PRODUCT DESIGN AND ENGINEERING

Design Dissertation

Module: PDE3251

A PRACTICAL FRAMEWORK TO ENHANCE THE EXPERIENCES OF THE LATE MAJORITY ADOPTION WITHIN SOCIAL COMMUNICATION TECHNOLOGY.

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ABSTRACT

In the last seven years, the understanding of product pleasure has greatly increased in academia. Currently the discussion has extended beyond just pleasure and has included complete experience. While this framework exists there is little empirical research that this is what the consumers want, especially within an increasing complex world.

Current technologies have created a plethora of new social methods of interaction that have been activity adopted by the late majority. This fundamental shift in product adoption means traditional late adapters have embraced new products and services faster than traditional early adopters. This paradox of adoption is still under designed for, as current manufactures still don't completely understand their users.

This dissertation will use triangulation of the late majority comparing against a range of hypothesis about experience and product adoption. The resulting research combines experience topologies with practical process, to create an interactive design framework that could be used to create better framed briefs. Product adoption is enhanced by a range of proposed solutions to consider the audience more holistically starting at the brief stage.

ACKNOWLEDGEMENTS

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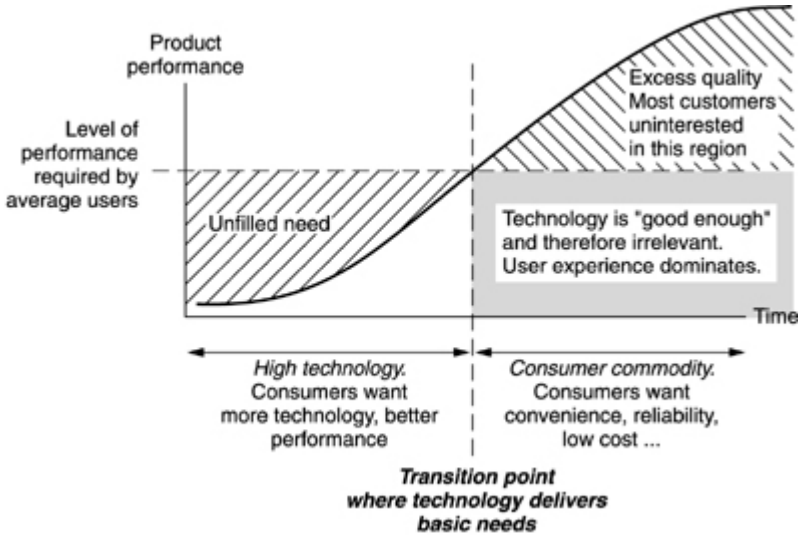
1. INTRODUCTION

Currently we are at a ‘tipping point’ (Gladwell M. 2000. Pg 2) where advances in consumer object interactions aren’t doubling in usefulness every 18 months, unlike Moore’s law (Moore 1965). As processing power increase, input devices and software advances have lead to many innovations, the overall experience is still poor (Bill Buxton, 2007).

Technologists believe that "Technology happens. If you give technologists enough time and money, he believed, they'll create miracles--and Moore's law of cost reduction will take care of the rest. The problem: The technologists' miracles too rarely yield commercial success. They build it, but we don't always come.” (Corborn P. 2006: 10 – 11) Currently there are many academics trying to connect technologists to their users. Most innovations are created for early adopters who are the adoption group most willing to compromise on the products usability or functionally. Donald Norman (1998) outlines the importance of targeting to pragmatists and conservative markets, the early and late majority. The late majorities are the innovation group least susceptible to the ‘wow’ effect because they are more “concerned with attributes and not features” (Sääksjärvi M. & Lampine M. p.148). This can be seen Donald Normans transition point (1998) of not filling unmet needs but creating a great experience for the mass of the late majority.

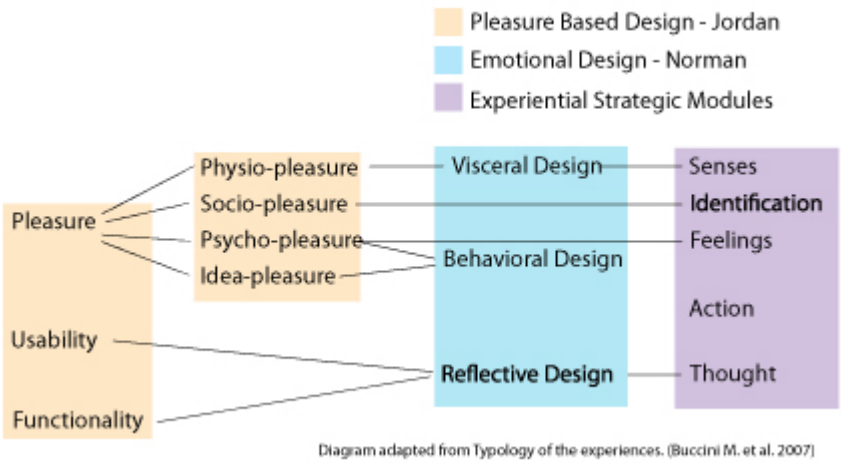


[IMAGE: Norman D. 1998. The Invisible Computer. P. 32]

A current gap in the development between technological products and the users is now being filled by a new discipline of interaction design. Bill Moggridge (2006) is one of the leaders in the field between industrial design and human computer interaction. Moggridge (2006) discusses that we are no longer designing hardware, or software but the interactions that we have with it, and the interactions that are created as a result. Within this new discipline many new design processes have had to be created the focus on people, and not technology. Thackara (2006) argues that we are living in an increasing complex world and that designers need to 'evolve from being the individual authors of objects, or building to being the facilitators of change among large groups of people' (pg 7).

Jordon (2000) understands that consumers are becoming increasingly sophisticated and demanding. "Now that we can do anything, what will we do?" (Buxton 2007, p 418) in the creation of a product, consumers can still feel 'techno phobic' (Gilbert et al. 2003). Fisk et al. (2004) observed older consumers having a substantial semantic memory base but will only be willing to use technology if the benefits are clear to them. Mainly because many new technologies are too painful to adopt, or don't solve a users need or resolve the users 'crisis' (Coburn P. 2006).

Bill Buxton (2007) proposes that it isn't just the product, but instead the overall experience of the product. While this looks at inputs and some basics human factors, his paper prototypes offer a low fidelity. Emotional design could add to this experience and is well documented by Jordan P.W (2006), Norman D.A (2004), Moggridge B (2006). and McDonagh D. et al. (2004). This collection of emotional design views were combined to create an "experience topology" ().



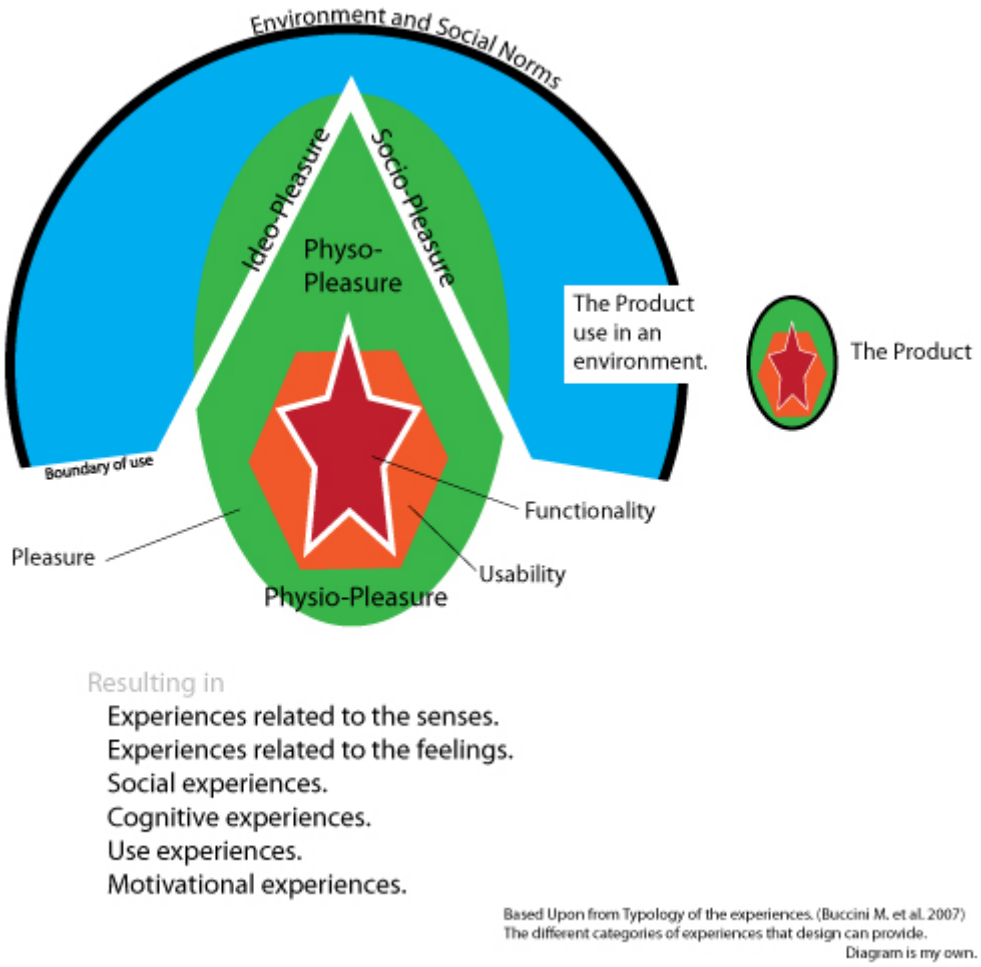
[IMAGE: Buccini. M *et al 2007* P. 501 – Re-Drawn by Ben Arent]

This extends products into all of the aspects of its experiences and Buccini. M *et al. 2007* created six experience categories from the user's interaction with the product.

