

Television and the experiential fabric of the 'domestic' and the 'everyday'

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Introduction – where have all the ethnographies gone?

We have ethnographies of the workplace, why are there no good *definitive* ethnographies of the home? There have been some ethnographies of television. Is it that we take the home as a site we take for granted? I mean we may all have homes to go to whether our role is designer or user or product manager, even though we may very well have different workspaces and responsibilities. In homes television, as a technology, is prosaic. It is common and usual. It is ordinary. When technologies are unfamiliar, novel and new, then they are not mundane, they can act as magic. Or so they should. This magic can drive their initial uptake, or their difference, their incongruence to antecedents may bring indifference on behalf of those who will consume and use such products. Does it drive the reasoning for their design and production? The answer is truthfully, 'maybe'.

The introduction of VCRs, microwaves, television, radio, and phonograph each brought their own particular brand of magic to our homes. Magic may come again as ambient forms of information and communication technologies (ICTs) pervade or invade the home and all other public and private spaces. But as they do so, insidiously, a different tact, probably a new paradigm in approaching evaluation of usability and user experience may be necessary. We see the move from 'interaction' as a key term to 'resonance' in the usage of such artefacts. Also a renewed emphasis may be seen on the dynamics of the use process that is 'inscribed' in the product language of features and functions. How is this to be best explored?

This question has significant implication for innovation in digital technology. Time has shown that the home is a relatively conservative space in the minds of people generally and in the world of innovation. I mean it is here that cultural aspirations and identities are most manifest, in bricks and mortar, and where culture is consolidated, and aesthetic desires and fundamental needs intertwine in unique and personal ways. Homes are always this way, they are like clothes they are extensions of the self. They are conspicuous and they are private.

Where features of artefacts and devices are static, conspicuous, explicit and 'in your face' then 'the user' can be asked to remark upon strategically placed changes – i.e. the difference 'x' makes to the operation, or the difference in placing 'x' here instead of there, or the size and shape, sound and colour of 'x'. But where changes are tacit and 'invisible', inconspicuous, where they are lodged in the use process rather than task- or content-based, then behavioural cues and expectations will have to dominate analysis. We can look at the homes down a street, but we cannot know what they 'mean' to owners. When new use this in the case of computer interfaces this has the corresponding effect that they will undermine what have been the main criticisms of traditional usability studies over the last couple of decades. That it is possible to locate design flaws by 'involving' users at the design stage. Does this take us back to the stone age of HCI, or is it more like the case of the innovation of television and the rise of the broadcasting industries?

In 1915, David Sarnoff (who became Chairman of RCA in the US) first foresaw radio as a mass medium built around a broadcasting *network*. Later extending this idea to television, he proposed a vision of a new medium that would rearrange "living rooms everywhere," extending both the function and experiential impact of radio "but with pictures"

"Let us think of every farmhouse equipped not only with a sound-receiving device but with a screen which would mirror the sights of life. Think of your family, sitting down of an

evening in the comfort of your own home, not only listening to the dialogue but seeing the action of a play given on a stage hundreds of miles away: not only listening to as sermon but watching every play of emotion on the preacher's face as he exhorts his congregation to the path of religion." (quoted in Wheen, 1985: p.16)¹

What characterises this scenario is that it offers a *domesticated* vision of a technology, situated within rich contexts of function, media content, societal values, family, emotional power and familiar programme and lifestyle preferences. It suggests a domestic embedding of the technology, integrated and *naturalised* within the home and also within the family. The family as the object of unit of consumption is a powerful image much used in marketing all kinds of products, but which was hi-jacked for a while as the emblem of PC consumption. But in the case of television which came first, the 'golden age 'nuclear family' or the technology that made them nuclear in habit – the television? Lyn Spiegel (1992) highlights television in the way it featured as an integrated part of modern home and family organisation in 1950s.² In American 'home economic' magazines it was a centrifugal force, offsetting the 'negative' effects of a growing youth culture which was threatening the break the familial bonds through teenagers going out with friends and possibly 'getting up to no good:

The modern PC rendition of this is the PC as educator. As opposed to the mind numbing and brainwashing effects of television, the PC recreates itself in the same spirit of media consumption as books. That is time spent using this device is viewed by some, as an educational aid. Over and above its use for downloading music and pornography, or chatting aimlessly to friends and strangers

Contextualising, embedding, naturalising are now explicit goals in modern brand development. It also features in technology development very significantly. Ashcraft and Slattery (1996) suggest that successful brands in the late '90s are those that embed the values and experiences of customers in products and marketing.³ The home, family life and familiar everyday routines have served as a distinctive pillar stone for advertising scenario building since its inception. They have played a significantly strong role in publicity for prospective interactive television systems and notion of 'smart' or 'intelligent' homes.

