discussion.

Interview aims:

1. To explore the effect of the product designers' cultural predilections that have been formed within his or her individual contexts.

2. To undertake an analysis of design training comparing the syllabi and methods used in examples from a number of countries in relation to cultural awareness.

Themes:

Type of training

1. **Can you tell me a little about the training you had and whether your training was formal or informal?**

   Initially it was informal, through instructional and learning different techniques although it wasn't a formal apprenticeship it was similar to it. Then I went on to university and got my degree in my subject but prior to that I'd been trained in industry.

2. **Did you undertake varied modules or was it focussed towards one specialism?**

   Across modules, but the specialism you came out with was Fashion Design. Other modules were undertaken such as Design history and theory.

3. **Was it predominantly technical, theoretical, marketing based (directed at certain consumers) or supportive of whichever direction you wished to explore?**

   No consumer knowledge was taught. Technical knowledge was taught and design skills and transferring these into actual products. Mostly technical skills taught and some theory that supported where the design concepts were coming from.

4. **Was there a 'house style' or a cultural style that you were encouraged to adopt.**

   No cultural style was taught. Our consumer wasn't thought about much in all honesty. It was really about what we were designing and why we were designing it, not really who was going to be the end user.

5. **So there was no market research or user analysis or anything of that nature?**

   No, there was none of that.

6. **If yes, can you explain what it was like, what was the reason for it?**

   N/A

7. **How was this taught or implied to you?**

   N/A

Prominent and conventional design concepts

1. **What is your understanding of 'global design' concepts?**

In my own practice, it would be about interpreting my designs so they're ready for the end user, and if it's in terms of teaching it is also what I'm trying to focus on as well. Questions such as, who is your end user, what are your expectations, do you understand your market well enough, and it is through these crucial questions that my concept of design would evolve.

2. **Was cultural awareness in relation to design development taught within your training?**

No, it wasn't. We could claw down some cultures to inspire us, but it was very superficial as no depth of knowledge was really required. It was about shape, style, and structure but no real meaningful nitty gritty stuff.

3. **Do you think you needed it looking back in hindsight now or no?**

Actually I think it would've given us a lot more depth. It's strange, but when I look at people as an academic now, I can see the students that have really gotten under the skin of a culture and have come up with exciting new concepts and their work is stronger, deeper and they can support it better. Then you have what I call the surface designers, who are literally just cherry-picking and mixing from different cultures. So, yes, I think it is needed and should be taught as it takes a stronger designer to understand the wider socio-cultural implications of their designs.

4. **In your own work, was it important to demonstrate an awareness of the needs of other cultures, for example through styling, sizing or another aspect?**

Is that whilst I was training or for my work now?

4b. For the work that you produce now.

For the projects I work on now, I need to meet my customers. I need to know all about them right down to what colours and materials I can use to be culturally sensitive. Their style adaptations would mean perhaps bringing the sleeves down to the elbows if I was going to be selling to certain countries. Trouser legs and hems would have to be brought down to the ankles if I was designing for cultural differences between eastern and western markets. So yes, all those are vital issues that need consideration and taking on board when designing, styling and pattern cutting.

5. **How did you cater for this if your formal training did not involve any cultural analysis understanding or teaching? How did you bring this into your design process and practice?**

I engaged with designers who were already doing it. When I was out in Kuwait, we knew the design team wouldn't permit you buy certain colours because when they had used those colours previously they found they wouldn't sell. You'd look at your leftover stock to realise this. Another example is when selling jeans over in the German market and the first thing the buyers would be doing would be to measure the length of the leg and say we will order a couple of thousand but only if you can cater for a longer leg length. It was the big buyers who'd buy in bulk for the products to go into the department stores who were the ones informing us of these cultural differences. They were telling us why they wanted certain colours and what they wanted. As a designer it

was difficult to get that kind of cultural knowledge going in blind with no training or awareness.

6. **This leads us to the question you have partially answered, of whether you now consider these aspects in your work or practice now or undertake any cultural needs analysis?**

Yes, you have to because you end up with products that aren't going to be sold otherwise. You actually look at your sale rate and say why haven't these items been sold and you can look at your customer demographic to make the cultural links of why not. Very often what we used to do was if some of our stock hadn't been sold wed look at a country that was perhaps a couple of years developmentally behind us and its terrible but we used to send it down to Australia three years after so left stock would be sold as new stock in Australia because their designs were so far behind. So you learn from your mistakes.

7. **That's really interesting. Can you give other examples?**

Yes, we do it with bras and underwear. Bra sizes for example – any small sizings that are left over stock we can sell them to the Chinese market because they are generally petite, small-busted people. So it's re-evaluating and using your leftover stock and exporting it to more demographically suited markets and people that it was not initially designed for. Even if designing for the American markets, you can really pick and choose what you design and who you design for and hopefully offload the design mistakes to a different demographic.

8. **Would consumers globally be able to recognise your own culture from your products?**

I don't think they would now. When I first started they would have and I know many of my colleagues you could say looking at their end products that they were definitely Danish or definitely English and you could tell their style was stereotypical of their area and own cultural influences. What I've found now is that the more I've grown as an international designer I've become more consumer focussed and aware of cultural sensitivities and you lose your own cultural identity and rigidity. You don't design for yourself anymore but you design for the consumer.