1. Experiences related to the senses.
2. Experiences related to the feelings.
3. Social Experiences.
4. Cognitive Experiences.
5. Use experiences.
6. Motivational experiences.

While there has been a lot of discussion about the importance of emotional design (Jordon 2000, Norman 2004, McDonagh et al 2004), and emotional experience there has been little framework which could be helped to allow product designers to create better framed briefs for this new realm of interactive product. Buxton B. (2007) and Moggridge B. (2006) outline a range of tools and methods that start to 'sketch the user experience' (Buxton 2007, p.149) to include a more people centric design approach. There is little documentation (LaSalle D. & Britton T. 2003) on how to address all experience categories and design products that successfully embody these elements especially within complex systems. Thackara (2006) notes that many products aren't within silos but are part of a greater system. Thackara (2006) agues we should develop for "design mindfulness" (Findeli A. 2002) to give "sensitivity to context, to relationships… [treating] place, time and cultural difference as positive values, [and] not as obstacles".

I have taken the above topology and added in environment and Context. Place, cultural differences, context and social norms will always be changing, which will affect the experiences within Buccini. M *et al. (*2007) experience categories.



[IMAGE: Buccini. M *et al 2007.* Experience Categories, with Experience topography. – Drawn and Synthesized by Ben Arent]

1.1. What and Why – but not the How?

Designers are best placed 'to interpret technological and cultural frames embedded in existing products, services and infrastructures, and to search for convergences between the cultural frames expressed by all the actors (people and technologies) involved in the development of the project'(Morelli 2006). While Morelli (2006) outlines a PSS, and as Buxton (2007) and Moggridge B. (2006) have given the tools to empower designers to create a people centred product. There are little guidelines to help a designer frame product development based upon pleasurable experiences.

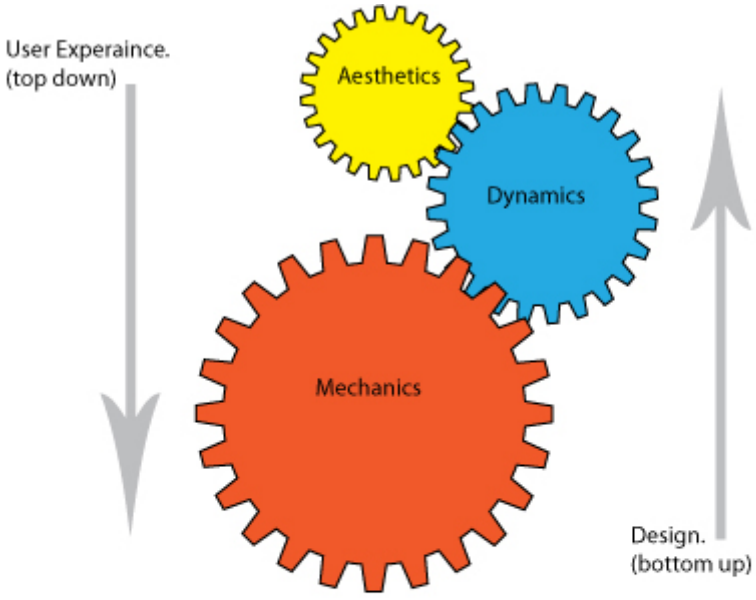
August de los Reyes & D. Wixon (2007) have created a framework that enable designers to create better emotional experiences, which extends beyond Jordan pleasure framework (2000).

August outlines that the simplest questions have the hardest answers. August de los Reyes & D. Wixon (2007) proposes a framework titled “Super Emotion”.

1. **Incite** – System Output is greater than User Input.

   August outlines that we should incite the user. To do this and understand their experience he borrows a formal method from game design (Hunicke R, et al. 2004). August notes that current designers can only really affect the mechanics, through the understanding of ‘design principles’ (Lidwell *et al)* designers can have a good feeling of how these mechanics will affect the aesthetic.

   While in many modern social communication technologies little attention is paid to the aesthetic experience (Bennet and Restivo 2004). One example of designing from a top down experience is by Shigeru Miyamoto, creating game dynamics based upon user input, instead of being defined by dynamics or aesthetics.



Mechanics describes the particular components of the game, at the level of data representation and algorithms.

Dynamics describes the run-time behavior of the mechanics acting on player inputs and each others outputs over time.

Aesthetics describes the desirable emotional responses evoked in the player, when she interacts with the game system.

MDA: A Formal Approach to Game Design. Hunicke R. *et al*

2. **Imprint** – Symbols of Myth. What is the story?

Cambell (1949) talks about the same 'elemental force' in a range of different stories. Cambell studies a range of 'monomyth stories' that all follow part of the same structure. These stories are reinforced by our modern use of semantics and metaphors (Lidwell W. *et al* 2003). These stories can be embodied into modern brands and products by following a "primal code". Hanlon (2006) outlines the seven elements of the primal code as

- Creation Story
- Creed
- Icons
- Rituals
- Pagans, or Nonbelievers
- Sacred Words
- Leader

By integrating these seven elements into product development, designer can embed these factors into design elements. As currently it's a post-product development process, in the manner of traditional marketing.

3. **Negate** – Negate their pain – Altering the user's pain of adoption while increasing the user crisis.

   Pip Corborn (2006) outlines

   Change Function = f (user crisis vs. total perceived pain of adoption)

   Corborn suggest that by decreasing the pain of adopting a new product, and increasing the need for it. The users will adopt a new product. Huh *et al* (2006) shows the late majority only adopting the 3rd or 4th versions which have become more usable therefore reducing pain.

   In addition negotiation applies to design elements, in regard to decisions to keep or remove design elements. August (2007) gives an abstract example of a bonsai tree, where it's what you cut out what makes the tree, not what you add to it.

There has been extensive research into both emotional design and in innovation of the late majority. Although there is little research that bonds the experience problems of the late majority to innovation adoption. A top down approach informed from user centred design will better examine the range of academic thinking on better experiences. This will synthesise in the creation of a better framework for product designer, when working from the bottom up. This

dissertation focuses on adoption within social communication because of current social shifts and technology advances.

There are multiple reasons for the choice of social communication as the focus of the study. In 2007 within the UK we have seen a 'coming of age' of many communication technologies. 85% of the Uk use mobile phones, with 101 million text messages being sent a day (National Statistics, 2007). Text messaging is an interesting service as it was taken up by the consumers, while telecom executives never thought the SMS would be any more than a system for check line service. The popular view on this subject is "This is in stark contrast to the top down technology and industry led approaches to other non-voice services such as WAP." (Anon 2006)