New usability or usability regained

In this new age of implicit systems and interfaces, it may be that participatory design and user centred approaches may become increasingly redundant, in favour of a process-oriented method and knowledge maybe drawn from artificial intelligence design, or which will have to rely more upon the corpus of knowledge drawing from ergonomic and HCI, as well as observations and *learning by doing*. This is in the place of getting 'involved' or 'down and dirty' with users. Having said this, it will be imperative that designers and system integrators have very precise knowledge on behavioural tasks and processes. Indeed while they are doing what they traditionally do best, trying to improve upon existing products by integrating new technology, they will be definitely be entering a new realm of human oriented engineering at the same time.

The two disciplines, that of the design of systems and the study of their implementation and use, were fused some time ago in a positive manner when computer scientists and graphic artists started to become social and cognitive scientists aimed at creating more efficient designs. But updates to the functionality and usability of Microsoft Excel are still for a narrowly defined and closely targeted audience of users of a well-understood and incrementally developing product.

¹ Wheen, F. (1985) *Television: A History*. London: Century Publishing

² Spiegel, L. (1992) *Make Room for TV: Television and the Family Ideal in Postwar America* Chicago :Univ. of Chicago Press

³ Ashcraft, D. & Slattery, L. (1996) 'Experiential design - Strategy and market share' *Design Management Journal* Volume 7, Number 4 Fall 1996

Use is pretty well defined here, and certainly so if we compare this 'segment' of users to those users of television, or those who will inhabit 'intelligent' homes (just about everybody).

The 'heuristics' of future personalisation will require new and granular knowledge generated regarding everyday behaviours, the human condition if you will, and its tolerance for adaptation across demographics. In some ways we are prepared for this, with trials, elaborate prototypes and 'test' homes, in other respects we are not. It is an area that has severe lacunae as most of the A.I. work and cognitive science was based on action/interaction with an 'in your face' interface. There was a transparency involved with the Turing Test, and it was proven by the Elisa programme ages ago, but it was very limited in operation, as was big blue for checking for the best price for a new cooker online.

This paper outlines the means through which we can approach the situational and the experiential dimensions of technology and digital networks. It offers an understanding of the mutual shaping process that happens between technology and people, mediated through use. It considers television as a very particular technology, and one that may provide insights into creating active domestic environments, and meaningful interactive television services.

In an age where blurring is a key theme in discourses of technology and spaces, this paper introduces an approach – *contextual usability* – that was developed to unpack and 'defamiliarise' the use process and the *domestication* of technologies for the purposes of study. This began as a broad framework that would come to consider usability –

- 1) As a quality of the product to be experienced tacitly or unconsciously by a user, or an imperative of a design process, to be explicitly inscribed into the design of something. This is often translated or objectified into precise engineering requirements, the language of the engineer so to allow manufacturing.
- 2) As a *single* component in an overall process of apprehending using a technology in particular situations and usage conditions (i.e. social or economic)
- 3) That it is never a fixed quality, it is dynamic based upon the user's exposure to the technology in question, technology in general, similar technologies, or vicarious learning.
- 4) There are always limits to how much it can be designed or inscribed into a manufacturable product, and how much it is apprehended, discovered, or appreciated by the user. Like all design aspirations it is a compromise.
- 5) This depends on individual differences in the user, demographics, capacity to learn, reason and motivation for use, cultural dispositions etc.
- 6) That all aspects of the use process matter, and moreover interrelate and lend each other relevance, with varying accents over time.