Products as change agents

1. **Have you come across products that you don't think travelled well in relation to their role, style or use?**

I worked for a company that was related to Copenhagen real furs for a while and that didn't travel well because the cultural aspect and marketing aspect of real furs in certain countries was clearly a big no-no. So people didn't understand or want to explore the so-called 'luxury' material. So yes I think it affects textiles more than anything. Sometimes they don't cross the cultural boundaries so much. What's acceptable in one country is not acceptable elsewhere and they don't transfer very well across markets.

2. **How well do you think your products would travel?**

I think they do now because I've adapted to cater for the consumer. I think when I initially in my own right as a designer I think I was a bit naïve and I expected people to like them just because they were what I liked as a designer.

3. **Would you consider changing your designs for the products to become more internationally desirable to a more diverse market or should people embrace the differences?**

Yes I do this already. At the end of the day, if you work for yourself and you're very well known and very high up on the ladder it's all right to have your own identity and you might have a specialist audience all over the world. However if your just a small designer working for a company you're only as good as your last set of sales really so you have to keep hitting your new target market to get new sales and sell your designs.

Subconscious or conscious decisions

1. **In your opinion can products be culture-neutral?**

Yes I think they can. I think Levis jeans are quite culturally neutral.

2. **Can you give an example of another global design that is universally suitable across cultures and demographics?**

Jeans are the only ones that spring to mind although I'm sure there are many others.

3. **How important are cultural values in the product design cycle?**

They are very, very important both in practice and in principle. It's just a question of whether the design turn-around time allows for them to be properly addressed and catered for.

4. **What do you consider to be the main influences on your designs, and more specifically are there any of your own political, cultural or social aspects to be found in your designs?**

In my current design work there aren't any – because it's industrial fashion design and it's global. You can sometimes forecast trend predictions or you sometimes find a theme that they've introduced and you might Google it to go a bit deeper but the short time spans you have to produce designs and products often means you cannot give it the depth of knowledge it so needs and it sadly falls low in the priority list and is the first thing to go.

The only time in the last few years was when I did do some work in sustainable design was on my own project that I was not being paid for where I began looking at how this could be developed further. So in diffusion lines you might be able to consider those things but not your main core.

5. When explaining your style do you ever change the language or reference points so people understand you?

Yes I do. Depending on the audience. It makes it appeal more to that particular target market.

6. In hindsight if you were to examine your products could you identify underlying socio-cultural aspects that you didn't realise were there? Please expand on this if possible.

Not now, except perhaps in the diffusion lines where would've been developed for the target market but they wouldn't be hidden anyway, well at least not deliberately.

7. Is there anything else you would like to add in relation to this subject or interview in general?

No thank you. Thank you for this opportunity to discuss my practice.

Participant information code: B1

Date and time: 16th June 2014; 15:30 GMT

Interviewed by: Begum, T

Location: Barcelona, Spain

Interview setting: Skype interview, Design studio

Core

1. **Occupation:** Co-founder of a small interaction design studio in Barcelona.

2. **Gender:** Male

3. **Type of product /designer:** Interaction design

4. **Age range:** 35-44

5. **Place of birth:** U.S.A

6. **Place/s of residence:** U.S.A and Spain

7. **Place/s of training:** ELISAVA School of Design, Barcelona, Spain and University of Florida, U.S.A.

8. **Whether you have current products that you design and produce:** Websites, applications and installations.

9. **Usual place of sale/ display or promotion:** Most of our work is contracted. In other words most of our work is for other companies, so globally.

Overall impression of interview:

Showed good awareness of subject. Answered most questions in a professional manner and with thought and reflection.

Interview aims:

1. To explore the effect of the product designers' cultural predilections that have been formed within his or her individual contexts.

2. To undertake an analysis of design training comparing the syllabi and methods used in examples from a number of countries in relation to cultural awareness.

Themes:

Type of training

1. **Can you tell me a little about the training you had and whether your training was formal or informal?**

   I got a BA in Graphic Design at the University of Florida in 2000. There weren't many interaction-focused studies at the time. My studies were more print oriented. The masters' course at ELISAVA was focused on interaction but fell well short of having any practical application. I think it was still too new of a discipline. Most of my learning has been on the job.

2. **Did you undertake varied modules or was it focussed towards one specialism?**

   The BA in Graphic Design had varied modules the first 2 years. We were obliged to take sculpture, art history, painting and drawing, color theory, and digital art modules as a base. However the largest module was WARP (workshop for art research and practice) http://www.arts.ufl.e. Once accepted into the college of fine arts (last 2 years) the modules were design focused.

3. **Was it predominantly technical, theoretical, marketing based (directed at certain consumers) or supportive of whichever direction you wished to explore?**

   I would say it was pretty evenly distributed except for the marketing. We didn't touch much at all on marketing. However we were taught how to talk about our work.