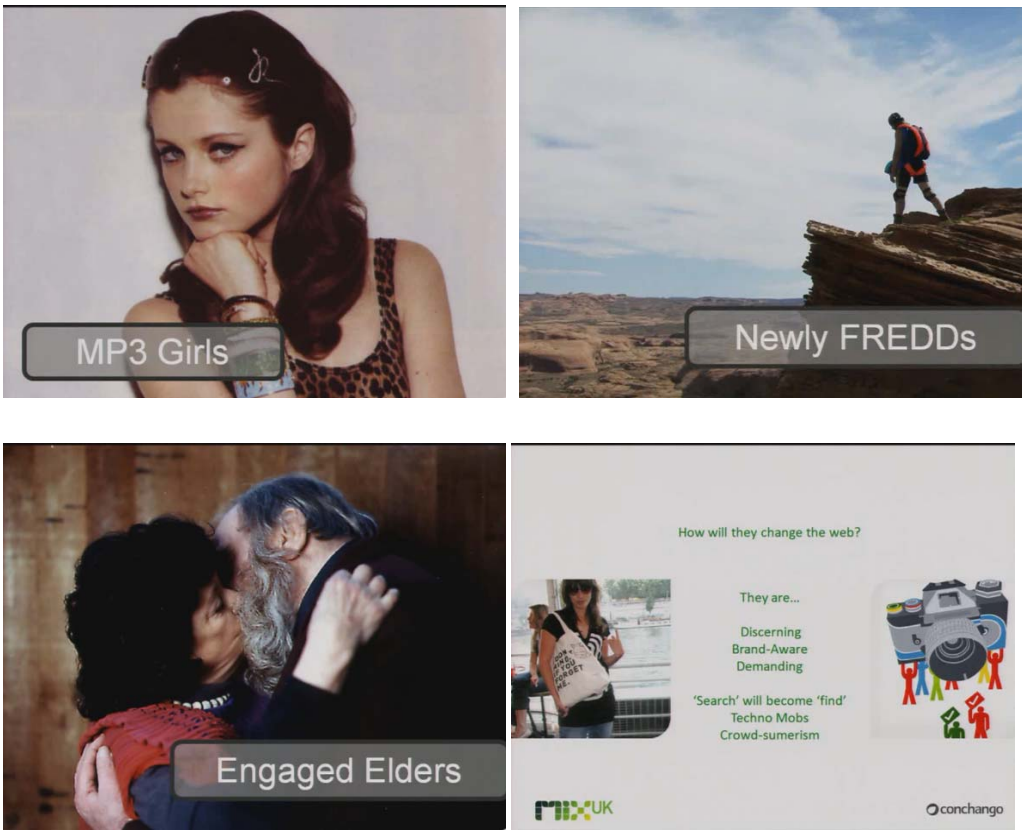
In more recent times the UK has been particularly taken to social networking. The UK has taken well to Facebook, being the 3rd largest country (Facebook 2008) to uptake with 7,943,940 users, from a 2005 population of 60.2 Million. (Facebook Targeted Ads, 2008)

Facebook targeted ads (Facebook Targeted Ads, 2008) generate very accurate usage figures, these should be compared to the estimated current UK population of 60.2 million in 2005 (National Statistics, 2007).

Facebook Stats	
Total Users	7,943,940
Female Users	3,369,060
Male Users	2,814,880
20 - 30	4,508,520
30 – 40	1,635,820
40 – 50	424,800
Over 50	248,060

Of this one of the most interesting statistics is that female users are leading the extension of social communication. Where in (innovation paper??) suggests that male consumers are dominant in adoption. These trends have been reinforced by Conchango's (Mix 07. Dawson P.

& Bagwell M) trend research that there is a shifting and expanding demographic groups using new methods of social interaction. Of these groups there are three interesting demographics 'MP3 girl', 'newly FREDDs [ree of debt and dependents]' and 'connected elders'. 'MP3 girl' is the most social, and is now starting to use a range of conventional and novel methods of staying socially active. 'Newly Fredds' are post war boomers, who don't want to age like their peers. This group has skipped much of the internet boom, and is only now adopting to new tools. 'Newly Fredds' late adoption have meant they are being introduced at a cutting edge level of social communication, but as they are late adopters they think this how 'technology' has always worked. Lastly the connected elders, these are the group that are now getting more connected with their grandsons and granddaughters as they have the time to take full advantage of range of modern forms of social communication.



[IMAGE: Dawson P. and Bagwell M. *2007.* Mix 07 Conference Slides.]

While the research from Conchango (Mix 07. Dawson P. & Bagwell M) point out that while they may be the late adopter of a 'computer' mainly because of Moore law they are purchasing the most usable and advanced devices which are capable of a wider range of social interactions. Effectively as all technology becomes communized, user interface, services and overall experience are fundamental for enhanced functionally. Thackara (2006. p. 187) proposes the "Law of demising amazement". The Law states "the more fancy tech you pack into a product, the harder it becomes to impress people with its benefits".

Thackara doesn't propose a solution to his law, with the common solution being to just add "Easy to use" as is pictured in a Dilbert Cartoon (2001).

One proposed solution of this problem is to make the technology hidden (invisible) such as proposed by Norman (1998), yet Norman (2007) has changed this view and comments on that a computer is only as intelligent as the person who created it.

Currently there is a lot of research within new social communication technologies; Mediaspace (2004) discusses what media means in this new connected landscape, and how this in turn can change social relationship on a grander scale (Couldry et al 2004 p. 194).

2. REVIEW OF ADOPTION PROCESS WITHIN LATE ADOPTERS.

Acquisition of data will be based on a triangulation of user centred approaches. Triangulation was first proposed by Mackay. W and Fayard. A (1997). Triangulation will be based on a range of hypothesis generated by academic research and theory. Triangulation will be focussing on innovation, experience and social communication.

The triangulation will be founded on four methods selected from the IDEO method cards (IDEO 2003). The results of which generate primary research to compare against modern innovation, experience and social communication research. By understanding people and their objects within the already defined "experience topology" shall create useful synthesis. Of which will allow product designers to achieve the paradox of top-down product generation. The four methods of triangulation are Questionnaires, Cultural Probes, Extreme Ethnography and a Learning Style Analysis.

2.1. Questionnaire

The questionnaire consisted of 4 statements based upon each hypothesis. The participant will then be able to answer based upon a Likert (1932) scale. The questionnaire is available in the appendix.

2.2. Learning Style Analysis – Understand cognitive behaviour.

A Learning style analysis will allow to see if there is a link between learning style and product adoption. Memletics Learning Style analysis shall be used as it "reveals individual learning styles and how important it is to know what they are in addition knowing how memory works within the learning process." (Davis. S *2007*). Memletics learning is a range of 70 questions that the participant will need to agree with, partly agree or disagree with.

The results of the questionnaire are then given in the below categories on a 20 point scale.

- Visual (spatial). You prefer using pictures, images, and spatial understanding.
- Aural (auditory-musical). You prefer using sound and music.
- Verbal (linguistic). You prefer using words, both in speech and writing.
- Physical (kinesthetic). You prefer using your body, hands and sense of touch.
- Logical (mathematical). You prefer using logic, reasoning and systems.
- Social (interpersonal). You prefer to learn in groups or with other people.
- Solitary (intrapersonal). You prefer to work alone and use self-study.

2.3. Cultural Probes

[IMAGE: Gaver B. *1999*. – Taken from Exhibition]

Cultural probes were first proposed by Bill Gaver in 1999. It's a custom made package that is a selection of custom tools that are sent out to a range of participants. These normally include at

least a camera and a notebook. Often custom artefacts will be made to complement the questions that they are trying to answer. Because of the time limitations photography shall inform most of the probe.

Participants will be using digital cameras and mobile phones.

Gaver (1999) outlines that the main advantages of cultural probe are

> *"Embracing subjectivity*
>
> Sacrificing generality for mutual engagement and personal glimpses.
>
> *Making it personal*
>
> Losing anonymity to extend a relationship beyond the probes.
>
> *Valuing the idiosyncratic*
>
> Ignoring 'average users' to focus deeply on the peculiarities of individuals.
>
> *Using the absurd*
>
> Giving up control to encourage surprise and discourage easy interpretation. (Gaver 1999 p 25)"

The below is a list that the participants will use to inform their photography.

1. Take a photo of something that you think is innovative.
2. Take a photo of your most important piece of technology.
3. Send in your most prized photo.
4. Take a photo of your oldest piece of technology.
5. Send in a 'social' photo.
6. Take a photo of a simple technological product.
7. Photograph a technological product that you hate.
8. Photograph something your dissatisfied with.
9. Photograph something that has helped you.

2.4. Rapid Ethnography

Ethnography is the qualitative and quantitative study of humans, their objects and their surrounding studies based up primary field work. These studies are normally undertaken by trained anthropologists and can take years to gather accurate data about a society's social phenomenon.

David Millen (2000) first introduced "rapid ethnography" where in which human-computer interaction researchers are able to use the same mixture of tools to focus on a particular users and activities. As a result of limited time for a dissertation, rapid ethnography techniques were utilised to capture 'in the wild' responses to social communication technology products. These observations will be captured on a Digital Camera and on a Camera Phone.

3. HYPOTHESIS TO INFORM USER CENTERED TRIANGULATION BASED UPON ACADEMIC WORK.

H1. Innovative functions aren't important to the late majority

A review into post adoption behaviour found that many new innovations didn't consider the actual product usage behaviour. Their paper found that "early adopters are not significantly different from later ones in terms of innovative function usage". Huh Y.E. *et al* (2008) proposed re-innovation and innovation based purely on early adopters could be an "elusive effort [as]. Examining post-adoption behaviour can also provide insights on how to improve on the design attributes of a later generation product. " (Huh Y.E. *et al* 2008 p 46)

H2. The late majority have more personal relationships with their products.