Desirable features of a device are always situated within a complex of the other experiential dimensions of product. Contextual usability has never been articulated as a method *per se*, but rather as an approach or framework for inquiry into the use of artefacts. The use of artefacts here could be an investigation of design presumptions within the firm, in which case the use process dimension serve as anchors to prepare questions or to guide semi-structured interviews. The use of artefacts may also be the situated experience of using a technology under particular circumstance and in particular events (such as trials of prototypes) by people going around their ritual and routines. In these cases then participant observation, system logging and tracking as well as structured and semi-structured approaches may be leveraged.

Practically, the idea of contextual usability was born from an attempt to investigate an early ATM-switched digital interactive television system based in Cambridge, England. It has been used to investigate an early prototype of the multimedia slate (Project Newspad), and for business modelling of digital rights management systems (in the development of the MPEG-21 standard).

Drawing the components of the use process together

We are aware that the term 'user-centered design' (UCD) has a 20 year pedigree. First finding currency in Donald Norman's research laboratory at the University of California San Diego⁴, Don Norman later built upon this idea coining the term "user experience" when he moved to Apple – there he was famous as the *User Experience Architect*. The thinking behind these terms represents a subtle but definite shift in the situating of the user. In the first case, their perceptions, cognition and desires are placed 'in the centre' of any design process, rather than the peripheries of the system's requirements and idiosyncrasies.

In practice, Norman's work stressed the need to fully explore the needs and desires of the users and the *intended uses* of the product. The need to involve actual users, often in the environment in which they would use the product being designed, was a natural evolution in the field of UCD. Don Norman showed the lack of a kind of common sense between design and use. He did this through a kind of real world ethnography of use, where he played the part of the naïve who finds or comes upon assumption in the design of artifacts. This remains an incredibly useful device as some 17 years after his manifestoes one can still encounter an urban world chock full of contradictory utilities and contrived contraption.

The overall project of UCD and other methods such as participatory design was to get designers 'closer' to the user or customer, in order to help them 'see' the design product as they did, to highlight design flaws or even presumptions. Flaws or presumptions uncovered *during the process of using* could cause usability problems or mitigate the development of value of the system over time, compromise safety, or the full use of a device or interface. It could indeed mitigate the formation of and sustenance of successful usage patterns. In short it would create easier to learn and use, products that would be less *alienated* from their human contexts (and use contexts) as some devices can be.

Proper and reflective understanding of the user on behalf of the designer would eventually extend the palette of design, eventually encompassing the apotheosis of this evolution – the 'design of experiences' – or *experiential design* – the next stage in the evolution of these ideas. This in essence inverts the design process from the 'design of things to be experienced', to 'experiences designed or channelled through things'. Experience design is an approach to the design of products, services and environments based on a holistic consideration of the users' experience. UCD and experiential design are not without critics.

These changes in the ontology of design were not alone. Many fields as diverse as consumer research, media studies and HCI could be seen as manifesting a kind of 'ethnographic turn' in their explorations. However, such work did not involve the lengthy duration that more traditional ethnographies demanded. Rather they were cut in the form of the 'long interview' style of Grant McCracken used in consumer research. This in turn was derived from hermeneutics and hermeneutic methods.^{5, 6} In particular, McCracken raised the notion of the reference to the 'hermeneutic circle': that is, continuously in analysis relating the whole to the part and the part to the whole.

Considerations, such as social, political, organisational and wider technological (legacy systems and complementary technologies) and other contexts, were coming into focus as important ingredients of successful deployments and use. Such a view was finding correlations in

⁴ Norman, D. A. & Draper, S. W. (Eds) (1986) *User-Centered System Design: New Perspectives on Human-Computer Interaction*. Lawrence Erlbaum Associates, Hillsdale, NJ.

⁵ McCracken, G. (1988) *The Long Interview*. Newbury Park, CA: Sage

⁶ In sociology, hermeneutics means the interpretation and understanding of social events by analysing their meanings to the human participants and their culture. Its chief advocate was Hans-Georg Gadamer and his seminal work *Truth and Method* (see: Gadamer, H-G (1975) *Truth and Method* New York: The Seabury Press)

operations management (with Total Quality Management) and in marketing (one-to-one relationships, Customer relationship management).