4. **Was there a 'house style' or a cultural style that you were encouraged to adopt?**

   No. Whatever we made and presented we had to earnestly defend in front of peers and professors. Anything goes as long you could make a valid argument for it.

Prominent and conventional design concepts

1. **Was cultural awareness in relation to design development taught within your training?**

   Yes. Good design has to be culturally aware because it focuses on a target.

2. **During your training, was it important to demonstrate an awareness of the needs of other cultures, for example through styling, sizing or another aspect?**

   Everything ranging from cultures, age groups, sexes, etc. had to be considered.

3. **Do you consider these aspects in your work or practice now or undertake any cultural needs analysis?**

   I think most designers do at least consider it even if superficially. Whether or not there is a deep analysis is usually tied to the budget and time constraints which is a pity.

4. **Would consumers globally be able to recognise your own culture from your products?**

   Hopefully, only when called for.

Products as change agents

8. **Have you come across products that you don't think travelled well in relation to their role, style or use?**

   I think this is becoming less and less of an issue with globalization. Design principals are becoming standardized. The largest differences I've noticed have been with Asian cultures.

9. **How well do you think your products would travel?**

   I think they would do well in most places, especially in western cultures. I try to keep things simple to use.

10. **Do you think your consumers would be able identify your cultural background from your designs?**

    I don't think so.

11. **Would you consider changing your designs for the products to become more internationally desirable to a more diverse market or should people embrace the differences?**

    When talking about commercial products, making users adapt to you is almost never the case. Usually things are made in a way so that they are as inclusive as possible within reason budget-wise. Basically whatever makes most financial sense. This can mean minimizing learning friction by basing interaction on familiar paradigms.

12. **Do cultural restraints inform your thinking?**

    Yes. Always. Though too many design companies think its far easier to produce what one might consider a neutral design with a broader market than a culturally specific one and far more profitable too. This is often how generic, bad design comes about.

13. **How much do you feel you know about the effects of mass-produced designed products on culturally diverse users?**

    Not much. I would imagine, where digital interaction is concerned; they are learning along with the rest of us and struggling with the constant changes in the conventions.

14. **As a Designer how do you reconcile designing products locally within specific cultural contexts with designing them for global, transcultural markets and consumers/users?**

In honesty, we don't work exclusively for the local market much.

Subconscious or conscious decisions

1. **In your opinion can products be culture-neutral?**

   No. Neutrality is impossible. But you can strive to be understood by as many people as possible.

2. **Can you give an example of another global design that is universally suitable across cultures and demographics?**

   Google.com.

3. **How important are cultural values in the product design cycle?**

   User-centric design is important - you should design for your audience.

4. **What do you consider to be the main influences on your designs, and more specifically are there any of your own political, cultural or social aspects to be found in your designs?**

   The content, its purpose and the audience drive my designs. I try not to bring my personal views into it.

5. **When explaining your style do you ever change the language or reference points so people understand you?**

   I'd like to think I don't have a style. Language and reference points should be aimed at the audience in the first place.

6. **In hindsight if you were to examine your products could you identify underlying socio-cultural aspects that you didn't realise were there? Please expand on this if possible.**

   I'm absolutely certain of this. I think this is something that is difficult if not impossible to avoid.

7. **Is there anything else you would like to add in relation to this subject or interview in general?**

   No thank you.

Additional questions

1. **In your opinion, in terms of new product adoption and use, how resistant are cultures and societies to change?**

   Extremely resistant. When it comes to business, people decide.

2. **If a product's salability is contingent on the particular market's reception and assimilation of it, can it still be imposed into a given society or market to make it successful?**

   It depends on what you are selling. If it solves a problem in an easy way it will have good chances of being successful. I don't think people care too much if it looks German or whatever, or not if it is something that works well.

3. **In what ways can products have direct and indirect effects on culture, cultural values, traditions and beliefs?**

   I'm not sure if anyone can answer this precisely. I think that the influence of a product on a culture in most cases has more to do with the problem it is solving. I'm not sure about traditions or beliefs, but the design of a successful product can affect design sensibilities.

4. **In what ways can designed products impose, reinforce or threaten moral or political values?**

   They can with the effectiveness of the message that technology and products carry. For an effective and ethically sound message you need to know your audience and cater to them.

5. **In what ways are user agency, adaptive design and co-design having an impact on industrial design and design education?**

   I can't speak for industrial design, however design education is seriously struggling to keep up with the velocity in which things change.

Participant information code: M1

Date and time: 16th June 2014; 13:00 GMT

Interviewed by: Begum, T

Location: Mauritius

Interview setting: Skype/telephone interview; Design studio

<u>Core</u>
1. **Occupation:** Designer

2. **Gender:** Male

3. **Type of product /designer:** Multi-disciplinary designer

4. **Age range:** 23-34

5. **Place of birth:** Hong Kong, China

6. **Place/s of residence:** Hong Kong, Mauritius, Taipei, Taiwan, U.S.A: Seattle, Washington Providence, Rhode Island, San Francisco, California.

7. **Place/s of training:** University of Washington, Rhode Island School of Design, Seattle, Mauritius, Providence, U.S.A.