Observe to see if because of the lower levels of technical sophistication, that they anthropomorphize their products. DiSalvo (2003) outline a framework to utilize anthropomorphic form and to embrace the differing cultural factors that these forms represent.

H3. The artifact and result of the product is more important than the product itself.

The late majority have a greater emotional, "physco-response" (Jordan 2000) with what the products can do for them. The internet and mobile phones have enabled the late majority to transcend time and space, to build stronger and longer lasting social connections (Bandura 2002). The late majority are active in sharing product use, both sharing the device and personal artefacts on the device e.g. personal photos.

Wander (2007) suggests "Product development focuses exclusively on the attribute level of the product, which can be designed by the producer. Obviously, neither the consumers perception

of the attribute value and its weighing, nor the social attribute can be designed by the producer, …".

H4. Late adopters will never un-adopt a technology

When late adopters have adopted a product, perhaps they are unlikely to un-adopt a product. "E.g. I couldn't live without my phone."

H5. Associated product experiences are more important than experience with the product.

Morelli (2002) proposes that "A designer is in the best position to interpret technological and cultural frames embedded in existing products, services and infrastructures, and to search for convergences between the cultural frames expressed by all the actors (people and technologies) involved in the development of the project.". This conclusion could mean that generating overall experience is more important than a silo-ed experience.

Triangulation results should be interesting to test this within communication technology. Especially when focusing on products (mobile phones) and their role in services (Online social networking).

H6. Late majorities purchase on feature bloat, but do desire some form of simplicity.

Marketers make an active decision to overload products with buttons and added features to drive sales (Wander. J 2007). Even Donald Norman (2007) suggests "Yes, we want simplicity, but we don't want to give up any of those cool features. Simplicity is highly overrated.", continuing to prove this by the inclusion of (windows like) Solitaire installed onto iPods.

H7. The Late majority struggle with the use of their product.

As we adopt more complicated consumer products, user can become anxious about use of them. Korukonda A. (2007) proposed that continuing education and training, for users that could be vulnerable toward computer anxiety. Korukonda (2007) continues to note that 'molar personality values' such as Openness, Neuroticism and Agreeableness should be targeted directly to increase self-efficacy via training.

The increasing amount of complex products has lead to the "Perpetual Novice" (Davis 1997). Where in a user will only learn a certain amount of a product or system, which can mean its use in an in-efficient manner. Whereas "Experts have not only mastered the system they have also know how to learn more about the product." (Sherman 2007) A compare this against my learning style analysis to synthesis a better "flow" (Csikszentmihalyi 1990) for the users.

H8. The late majority are still dissatisfied with their products.

Human centred design is being used to literary to design for people, instead of designing for the task (Norman D. 2007). A contemporary view on the subject is that dissatisfaction is created the paradox of choice (Schwartz 2005). By creating an abundance of choice we undermine happiness by thinking that we made the wrong decision.

H9. The late majority needs a support service to setup, explain and maintain the product.

Lidwell W. *et al (2003 p 127)* note that "The late adopters are a large market, in which competition is high. This leads to a business focus on customer retention and a design focus on support." Are these needs being fully meet? Point of Sale 'bars' offer a lot of attention during the during process, but do support experiences translate in valuable experience. The rise in computing services such a 'PC World Tech Squad', as mediators between consumers and there technology.

4. RESULTS OF TRIANGULATION.

Six late-adopting participants complete my triangulation. 5 of them were pre-briefed and undertook 3 of the tests in person, while the other 3 participants completed the questionnaire and learning styles on their own. One of my users had no physical contact with myself, and completed the whole of my study via a Facebook group, the use of online social networks to gather data upon specific user groups could potentially be very powerful, proposed extended research methods are within the Appendix.

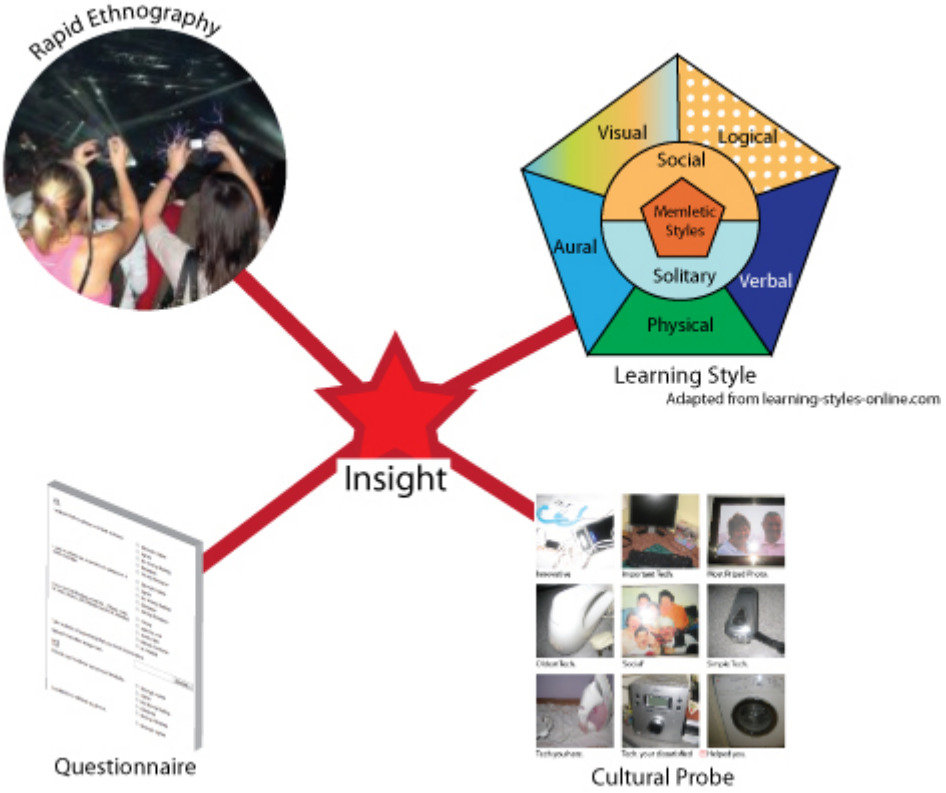
six participants were all chosen because of being the late majority within certain product areas. A couple of participants had 3G mobile phones, that could do features that early adopter would desire. Such as mobile e-mail or web browsing. While these features were relatively accessible to my participants they were still apprehensive of adoption.

The results of my triangulation created a lot of data, Coburn (2006) notes that Data, Information and insight aren't the same thing.

Coburn (2006 p 186) analysis follows

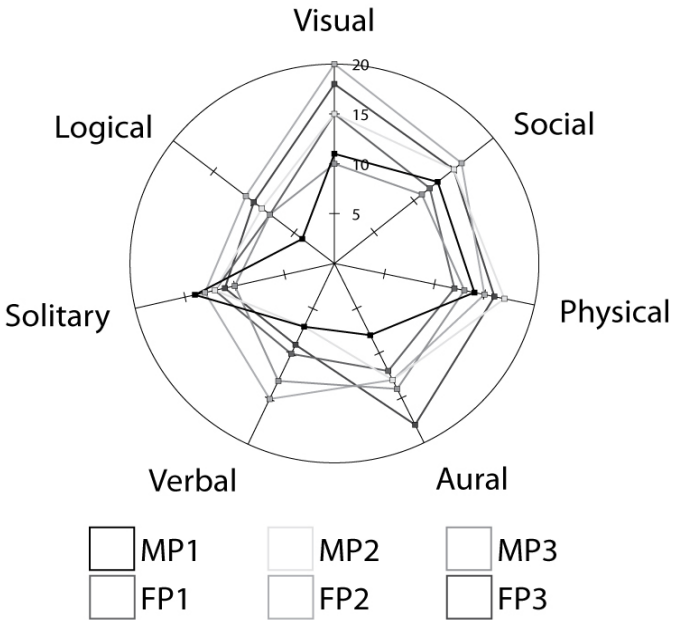
> "Data –numbers and the like.
>
> Information –data in context.
>
> Insight – the discerning the true nature of a situation."

Coburn (2006) recalls a story from Ted Levitt, that "People don't want quarter-inch drill bits – they want quarter-inch holes. People buy a service. [this is] an Insight". Informed insight based upon the triangulation of my users.



5. OVERVIEW OF RAW DATA.

5.1. Learning Styles



Questionnaire

The Likert questionnaire had a mean score assigned to each question. The questions that were asked are in the Appendix.