The use of contextual usability

By considering technologies aimed at the home, by looking at their use processes, we consider features and functions crystallised as ‘texts’, ‘narratives’ or ‘stories’. Seen in this way, itself derived from ethnomethodological perspectives, contexts may come to be highlighted that otherwise would remain hidden or tacit. In this sense CU aims to provide a domestic analogy to other naturalistic inquiry methods such as CI. The production and diffusion of features and functions, considered as ‘acts of communication’ between designers and users, can highlight disparities in the perceptions of products. They can disambiguate. This process may provide clues as to the reason why some technologies come to be unsuccessful, whilst still manifesting strong competitive qualities such as competitive pricing or good usability.

In studies of the user-consumer, investigation and exploration of their interpretation of technologies, their features and functions, can show how varied are the kind of attributes associated with technologies and the ways by which the technologies come to be characterised. I would argue however, that there are certain essential and phenomenological qualities that define experience of use in every case of apprehension, whether considered from the perspectives of designer-producers or that of consumer-users. For instance, beyond a product’s *usability* - how easy it is to operate and understand a technology or service - there clearly exists a number of other properties and contingencies which significantly contribute to how and what a product ‘is’. These properties are the other aspects of the overall use process of a given technology. They are a kind of *culmination* of actual encounters with a design product, its features and functions, in its manifest state, or as a result of some other kind of discourse such as advertising, discussion, imagination, predication and so forth. CU⁷ proposes that the use process may be decomposed into four main dimensions that include:

- The individual circumstances and situations of **use** – the phenomenological, socio-cultural, economic, individual, sensory and psychological contexts which lead, motivate and otherwise create the *particular* and *individual* conditions of use. (i.e. retail shop floor, at home, during a birthday party etc.) (i.e. Belk, 1975).^{8,9}

⁷I have termed this approach ‘contextual usability’ although it could equally be called ‘contextual use’; ‘contextual usefulness’; or “contextual usage”. ‘Contextual usability’ does emphasise however that the other elements of the use process come to bear in the creation or impression of usability – the ease or ‘fit’ of use. In a sense their anticipated or actualised realisation are imperative precursors for usability to be a desirable and necessary quality of a technology (i.e. marketing claims of good usability are rarely used to sell product, whereas a promise of usefulness might). Also, usability is the single element in the use process that can be contrived by designers and producers. The others, while being suggested by marketing and advertising, are more ‘open’ texts, capable of engendering a range of impressions and beliefs regarding the product’s ability to add value to current and future activities. Usability has to be realised and verified by consumer-users in the lived processes of apprehension, consumption and use.

⁸ Belk, Russell W. 1975. "Structural Variables and Consumer Behavior." *Journal of Consumer Research* 2 (December): 157-164.

⁹ Belk (1975: p.157) considers that “situations and behavioural settings are subunits within an environment . . . Situations represent momentary encounters with those elements of the total environment which are available at a particular time. *Behavioural settings* - derived from Barker (1968) - are not only bounded in time and space but also a complete sequence of behaviour or an “action pattern.” Examples Belk offers are a basketball game, or a piano lesson. These are behavioural settings since each involves an interval in time and space in which certain behaviours can be expected regardless of the particular persons present. The study of use also focuses more on the experiential qualities of use – from the perception of the consumer-user - in a particular situation, environment and circumstance. This may included how they view these situations, environments and experiences. The key difference here between use and usage lies in the difference between “momentary” use situations and environments, and periodic patterning of use in time

- **usage** - contexts - social, cultural, technical, other interests, pursuits and activities etc. - which *pattern, constrain* and *sustain* periodic use or consumption.
- **usefulness** - the value gained from integration of the technology within an individual's lifestyle and activities. The quality of usefulness is again contingent on multiple contexts including user's relations with existing and previously possessed products (i.e. Dickerson and Gentry, 1983), the private and public meaning of the product to the user, novelty, conspicuous benefits from using, etc.