8. **Whether you have current products that you design and produce:** Yes.

9. **Usual place of sale/ display or promotion:** Consumer electronics stores.

Overall impression of interview:

Interviewee was very motivated and thus expanded on questions with minimal probing due to clear level of self-awareness and cross-cultural technology experience. Good thoughtful responses on culture and design relationship.

Interview aims:

1. To explore the effect of the product designers' cultural predilections that have been formed within his or her individual contexts.

2. To undertake an analysis of design training comparing the syllabi and methods used in examples from a number of countries in relation to cultural awareness.

Themes:

Type of training

1. **Can you tell me a little about the training you had and whether your training was formal or informal?**

   Industrial design both at an undergraduate level and graduate level from a public school and a private school. The public school curriculum during my undergraduate studies was more pragmatic in that we had studio projects that were geared towards designing something for clients. The private school curriculum during my graduate studies was more experimental and had more of an artistic view to design.

2. **Did you undertake varied modules or was it focussed towards one specialism?**

   My undergraduate studies were very much geared towards the businesses that were based around Seattle, and so the projects were geared towards consumer product designs. My graduate studies had a varied module and there was a lot more freedom in choosing classes from other disciplines.

3. **Was it predominantly technical, theoretical, marketing based (directed at certain consumers) or supportive of whichever direction you wished to explore?**

   My undergraduate studies were predominantly technical and marketing based, as it was designs that were very targeted to a certain group of people.

   My graduate studies were more personal and theoretical in that the curriculum was more supportive of whichever direction I wished to explore.

4. **Was there a 'house style' or a cultural style that you were encouraged to adopt.**

   Yes.

5. **If yes, can you explain what it was like or what was the reason for it?**

   The "style" varied from project to project as we were encouraged to adapt to that client's "style".

6. **How was this taught or implied to you?**
   It was both taught and implied in the course.

Prominent and conventional design concepts

1. **Was cultural awareness in relation to design development taught within your training?**

   Yes, it was taught to me during my graduate studies.

2. **During your training, was it important to demonstrate an awareness of the needs of other cultures, for example through styling, sizing or another aspect?**

   It was important to address that it was considered during the development of the design, but the most important awareness was to demonstrate that you understood your target audience and designed towards their needs.

3. **How did you cater for this if your formal training did not involve any cultural analysis understanding or teaching? How did you bring this into your design process and practice?**

   Observing your target audience and conducting interviews when appropriate.

4. **Do you consider these aspects in your work or practice now or undertake any cultural needs analysis?**

   Yes. We do as much as we can to gather feedback from our targeted audience.

5. **Would consumers globally be able to recognise your own culture from your products?**

   I don't think so. As a third culture kid, I don't believe that I am heavily influenced by any culture, and so there might be small hints/elements in the design, but shouldn't be totally obvious.

Products as change agents

1. **Have you come across products that you don't think travelled well in relation to their role, style or use?**

   Yes. Some products have specific cultural specifications so can detrimentally affect users of a different demographic if enforced on them.

2. **How well do you think your products would travel?**

   Somewhat okay. I try not to let my personal identity and cultural preferences affect the product design as much as is possible.

3. **Do you think your consumers would be able identify your cultural background from your designs?**

   I don't think so. Though from my experience working on design teams with other designers from various backgrounds, hidden cultural bias can still exist in product cycles. This is not always a bad thing or deliberate even. The products we use in our own lives allow us to become aware of their cultural connotations and bias otherwise it is often invisible.

4. **Would you consider changing your designs for the products to become more internationally desirable to a more diverse market or should people embrace the differences?**

That will depend on what type of product it would be. I believe both aspects is desirable by a certain group of consumers, and so they both have a place in the market.

5. **Do cultural restraints inform your thinking?**

Yes. Especially products that provide feedback to the users, or the product is used in situations where such constraints would be considered essential, for example safety products.

6. **How much do you feel you know about the effects of mass-produced designed products on culturally diverse users?**

A little. I feel the mass-produced designed products are globalizing the world and the products you would find in different countries are not as diverse. Designing for the masses is a mind-set easily slipped into even on an unconscious level, thereby side-lining that cultural difference does exist and often needs to be factored but isn't. This is often because it's easier to generate support for a culturally neutral requirement and far more lucrative. Many designers are slightly reluctant to voice culture-related issues in a design development setting due to fear of sounding discriminatory.

7. **As a Designer how do you reconcile designing products locally within specific cultural contexts with designing them for global, transcultural markets and consumers/users?**

I believe there are certain product categories that would benefit from local cultural products and some product categories do benefit from a mass-market culturally oblivious approach.

Subconscious or conscious decisions

1. **In your opinion can products be culture-neutral?**

If by culture-neutral you mean it's a hodge-podge of different cultures integrated into one product where none of the cultures is immediately identifiable, then yes. If you mean no cultural effects are integrated, then no. That's impossible. In considering the product cycle from idea generation, to funding, development and selling, upon closer inspection there are many instances where unintended cultural bias affects design decision-making. Gut instincts determine the end product in many ways. Multiple decisions are made by individuals on the team that are influenced by their own personal backgrounds, experiences and ideas. Decisions such as the features that are voted on to make it onto the prototype. In order to address diverse representation minority views are often relegated and perceived as a wasted vote. Another example is when securing funding from investors and executives from a particular background; products are often pitched and customised in a manner they will relate to without realising this is even

occurring. To make a product as culture neutral as possible, it has to be a conscious aim of the design team.