Participant	H1 - Q1	H1 - Q2	H2 - Q1	H2 - Q2	H2 - Q3	H2 - Q4	H3 - Q1	H3 - Q2	H3 - Q3	H3 - Q4
MP1	1	5	4	5	3	3	3	5	3	4
MP2	3	1	5	3	4	1	4	4	2	3
MP3	5	2	4	2	4	3	4	1	5	4
FP1	4	1	4	2	5	2	4	4	3	3
FP2	5	2	3	4	5	3	5	3	4	4
FP3	4	2	5	5	3	2	3	2	5	5
Mean Score	3.7	2.2	4.2	3.5	4.0	2.3	3.8	3.2	3.7	3.8

Key		
	Stongly Agree	5
	Agree	4
	No Stong Feeling	3
	Disagree	2
	Strongly Disagree	1

H4 - Q1	H3 - Q2	H3 - Q3	H3 - Q4
3	3	1	2
1	1	1	1
2	2	2	1
1	2	4	4
2	1	2	2
4	2	3	3
2.2	1.8	2.2	2.2

H4 - Q1	H4 - Q2	H4 - Q3	H4 - Q4
2	4	3	4
3	3	3	2
1	1	2	4
2	2	3	3
4	1	4	1
1	3	2	3
2.2	2.3	2.8	2.8

H5 - Q2	H5 - Q3	H5 - Q4
2	5	2
3	3	2
4	4	4
4	3	2
4	3	1
2	1	1
3.2	3.2	2.0

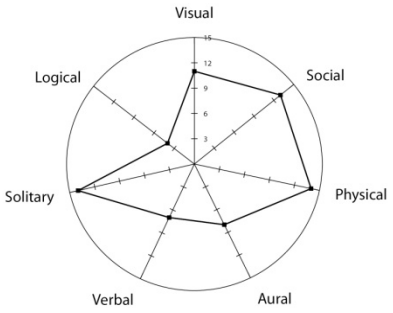
H6 - Q1	H6 - Q2	H6 - Q3	H6 - Q4
1	2	1	3
2	3	2	3
2	4	4	4
2	2	2	3
1	1	3	4
1	3	4	2
1.5	2.5	2.7	3.2

H7 - Q1	H7 - Q2	H7 - Q3	H7 - Q4
1	4	1	4
2	2	2	4
1	5	4	4
3	3	5	2
2	4	4	5
1	5	3	1
1.7	3.8	3.2	3.3

H8 - Q1	H8 - Q2	H8 - Q3	H8 - Q4
1	4	2	3
2	4	4	3
3	4	1	4
3	5	4	4
2	4	4	5
1	3	2	4
2.0	4.0	2.8	3.8

5.2. Cultural Probes.

Male Participant 1. (MP1)




Pleasure.


Innovative


Important Tech.


Most Prized Photo.


Oldest Tech.

'Social'

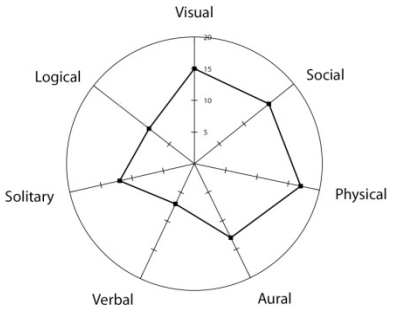

Simple Tech.


Tech you hate.


Tech. your dissatisfied


Helped you.

Male Participant 2. (MP2)

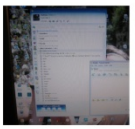



Innovative


Important Tech.


Most Prized Photo.


Oldest Tech.


'Social'

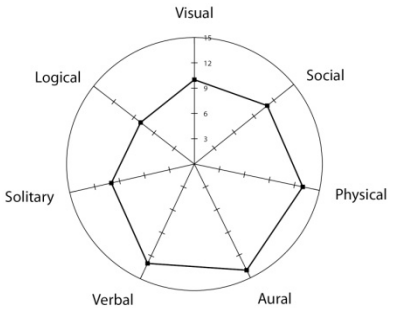

Simple Tech.


Tech you hate.


Tech. your dissatisfied


Helped you.

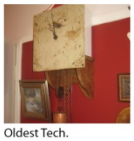
Male Participant 3. (MP3)




Innovative


Important Tech.

Most Prized Photo.


Oldest Tech.


'Social'

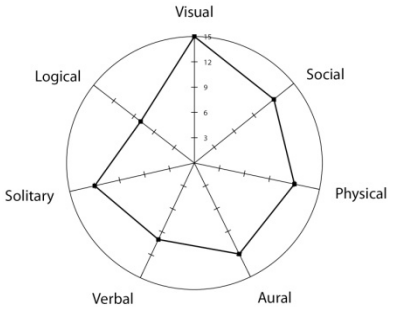

Simple Tech.


Tech you hate.


Tech. your dissatisfied


Helped you.

Female Participant 1. (FP3)




Innovative


Important Tech.


Most Prized Photo.


Oldest Tech.


'Social'

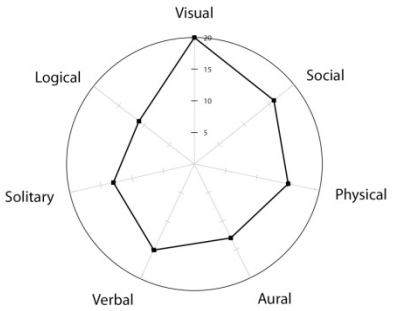

Simple Tech.

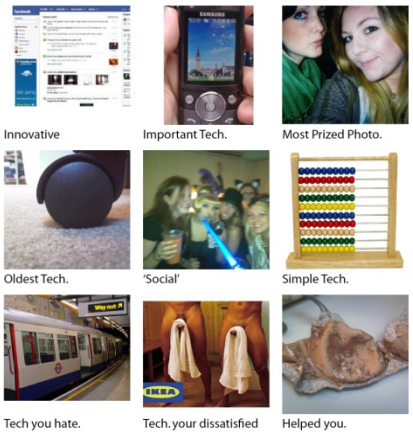

Tech you hate.


Tech. your dissatisfied

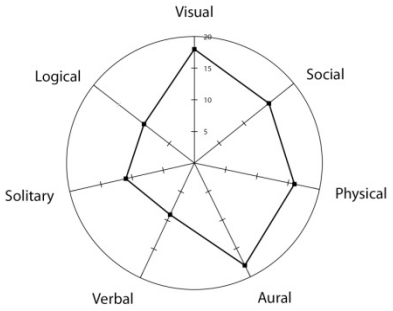

Helped you.

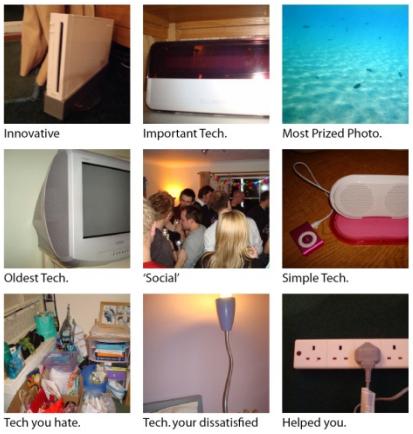
Female Participant 2. (FP2)





Female Participant 3. (FP3)





5.3. Rapid Ethnography.

Most of my rapid ethnography was undertaken with a small digital camera, Camera Phone or design notepad to jot down design issues. As a result of the subjective and amount of ethnographic detail I shall just be using snippets to reinforce any of the trends. Ethnography also allowed me to observe behaviour of interesting product usage, that is being used in an otherwise 'thoughtless act' (Suri 2005).

5.4. Trends in Results.

5.4.1. TV's

From the cultural probes and questionnaire its still appears that the late majority enjoy being a passive consumer. Suggesting that this form of passive media will always stay

as there is an aesthetic joy to being feed information. No participants photographed a flat panel TV, while many had adopted flat panel monitors, properly because of the speed of technology change.

5.4.2. Mobile Phones.

Mobile phones play an active role for my participants, while they are interesting and important. The use of them can still generate a lot of hate, when questioning MP1 further he also noted that the disclosure of the phone as a problem along with poor reception, and a ‘pain to text’.

One interesting note was from part of the rapid ethnography data. This photo captures the role of mobile technology in an under designed for context. The two users are both presumably illegally recording the gig, they are also compelled to take an active view to watch the show though the screen. This creates a ridged arm position that breaks up the dynamic of the gig. Presumably this recording will be showed at later date which will bring ideo-pleasure and physco-pleasure of the remembering of the ‘live’ musical experience.

5.4.3. Emphasis on Non-Electronic Devices.

The late adopters picked very sensible and logical answers to my cultural probe. This in regard that they focused upon ‘normal’ items such as a washing machine and a bra.