I define these as essential distinguishing elements underlying either motivations to design, use or consume technology (see below).¹⁰

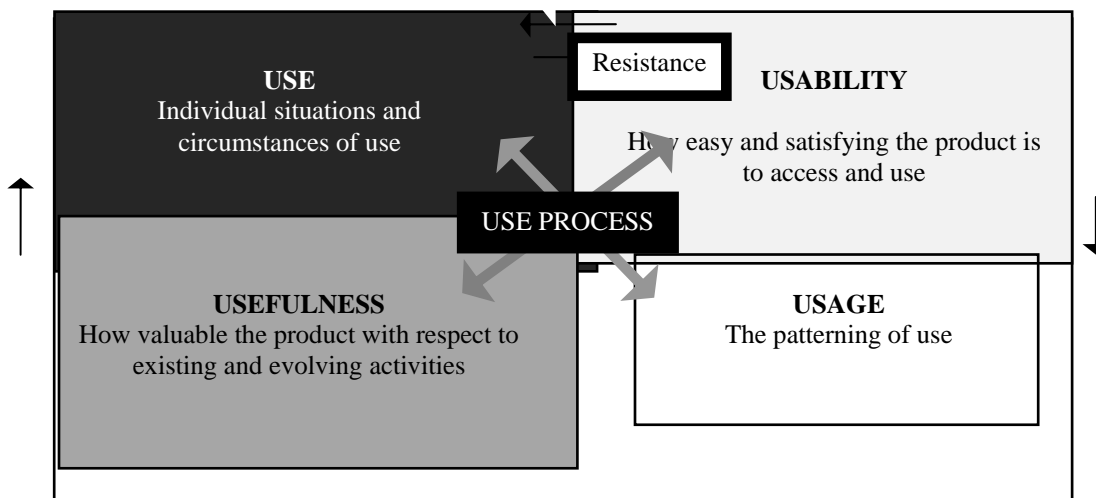


Fig.1 The elements of the use process (arrows suggest interdependency of use elements, arrows circumnavigating suggest procedure of use, from first use to establishment of use. Usability of the technology resists use)¹¹

The model shown above suggests an argument that the qualities of a technology or product, such as its usability co-exist with, or are, co-dependent upon the other aspects of the use process. For instance there is an obvious common-sense link between the usefulness of a product and the development of usage or consumption patterns.

and space (usage). Whereas, the quality of use may include elements which are obvious to the consumer-user, usage focuses much more upon behavioural variables, often not registered by the conscious awareness of the consumer-user. Also particular situations, environments and circumstances may promote or abate periodic use and consumption.

¹⁰ It is also important to note that other use terms such as 'useless', 'abuse', 'used' and so on also have unique bearing and meaning at the level of analysis as represented here. However, I do not consider them here.

¹¹ Usability of a technology resists use within a number of different use situations. The novice user, for instance, using a new machine on the shop floor, may encounter problems accessing and operating. This obviously impacts upon their developing notions of the machine's usefulness, as well as their anticipations of how the machine can integrate into their lives. The 'expert' user, who has successfully incorporated the machine into everyday life, may similarly derive dissatisfaction if the machine does not permit sufficient customisation which allows for their increased expertise in using - i.e. 'hot' buttons which allow for faster accessing of functions or content. Each of these represents a problem of the machine's usability.

For instance, there are strong links between usefulness and usability, when one considers early spreadsheet packages. These had notoriously poor usability and were difficult to operate. However their utility and perceived value encouraged early users to overcome the problems of usability. Usability - the ease of use of products - cannot be divided from desire to use, reasons to use, and the socio-economic contexts and conditions of use. This is particularly true in the use of media devices that are intended for recreational and informational purposes, consumed within the home and used within people's leisure time.

Table 1. The use process

Use process	Properties	How Captured	Illustrates
Use	Individuated use situations	From the perception of the consumer-user, observable behaviours, biographies	Situations, contexts and environments leading to use, demographics, psychographics, goals desires, needs and requirements
Usability	Ease of use	From the perception of the user-consumer	Attitudes towards technology Expertise of using technologies generally Problem solving style
Usage	Patterned or periodic use	Registration of the system	Social factors – i.e. regimes and rules regarding consumption and use in particular household Economic factors – i.e. cost of using Consequences of using
Usefulness	Relation to lifestyle and activities outside usage	Registration of the system and perceptions of the consumer-user	Relation of the technology to other pursuits, interests and tasks, outside of use Pleasure deriving from intrinsic motivation to use Consequences and outcomes of using Symbolic 'potency' of the technology

Context and ethnography: What to build and how to build it, what you build will affect all the other related activities.