2. **Can you give an example of another global design that is universally suitable across cultures and demographics?**

Tea mug or cup.

3. **How important are cultural values in the product design cycle?**

That depends on the product being designed.

4. **What do you consider to be the main influences on your designs, and more specifically are there any of your own political, cultural or social aspects to be found in your designs?**

The main influence would be the target audience.

5. **When explaining your style do you ever change the language or reference points so people understand you?**

Yes, this is vital.

6. **In hindsight if you were to examine your products could you identify underlying socio-cultural aspects that you didn't realise were there? Please expand on this if possible.**

No. My products are very targeted towards the target audience and so I try to remove myself from the equation as much as possible.

7. **Is there anything else you would like to add in relation to this subject or interview in general?**

I've noticed that during product development stages opinions on cultural differences are not voiced in the fear that it would appear discriminative or as sweeping, generalising statements.

Additional questions

1. **In your opinion, in terms of new product adoption and use, how resistant are cultures and societies to change?**

I think most cultures and societies are pretty resilient to change, and some more than others.

2. **If a product's salability is contingent on the particular market's reception and assimilation of it, can it still be imposed into a given society or market to make it successful?**

Yes. It depends if that particular market's reception is very influential or not.

3. **In what ways can products have direct and indirect effects on culture, cultural values, traditions and beliefs?**

Products are usually targeted to a specific group of people. If other cultures adopt the use of that product, then it would have an indirect effect on their culture, cultural values, traditions and beliefs.

4. **In what ways can designed products impose, reinforce or threaten moral or political values?**

When another group of people that were not the targeted audience adopts the use of that product, then it can impose a threat to the moral or political values. Some products are also designed specifically to reinforce those values. To tackle this issue and build successful products that do not exhibit cultural biases all it takes is a simple awareness to be integrated into formal international design training syllabi across the board.

5. **In what ways are user agency, adaptive design and co-design having an impact on industrial design and design education?**

It's getting industrial designers and design educators to realise that the one-size fits all model does not work for all products. Co-designing with your target audience can help create a product that will have a higher chance of being more positively received and have a high success rate of adoption.

Participant information code: U1

Date and time: 15th June 2014; 14:00 GMT

Interviewed by: Begum, T

Location: United Kingdom

Interview setting: Online via Skype; Office/University setting

Core

1. **Occupation:** Senior Lecturer in Computing, Software engineering and Technology project management at a University in the United Kingdom.

2. **Gender:** Male

3. **Type of product /designer:** Multi-discipline

4. **Age range:** 35-44

5. **Place of birth:** London, United Kingdom

6. **Place/s of residence:** Wales, United Kingdom

7. **Place/s of training:** BBC; University of Wales.

8. **Whether you have current products that you design and produce:** No

9. **Usual place of sale/ display or promotion:** N/A

Overall impression of interview:

Interviewee was informative and eager to volunteer information, very helpful. Did not have current products on sale or display, which stunted many questions. However, their views on educational aspects were equally if not more so useful.

Interview aims:

1. To explore the effect of the product designers' cultural predilections that have been formed within his or her individual contexts.

2. To undertake an analysis of design training comparing the syllabi and methods used in examples from a number of countries in relation to cultural awareness.

Themes:

Type of training

1. **Can you tell me a little about the training you had and whether your training was formal or informal?**

   I spent many years in school, college and university learning numerous practices, set within formal frameworks. Whether my training was formal or informal depends somewhat on when you consider my relevant training started. Subjectively speaking, I still draw upon methods of communication that I learned informally in the school yard some 30 years ago, a tad factious yes, but through-out my formal education at university and in industry I have learnt through both paradigms of learning. So to answer your question, my training has been guided and actively engaged through both.

2. **Did you undertake varied modules or was it focussed towards one specialism?**

   Having completed several programmes with its learning centred on design practices, this is a question that is difficult to pin down. Some have been modular and some have been focused within one specialism.

3. **Was it predominantly technical, theoretical, marketing based (directed at certain consumers) or supportive of whichever direction you wished to explore?**

   Each of the programmes engaged technical and theoretical practice and also gave me the flexibility to explore my own directions.

4. **Was there a 'house style' or a cultural style that you were encouraged to adopt?**

   No, each has been different. As per the requirement gathering.

5. **How was this taught or implied to you?**

   Through user-centred design and the application of user-centred theory, and/or qualitative processes and or an ethnographic practice. In doing so, it deepens an understanding of the user. These may involve interviews, observations, workshops etc. My students learn about the importance of designing for a set parameter, utilising theory that supports development from a single user to universal design theory. Cultural requirements will be examined throughout the ethnographic practices (et al Dix) or ethnomethodology – Dourish.