5.4.4. Only one user got pleasure from a ‘utility device’.

Only one user FP3 recognized technology as products that help here, this was unlike the other participants (FP2 & MP2) who mostly outlined social technology, even though with they weren’t specifically asked to undertake social activities. (With the exception of cultural probe question 5) FP2 fitted into the ‘mp3 girl’ (Conchango) demographic. This generational shift could mean that ‘adoption’ will become a generational factor as these users have never lived without washing machines, and even computers. This could become an important design issue as we now have a generation who have become

both technically fluent in current technology, and have also become to embrace more complex social privacy issues and new methods of communication. In this sense while some of my 'late adopters' may not seem themselves as keeping up to date with the current technology, once the same product becomes available to the late adopters, (normally because of price in the respect of my late adopters) they not only embrace the technology they also fully utilization all technical innovation. In this sense my study agrees with Saaksjarvi *et al* (2005).

5.4.5. Importance of photos to capture an experience.

Four of the six participants chose photos to express 'social'. One used an active form of social communication (MSN messenger) and one depicted a game to represent a gathering of people. The ability to remember the social connections appear to be important to my participants.

5.4.6. Users dislike questionnaires.

Possibly as result of a saturation of Likert (1932) style questionnaires. When questioning participants they seemed limited by agree or disagree statements. They would be unwilling to type their comments on the question. While A Likert style statement biased questionnaire is good for generating discussion and creating awareness of the issues.

6. COMPARISON OF RESULTS AGAINST HYPOTHESIS.

This dissertation hoped to shed light on how we can better create pleasurable experiences for social communication products. The results of my triangulation have formed some interesting result. While most of the initial research hypothesis turned out to align with my late majority. The main insight that would greater help product designers in the implementation of any new social communication technology are:

Designing for mutable learning and usage experiences.

H7 proved correct, that many late adopters still struggled with product adoption. Often they would only use the basic features as these took such a long time to work out, the participants were less likely in investigate advance features.

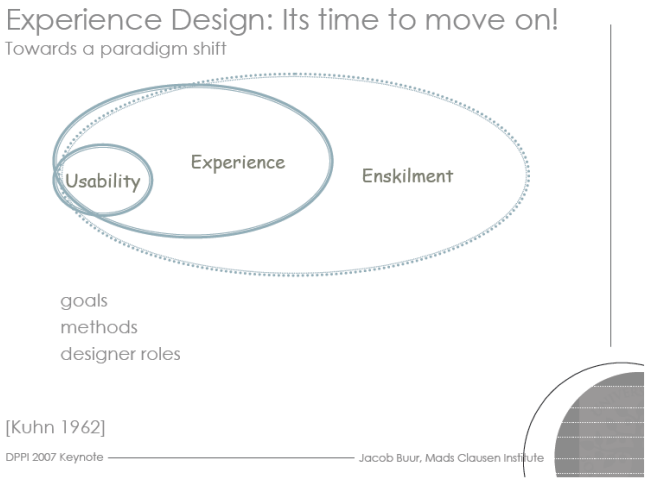
Understand the experience and results of complex objects as holistically as possible.

H8 proved correct. All late majorities had dissatisfaction with their products. The devices in regard to poor usage were often simple devices that tried to complete mutable takes.

After the completion of this comparison, there does appear to be some similarities in academic research and primary research into experience. While there is an evident missing link between academia and business Nussbaum (2007) suggests “CEOs must be designers and use their methodologies to actually run companies“.

Thackara (2006) proposes that because we live in such a ‘complex world’ with such a plethora of options, choices and information that we aren’t succeeding in ‘meaningful’ design. Information architecture started to create a master system that starts to allow information.

While a complex debate happens around innovation, design theory and product experiences. The 2007 2nd designing pleasurable products and interfaces conference proclaimed that we need to move on from discussing theory. So academia could work on ‘Enskilment’ (Buur 2007) to create these experiences, while we still understand the ‘subtitles of the particular modes thought which we engage objects and spaces’. (Plowman 2005)



[DPPI 2007 Closing Keynote. Buur J *et al* 2007.]

7. PROPOSED METHOD FOR OUTLINING FRAMED DESIGNED BRIEFS.

7.1. Importance of Pleasure.

Kim (2006) and August (2007) both outline the importance of learning from games to create pleasure. This not only extends Jordon’s (2000) view on pleasure, but focuses on fun. August (2007) noted that within game design, developers (Hunike R et al) have

successfully created a top-down approach. This should be used with Buxton's (2006) rapid prototypes, while applying to multiple environments.

Analysis of data showed that while come products did bring the user pleasure there was a time and place for all pleasures. This was affected by socio-context, location and time. An example is the role of the mobile phone, and the intrusion that it imposed upon some participants.

7.2. Importance of 'Medium'.

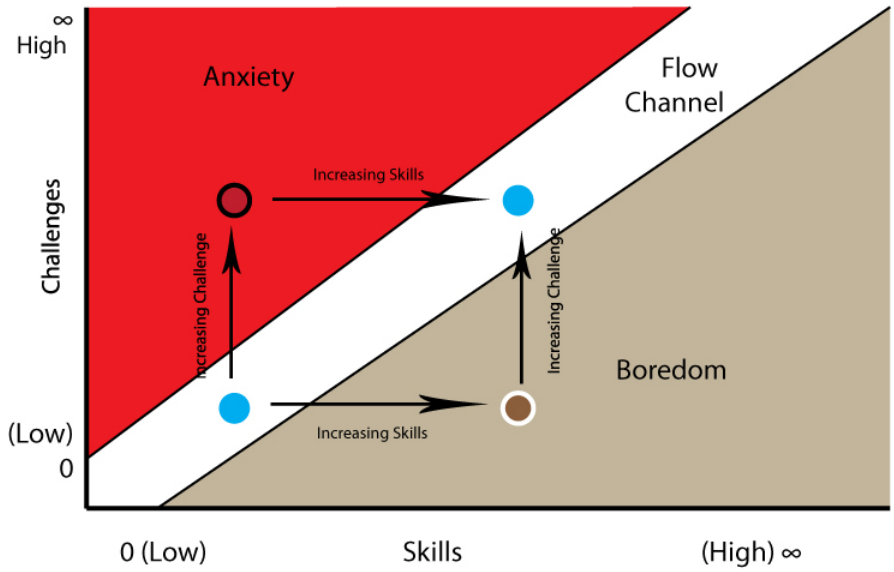
Mcluhan (1969) outlined the importance of the medium as a sign that there is greater shift in society's usage of modern 'media'. Pentland (2005) believes that artificial intelligence will bring devices that will be 'Socially Aware', outlining such systems that hope to "design systems that are aware of human social signalling, and that adapt themselves to human social context, it may be able to remove the medium's message and replace it with the traditional messaging of face to face communication". The first hand research appears to disagree with Pentland (2005) as many preferred the use of online social networks, SMS and instant messaging compared to face to face communication. Most late adopters were keen of the idea of being able to stay in touch, while still being in full control of their personal disclosure. As products and services are built to enable communication groups of small friends will be better connected, while the ability to know more about friends will enable better connections. Zuckerberg (2007) believes that "the other guys think the purpose of communication is to get information. We think the purpose of information is to get communication."

7.3. The Perpetual Novice.

7.3.1. Product designed for certain learning style.

While investigating H7 the learning style analysis found some interesting trends. Date from the late majorities show that Solitary, Physical and Logical traits are close within the group of participants, while Visual, Verbal, Aural and Social can differ largely. The grouping of Solitary, Physical and Logical traits could be because these are the methods that are traditionally used in the British education system. More research would be needed to better understand the late majority. Learning of the advance features and observation of users 'perpetual novice' status, have meant we can now enhance users to better learn and understand their products.

1. Utilize "Flow" (Csikszentmihalyi 1990) to slowly disclose product complexity.



Mihaly Csikszentmihalyi, Flow Channel. Adapted from 1990 Flow: The Psychology of Optimal Experience

Csikszentmihalyi (1990) flow state is when a person is fully engaged in an activity for its own sake. “Every action, movement, and thought follows inevitably from the previous one, like playing jazz. Your whole being is involved, and you're using your skills to the utmost.” (Csikszentmihalyi from Geirland. 1996). Flow bring into the concept of Skill. “Skill is not simply a technique of the body but of an organism -person in a rich environment. Skill is a coordination of perception and action, not a transmission of rules and representations.” (Ingold 2001). Hence the utilization and knowledge of learning styles to enable a late adopter to acquire the skill, though the full utilization of the flow channel, within the complete experience topology.

2. Utilization of an adaptive interface.

Anderson (2007) presents how intelligent systems can adapt to the user. This type of software is progressive and smart; as the user performs the same actions the system will evolve to help the user. When building this into a system for the late majority the system should cover all learning styles equally, while adapting and making the product easier if the system realises a certain learning style.

This type of system would extend beyond the interface using not only cognitive and physical input but even social context (Pentland 2005). Examples of potentially integrating physically adaptive interfaces are just

become commercially available in devices (Optimus Maximus 2007). Thus, enhancing phyiso-pleasure

3. Create an overall experience architecture.

Conchango (Dawson P. and Bagwell M. 2007), create large mind-maps that depict 'flow' and all of the touch points for a persona. This methods starts to include context and medium yet the 'experience architecture' would need the 4th dimension and 5th dimension of both context and time to help understand changing relationships. For how 'flow' and 'skill' will change the experience.

[IMAGE: Dawson P. and Bagwell M. *2007*. Mix 07 Conference Slides. Fig 1. 'Experience Architecture']

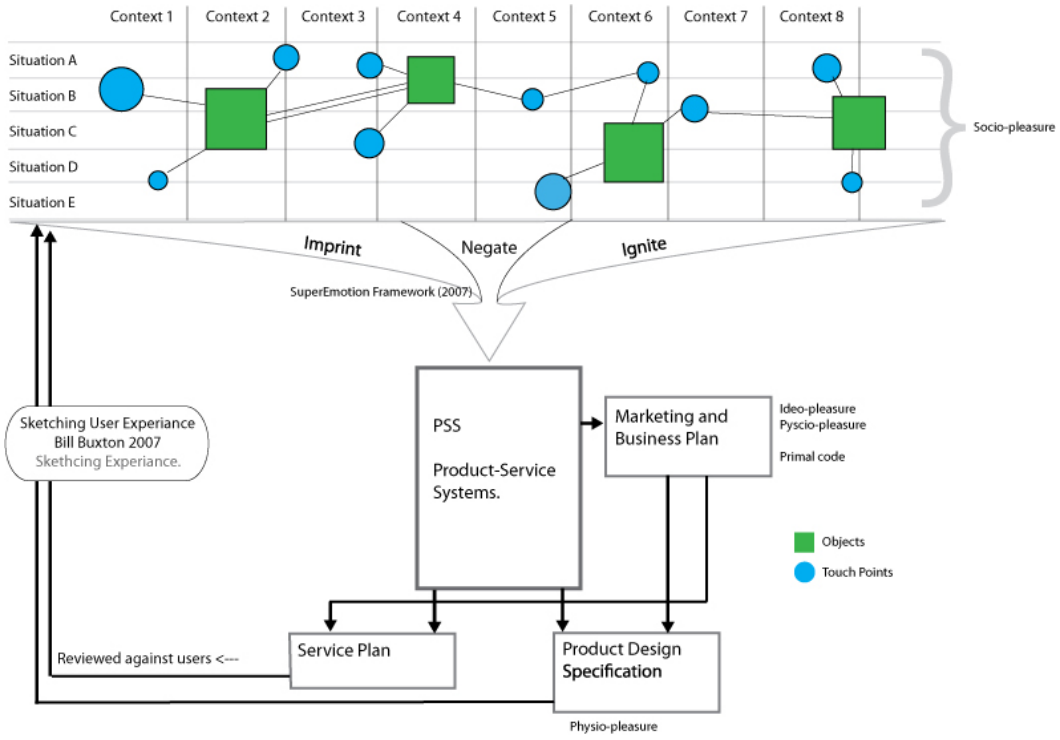
8. HOW A PRODUCT DESIGNER COULD EMBRACE THESE METHODS WITH A TRADITIONAL PRODUCT DESIGN BRIEF.

It has already been outlined by many academics what the experience theory's area and Buxton (2007) has started to create the tools so that a designer can rapidly prototype and evaluate experience. Though there is little in place to frame this development, while in a traditional sense as product designer "we cannot craft an experience, but only the conditions or levers that might create an intended experience" (Forlizzi, 2000) . DiSalvo et al (2004) suggest that we are "cannot design products to generate specific

emotional experiences… yet if we understand the environment in which an emotional experience happens and how objects function as an emotional lever within that environment, we may be able to discover opportunities for new products that fulfil needs and desires for emotional experiences."

These statements could start to separate design into the practice of design and design thinking. While this question of where design thinking meets design craft is an interesting subject, it's still being discussed by academics and practitioners (Brown 2007).

Therefore, a new framework that is both interaction and experience orientated and follows user-centred design process has been synthesized.



[Diagram Drawn by Ben Arent. Combinging a range of frameworks discussed within the dissertation]

The foundation of the process builds on August (2007) work and Buccini. M *et al* (2007) experience topology. This has been extended to N. Morelli (2007) PSS to included the traditional documentation of product design specification and business plan.

The PSS [Product-Service System] will be initially based upon a user centred design approach, recognising key factors of 'pain' for the user, while undertaking what "ignites" (August 2007) these users. This will then be used to start the creation of a

PSS, which will be based upon a marketing plan framed within the imprint methodologies of the 'primal code' (Hanlon 2006). This will help to create a skeleton brief, which will allow the creation of a service brief and product design specification. These briefs will then be used to create 'experience prototypes' (Buxton 2007) which will be used by multiple user groups, within different physical and social contexts and locations. The design cycle will then begin again, to review areas where the object or service isn't emotionally engaging in.

The main addition to this framework is the consideration of time, physical and social context. There seemed to be a lack of these factors from the research. Participants pointed out issues with disclosure, and privacy. The ability to review location by rapid prototyping, would help evaluate a range of experiences for the late majority. The factors of time, physical and social context are becoming more important with modern work practices where the division between work, social and home life is merging.

The Green squares and blue circles represent a collection of interlinked objects based within multiple contexts and situations. The lines between objects and touch points represent the complex interconnections that can happen between mutable users within the same situation, yet different context.

In conclusion, I have proposed a fast and iterative and practical framework that can has helped to 'Enskilment' (Buur 2007) designers. The framework believes partially with the design of social communication technology to facilitate time, physical and social context are fundamental to the success of products. This has been reinforced by my observations when participants pointed out disclosure, unlimited access, and alterations to online personas. Most often these are because of context (work isn't the place for your weekend social life), social (Class mates, work mates, friends and family all view a different persona within my research.) or time (filling free time at work and while commuting are two) issues.

An exemplifier in a similar process is Shigeru Miyamoto, who has been suggested to us a similar process in game design (Reyes A. 2007 [Mix 2007]). This has best been produced with the Wii, where in which Miyamto uses a top down iterative approach (Hunicke *et al)* to design, that holistically understood that most the fun, is watching someone else play. Therefore transforming a lone activity into a social activity.

There will always be a late majority, but products created within this framework and processes outlined within the dissertation. Will better address their needs. This

framework will help to empower the designer to create better products. This shall make adoption and usage more pleasurable for all users.