Prominent and conventional design concepts

1. **Was cultural awareness in relation to design development taught within your training?**

   Yes.

2. **During your training, was it important to demonstrate an awareness of the needs of other cultures, for example through styling, sizing or another aspect?**

Yes. It was important to show that the design addressed the parameters set. I know this sounds very dry and cut but it's important that the design meets and addresses its set brief. So, it is important understand your user, so that right from the start and throughout the process, that the definitions and cultural preferences are gathering and reflected upon. As you would any of the many attributes that go to make/stipulate a design brief or UML model for that matter.

3. **How did you cater for this if your formal training did not involve any cultural analysis understanding or teaching? How did you bring this into your design process and practice?**

   Through qualitative analysis during requirements gathering. 'Requirements gathering' within the field of information systems is an extensive and expensive process. A critical process within an information systems development is its initial 'requirements gathering'. Within this, an often extensive qualitative process is undertaken to ensure that the system can and will address its needs. With projects running costs often into the billions of any currency, highlights the importance of designing things well. Our times are littered with information systems that carry the weight of society within its servers and that have failed to addresses many cultural problems. Conversely, there are examples that have heightened and contributed positively within their cultural design practices. That's probably due to the application of modern methodologies (qualitative methods).

4. **Do you consider these aspects in your work or practice now or undertake any cultural needs analysis?**

   Yes I think I kind of addressed this in the question above.

5. **Would consumers globally be able to recognise your own culture from your products?**

   No. My designs are not about me. The design is rooted in the users world not mine. They will have undergone some culture analysis and definition from the requirements gathering stage.

Products as change agents

1. **Have you come across products that you don't think travelled well in relation to their role, style or use?**

   Yes. There are many that have failed to take and been returned to the drawing board or binned given the variances within international definitions of semiotics, layout, language, gestures, use of colour.

2. **How well do you think your products would travel?**

Pretty well. From one perspective if the designs had been made for universal use then, probably pretty well. Note that says pretty well, not poorly or excellently, that's because it would be using methods of universal design (Dix et al) (Maeda) however, these methods are constructed to design systems so that they can be used by anyone in any circumstance.

However if they were purposely designed for use in other countries then this process (probably an ethno-methodological one) would have captured all the requirements of those cultures including monitoring and reflections upon their status throughout the development. And then my answer would be 'perfectly'.

However, designing for an ambiguous user group such as 'internationally' undermines the whole process, the vague, faux catch-all might as well be called non-user-centred design or all-user-centred design. Using gross generalization we can mitigate many international faux pas of design. However this reductive positioning of design process appears to be more crippling than of practical use. Understand your users! Albeit your second tier of user engagement, however if they are likely to be users, then this should be part of the sustainability analysis process.

3. **Do you think your consumers would be able identify your cultural background from your designs?**

   No, my designs are not about me. I aim to be objective and gender and culturally neutral.

4. **How do you do this if you are catering for specific user-groups and specific markets?**

   By using ethnographic and or ethno-methodological processes.

5. **Would you consider changing your designs for the products to become more internationally desirable to a more diverse market or should people embrace the differences?**

   Yes, I would welcome redesigns, if the users group changed or reflective feedback from existing users required redesign to address issues.

6. **Do cultural restraints inform your thinking?**

   Yes.

7. **How much do you feel you know about the effects of mass-produced designed products on culturally diverse users?**

   Enough to be of assistance. However I haven't finished reading the entire works at the Alexandra Bibliotheca yet either.

8. **As a Designer how do you reconcile designing products locally within specific cultural contexts with designing them for global, transcultural markets and consumers/users?**

Through design research and user centric techniques with the use of an in-depth qualitative requirements gathering process. To ensure that all users groups risks can be mitigated, this could include specifically tasked and recruited - from within the required cultures: focus groups, steering groups, and expert user. Others could be used but would be established from some phenomenological approach to the research.

Subconscious or conscious decisions

1. **In your opinion can products be culture-neutral?**

   No. I know it sounds contradictory however its more pedantry, I believe its impossible to be culturally neutral, due to a product being of somewhere, sometime and someplace. However I always strive to be as culturally neutral as possible. After all, everything is subjective.

2. **Can you give an example of another global design that is universally suitable across cultures and demographics?**

   Not really, for the reasons that I have already stated, however at a push I would argue for Cotton? And most chemicals?

3. **How important are cultural values in the product design cycle?**
   It's essential that you know whom you are designing for. User-centred design. Cultural values are important if you want to get a clear understanding of how why your users use your product. As essential as knowing they're a users ideology, nationality, ethnicity, gender etc.

4. **What do you consider to be the main influences on your designs, and more specifically are there any of your own political, cultural or social aspects to be found in your designs?**

   The main input from me is blood, sweat and tears; the rest is gauged from the users needs. However, saying that, radical relativism (e.g. we studied western designers and thinkers such as Heraclitus/Count Rumford/ von Uexküll / Buckminster Fuller/Wittgenstein/David Bohm) to the essentials then stepping back (universe) before focusing in to specifics.

5. **When explaining your style do you ever change the language or reference points so people understand you?**

   Of course, clear and effective communication is paramount, catered to the audience.

6. **In hindsight if you were to examine your products could you identify underlying socio-cultural aspects that you didn't realise were there? Please expand on this if possible.**

This is possible, however if I had all the time in the world, I am sure I would find mistakes in my work. When is a product perfect or finished? Normally when the deadline is up and when it addresses all of the requirements set from the design initiation and brief.

7. **Is there anything else you would like to add in relation to this subject or interview in general?**

No.

Additional questions

1. **In your opinion, in terms of new product adoption and use, how resilient are cultures and societies to change?**

There are a lot of societies and cultures. And they are not all the same and treat and use new products differently. I would go as far to say too many for me to be able to answer this question easily.

2. **If a product's salability is contingent on the particular market's reception and assimilation of it, can it still be imposed into a given society or market to make it successful?**

No. The environment and user base needs to be incorporated to enable any risk mitigation and match product requirements.

3. **In what ways can products have direct and indirect effects on culture, cultural values, traditions and beliefs?**

Given that products are everywhere and make up nearly everything: cups, houses, shirts, most food etc. its effect is immense and exceptionally powerful.

4. **In what ways can designed products impose, reinforce or threaten moral or political values?**

Using semiotics in design, for example, meaning can be imposed, reinforced and/or threatened.

5. **In what ways are user agency, adaptive design and co-design having an impact on industrial design and design education?**

Synergistically. This is through the interaction of multiple elements in a system to produce an effect different from or greater than the sum of their individual effects. However, there are plenty more design methods that can also enable other advantages. My view is that design needs re-designing. All of these fragmentary offshoots need bringing together in what Fuller called a "Comprehensive, Anticipatory Design Science'.

7.7.2 Survey Data - Transcript 7

An analysis of international design training comparing the syllabi and methods used in examples from a number of countries and contexts.

Q. 14. Did your training have a religious, cultural or political perspective?

No.	Response Date	If yes, explain how
1	Jun 2, 2014 11:27 AM	In my first year of degree I did art and politics equally as a part of a modular course.
2	May 31, 2014 9:41 AM	Only in terms of research to gain expertise and conceptualise.
3	May 30, 2014 10:16 AM	Ethics module.
4	May 29, 2014 2:32 PM	Because we are all situated, and much of my 'training' was from mentors from different societal and personal, political cultures.
5	May 26, 2014 2:47 AM	Western culturally.
6	May 25, 2014 6:34 PM	PhD in particular addressed cultural theory.
7	May 25, 2014 12:16 AM	External (except my own)
8	May 24, 2014 7:48 PM	Exploration of Political graphics.
9	May 24, 2014 2:34 PM	Studying yoga and cross-cultural sensitisation whilst living and working in India for 16 years, there was a large input of religious. and cultural perspective to my training.
10	May 24, 2014 9:53 AM	Games/New Media are not considered to align with both religious/cultural values.
11	May 24, 2014 3:12 AM	Eventually - during the PhD.
12	May 23, 2014 11:52 PM	Cultural studies.
13	May 23, 2014 11:01 PM	All training to some extent has political, cultural or institutional perspectives/positions.
14	May 23, 2014 10:26 PM	Explain how it couldn't!
15	May 23, 2014 9:33 PM	Cultural significance of design, solving society or user problems.
16	May 22, 2014 2:08 PM	Cultural and Political. But scant religious content.
17	May 21, 2014 9:37 PM	Understanding how artists and designers made products for their time. Artists making political work, with a message.
18	May 21, 2014 9:33 AM	My training in terms of studio practice was very dependent on the experiences of my tutors based mainly in Edinburgh. In terms of art history it seemed more dependent on a discourse of art history developed mainly in Europe. I wouldn't say though that this 'cultural' aspect was conscious. There was no alerting to possible religious, cultural or political bias within the training itself.
19	May 20, 2014 9:13 PM	Very British - but included references that were Euro-American. Nothing from the rest of the world at undergrad level.

An analysis of international design training comparing the syllabi and methods used in examples from a number of countries and contexts.

Q. 16. If you believe the design process changed, identify the reasons for the changes?

No.	Response Date	Other (please specify)
1	May 29, 2014 8:24 PM	Personal interest.
2	May 27, 2014 6:18 PM	It changed the way I worked from working closer with consumers in a co-design sort of way.
3	May 27, 2014 9:45 AM	To meet broader constrains, outside design field.
4	May 26, 2014 2:09 AM	Self-awareness, world-awareness and skill at focused creativity.
5	May 25, 2014 2:55 AM	I became faster at some things due to knowledge and experience, so the process became more efficient and effective.
6	May 24, 2014 1:40 PM	Environmental revelations.
7	May 24, 2014 1:01 AM	Environmental responsibility.
8	May 23, 2014 9:33 PM	Process evolves to reduce the cycle time from concept to outcome, to shorten cycle time to discover product/market fit.
9	May 20, 2014 10:34 PM	To meet the demands of industry.
10	May 20, 2014 9:13 PM	To develop a critical language even though there was a very small audience for it.
11	May 20, 2014 6:37 PM	It changed but I'm not sure of why. Mostly to do with working in industry with clients rather then any educational influence.