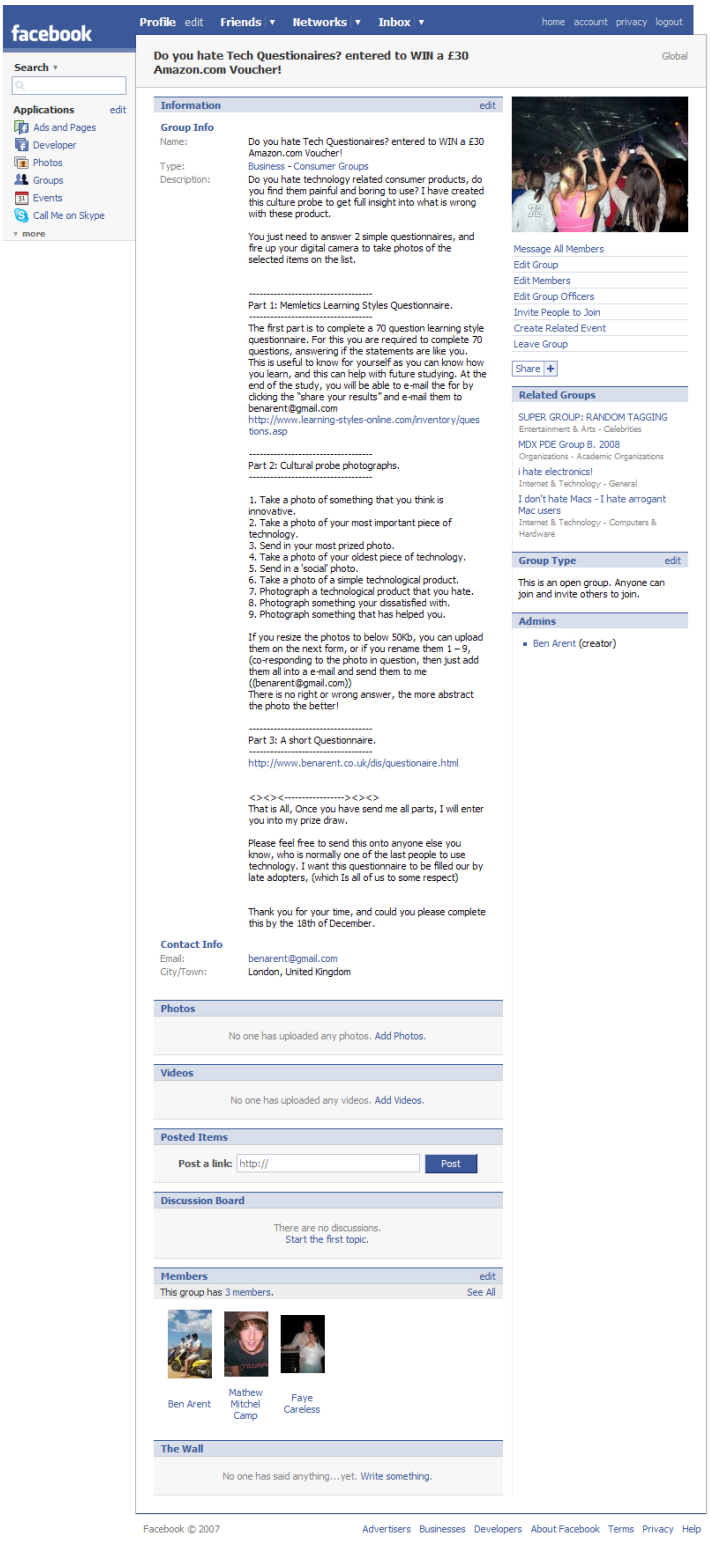
9. APPENDIX

Learning Style Analysis –

Use of Memletics Learning Styles Questionnaire. Psychometric Test. Available at http://www.learning-styles-online.com/inventory/questions.asp

Online Organisation.

http://mdxuk.facebook.com/group.php?gid=15457135314


facebook
Profile edit Friends Networks Inbox
home account privacy logout
Search
Applications edit
Ads and Pages
Developer
Photos
Groups
Events
Call Me on Skype
more
Do you hate Tech Questionaires? entered to WIN a £30 Amazon.com Voucher!
Global
Information edit
Group Info
Name: Do you hate Tech Questionaires? entered to WIN a £30 Amazon.com Voucher!
Type: Business - Consumer Groups
Description: Do you hate technology related consumer products, do you find them painful and boring to use? I have created this culture probe to get full insight into what is wrong with these product.
You just need to answer 2 simple questionnaires, and fire up your digital camera to take photos of the selected items on the list.

Part 1: Memletics Learning Styles Questionnaire.

The first part is to complete a 70 question learning style questionnaire. For this you are required to complete 70 questions, answering if the statements are like you. This is useful to know for yourself as you can know how you learn, and this can help with future studying. At the end of the study, you will be able to e-mail the for by clicking the "share your results" and e-mail them to benarent@gmail.com
http://www.learning-styles-online.com/inventory/questions.asp
---
Part 2: Cultural probe photographs.
---
1. Take a photo of something that you think is innovative.
2. Take a photo of your most important piece of technology.
3. Send in your most prized photo.
4. Take a photo of your oldest piece of technology.
5. Send in a 'social' photo.
6. Take a photo of a simple technological product.
7. Photograph a technological product that you hate.
8. Photograph something your dissatisfied with.
9. Photograph something that has helped you.
If you resize the photos to below 50Kb, you can upload them on the next form, or if you rename them 1 – 9, (co-responding to the photo in question, then just add them all into a e-mail and send them to me ((benarent@gmail.com))
There is no right or wrong answer, the more abstract the photo the better!

Part 3: A short Questionnaire.
---
http://www.benarent.co.uk/dis/questionaire.html
<><><----------><><>
That is All, Once you have send me all parts, I will enter you into my prize draw.
Please feel free to send this onto anyone else you know, who is normally one of the last people to use technology. I want this questionnaire to be filled our by late adopters, (which Is all of us to some respect)
Thank you for your time, and could you please complete this by the 18th of December.
Contact Info
Email: benarent@gmail.com
City/Town: London, United Kingdom
Photos
No one has uploaded any photos. Add Photos.
Videos
No one has uploaded any videos. Add Videos.
Posted Items
Post a link: http:// Post
Discussion Board
There are no discussions.
Start the first topic.
Members edit
This group has 3 members. See All
Ben Arent
Mathew Mitchel Camp
Faye Careless
The Wall
No one has said anything...yet. Write something.
Message All Members
Edit Group
Edit Members
Edit Group Officers
Invite People to Join
Create Related Event
Leave Group
Share
Related Groups
SUPER GROUP: RANDOM TAGGING
Entertainment & Arts - Celebrities
MDX PDE Group B. 2008
Organizations - Academic Organizations
i hate electronics!
Internet & Technology - General
I don't hate Macs - I hate arrogant Mac users
Internet & Technology - Computers & Hardware
Group Type edit
This is an open group. Anyone can join and invite others to join.
Admins
Ben Arent (creator)
Facebook © 2007
Advertisers Businesses Developers About Facebook Terms Privacy Help

Likert Questionnaire.

H1 I wished that my phone was just a phone.

- ☐ Strongly Agree
- ☐ Agree
- ☐ No Strong feeling.
- ☐ Disagree
- ☐ Strong Disagree

I use my phone as a camera, or camera as a video recorder.

- ☐ Strongly Agree
- ☐ Agree
- ☐ No Strong feeling.
- ☐ Disagree
- ☐ Strong Disagree

I buy new technology when its , Cheap, easy to user, dose a job, blends functions, needed.

- ☐ Cheap
- ☐ easy to user
- ☐ dose a job
- ☐ blends functions
- ☐ is needed

Take a photo of something that you think is innovative. Upload innovative image here.

H2 I find it hard to throw out unused products.

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

I couldn't live without my phone.

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

I hate my computer when it crashes.

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

I don't like using public computers and phones

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

Take a photo of your most important piece of technology. upload important tech image here.

H3 Photos are more important than the camera.

- ☐ Strongly Agree
- ☐ Agree
- ☐ No Strong feeling.
- ☐ Disagree
- ☐ Strong Disagree

Always being available for contact is important to me.

- ☐ Strongly Agree
- ☐ Agree
- ☐ No Strong feeling.
- ☐ Disagree
- ☐ Strong Disagree

A letter says more than an e-mail

- ☐ Strongly Agree
- ☐ Agree
- ☐ No Strong feeling.
- ☐ Disagree
- ☐ Strong Disagree

Staying in touch with old friends is more important than making new ones. (in realation to online social websites)

- ☐ Strongly Agree
- ☐ Agree

- No Strong feeling.
- Disagree
- Strong Disagree

Send in your most prized photo. upload your most prized photo.

H4 I couldn't live without my phone.

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree.

I couldn't live without my computer.

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

I couldn't live without my tv.

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

I couldn't live without facebook.

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

Take a photo of your oldest piece of technology. upload oldest tech photo here.

H5 I love being constantly available with my phone.

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

I love being constantly contactable with 'facebook'.

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

I love being constantly connected.

- Strongly Agree
- Agree

- [ ] No Strong feeling.
- [ ] Disagree
- [ ] Strong Disagree

Most of my phone time is in organizing to meet people in person.

- [ ] Strongly Agree
- [ ] Agree
- [ ] No Strong feeling.
- [ ] Disagree
- [ ] Strong Disagree

Send in a 'social' photo. upload social photo here. H6 I purchase technology based on

- [ ] price
- [ ] features
- [ ] simplicity
- [ ] fashion
- [ ] need

My phone has too many features.

- [ ] Strongly Agree
- [ ] Agree
- [ ] No Strong feeling.
- [ ] Disagree
- [ ] Strong Disagree

I prefer the features of digital TV

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

I still store mobile phone numbers in a 'physical' contact book.

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

Take a photo of a simple technological product. upload a photo of a simple tech product

H7 I struggle to use my mobile phone.

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

I fight against the amount of disclosure that I'm giving of from my products. (e.g. your free, but you still direct a call to voice mail)

- Strongly Agree
- Agree
- No Strong feeling.

- Disagree
- Strong Disagree

Life used to be so much easier.

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

Newer products are harder to use.

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

Photograph a technological product that you hate. ....

H8 I can't wait for my next phone because of size, features, fashion, usability or price plan.

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

Using a computer to keep in touch takes too much time

- StronglyAgree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

Keeping in touch with people takes too much time

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

Looking back at mobile phones 20 years ago, I'm looking forward to what mobile phone will be like in 20 years.

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

Photograph something your dissatisfied with. upload photo of dissatisfied product. H9 My products fail often

- Strongly Agree
- Agree
- No Strong feeling.

- Disagree
- Strong Disagree

I easily get help from my family when a product stop working.

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

I easily get help from call centers when a product stops working

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

My products get worse the older they become.

- Strongly Agree
- Agree
- No Strong feeling.
- Disagree
- Strong Disagree

Photograph something that has helped you.

10. REFERENCE LIST

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12. SUPPLEMENTARY

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