An analysis of international design training comparing the syllabi and methods used in examples from a number of countries and contexts.

Q. 18. Would you consider selling your product internationally?

No.	Response Date	If no, what is your perception of the barrier?
1	Jun 1, 2014 6:03 PM	No, they would become irrelevant surely? I would love to but not sure they would sell.
2	May 27, 2014 3:58 PM	This question does not apply to me. Although I work for an international organization, in my own practice I "sell" locally only.
3	May 25, 2014 6:34 PM	I believe in design being taught from within the culture - my product is interior design.
4	May 24, 2014 7:48 PM	People view design differently around the world. It needs adjusting to a particular audience so it depends on whom you are selling it to.
5	May 24, 2014 6:38 AM	Political borders exist. You need to be quite globally and culturally aware to realise this though which isn't formally taught to you.
6	May 24, 2014 4:16 AM	My products are designed for very narrow specific cases. I don't know if they can be upsold outside of their niche.
7	May 22, 2014 2:08 PM	It really depends on the product, there are many. This also depends on what you class as a product - i.e.. System design.
8	May 20, 2014 6:37 PM	No, there are too many barriers.

An analysis of international design training comparing the syllabi and methods used in examples from a number of countries and contexts.

Q.19. Does your own culture affect your design style?

No.	Response Date	If yes, in what way?
1	Jun 2, 2014 11:27 AM	I've been told I am an 'English' painter, so yes I guess.
2	Jun 1, 2014 6:03 PM	Each piece of work is a telling or re-telling of a story. Stories of friends, family - people within my own culture. Stories about my own culture.
3	May 29, 2014 2:32 PM	My personal culture is a mix of influences - British, Spanish, African - my life is my work.
4	May 28, 2014 8:39 AM	I am designing and producing furniture required for the culture I live and work in.
5	May 27, 2014 6:18 PM	In every way. My culture influences who I am as a human being, I am the result as well as a creator of my culture.
6	May 27, 2014 5:08 PM	My perspective is from the UK but I'm aware of other cultures and styles.
7	May 27, 2014 3:58 PM	I come from classical studio in Ukraine, but I did most of my schooling in Canada.
8	May 27, 2014 2:08 PM	Yes, it is what's familiar.
9	May 27, 2014 9:45 AM	My 'culture' (knowledge, traditions, etc.) defines what I am and how I perceive and interpret the world so how can it not!
10	May 26, 2014 10:07 AM	In the use of style, colors and the shapes.
11	May 26, 2014 7:21 AM	You cannot design anything without being influenced by your culture.
12	May 26, 2014 2:09 AM	My culture is theoretically very accepting of other cultures — Canada is fluid and multicultural.
13	May 25, 2014 7:57 PM	Everyone's culture and background affects their work whether conscious or not.
14	May 25, 2014 7:33 PM	Your culture always influences your design, even when you might not realise it very clearly.
15	May 25, 2014 2:55 AM	Shapes, audience expectations and languages (visual, written and spoken). Therefore, to make a communication effective, I must communicate in the local language to be understood.
16	May 25, 2014 12:16 AM	How could it not? Too many designers don't realise how much it does!
17	May 24, 2014 10:48 AM	People need to understand the messages being communicated to them; they need to be culturally appropriate.
18	May 24, 2014 10:11 AM	It informs what we do in deep ways.
19	May 24, 2014 10:08 AM	It feeds the concept and also constrains it.
20	May 24, 2014 8:58 AM	All design in affected by cultural understanding.
21	May 24, 2014 7:35 AM	Visual language, choice of subjects.
22	May 24, 2014 6:38 AM	In terms of values and aesthetics.
23	May 24, 2014 3:08 AM	I speak and write in English so I think a certain way.

24	May 24, 2014 1:01 AM	Montreal is a Nordic city, therefore winter means planning ahead, it is multicultural which means open-minded.
25	May 23, 2014 11:01 PM	All of our cultures affect the way in which we work. The habitus and the field.
26	May 23, 2014 9:33 PM	Western ideas of font, page layout, reading styles. All aspects of design embody our outcomes either purposefully or unwittingly.
27	May 22, 2014 2:08 PM	I try to design from the perspective of a brief and constraints external to me. However impartiality is a difficult thing to truly have, but I strive to design with objectivity and leave the subjectivity work for my art work.
28	May 21, 2014 10:38 PM	Inspiration is informed by my environment.
29	May 21, 2014 9:37 PM	Lifestyle is the biggest influence. Designing clothing wear is according to activity. Good design is always user-centred.
30	May 21, 2014 9:33 AM	My culture must affect what I make and do as I work most consciously from my own experiences.
31	May 20, 2014 10:34 PM	I feel who I am informs my perspectives, taste and sense of humor. All of these things are embedded in the work I produce.
32	May 20, 2014 4:55 PM	Style and materials used.

7.8   References and bibliography

Selected analytical bibliography

Design, technology, philosophy, research methodology, postcolonial theory and cultural studies

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