To situate and embed properly within firms it was clear that some level of customisation and adaptation would be necessary, this was best-explored *en situ*, working closely with customers and boasting generic experience of business and information systems. Beginning most famously with Lucy Suchamn's *Situated Actions*, ethnographic style methods or studies began to be aimed

at understanding systems within particular commercial or industrial environments. Significant studies included air traffic control systems.¹²

Methodologies were adopting a more anthropological feel than purely experimental or cognitive approaches that aimed to improve interface. Following this line of thinking *Contextual Inquiry* (CI) emerged as an interpretive field research framework that information designers could use to ground their designs in users' real work. The aim was to immerse product designers in actual customer data by having designers observe the work of users in their 'natural' environment.¹³

This was 'at work'. The hope was that design teams could quickly identify specific and unique problems and needs of their customers. In short such analysis would provide insight to explicit and possibly tacit elements of the use process which could have significant bearing on the use of the design. CI provided a framework for designers to synthesise the customer data they collect and use it to produce better overall systems. *Contextual Design* (CD) starts with the recognition that any system embodies a way of working. A system's function and structure forces particular strategies, language, and work flow on its users. Successful systems offer a way of working that customers want to adopt. CD is a method which helps a cross-functional team come to agreement on what their customers need and how to design a system for them.¹⁴ They were finding how social, technological and cognitive environments impacted the siting of systems within actual workplaces, and how in turn such deployments could simultaneously serve to catalyse change in organisation and that very same environment. It was clear that exigencies acting upon the user, beyond the artefact or device itself could have considerable influence on the use process. It was also becoming clear that the artefact or device itself and the developing use process were also placing needs upon the user organisation to change.

During the 1990s in the face of exploring the natural environment we call 'the home' (as opposed to 'work') I developed the notion of *contextual usability*. It was as much informed by contemporary HCI work, as from sociological and cultural studies that were considering how ICTs situate within the home. My rigid neo-positivist usability approach came quickly to be more sympathetic to the work of researchers such as Roger Silverstone, Eric Hirsch and David Morley (1991), particularly their study of the use of mediatechnologies in London households.¹⁵

This problematic study drew attention to the complex of social and psychological contexts that propagate and define domestic ICT use and moreover, usage – that complex of social contingencies and happenings which influence the experience and conditions of use every bit as much as the operating parameters of technology. This study drew attention to the distinct methodological complexities and ambiguities arising from the study of domestic spaces in advanced societies. In an important later volume entitled *Consuming Technologies: Media and Information in Domestic Spaces* (1992), a number of essays advocated the perception of information and communications technologies as *social* and *symbolic* as well as *material* objects. Such treatments of the idea of technology is traditionally viewed by engineers and designers as 'not applicable' to their work, but those adopting the broader definitions of design now embrace such thinking in their efforts to secure a 'holistic; treatment of their intentions.

¹² Mackay, W.E., Fayard, A-L., Frobert, L. & Médini, L. (1998). Reinventing the Familiar: Exploring an augmented reality design space for air traffic control. In *Proceedings of the CHI '98*, 1998 (Los Angeles, USA, April 18-23, 1998) ACM, New York, 1998, pp.558-565.

¹³ Beyer, Hugh, and Holtzblatt, Karen, "Apprenticing with the Customer: A Collaborative Approach to Requirements Definition," *Communications of the ACM*, May 1995.

¹⁴ Beyer, H. & Holtzblatt, K. (1998). *Contextual Design: Defining Customer-Centered Systems*. Academic Press: Kaufmann Publishers

¹⁵ Their work was itself influenced by earlier work of David Morely – particularly *the Family Television: Cultural Power and Domestic Leisure* (1986) – Sandra Wallman's *Eight London Households* (1984) – and Bott's (1957) *Family and Social Network*. These studies focussed in depth on relatively small samples of households. The Silverstone, Hirsch and Morely sample was also relatively small (n = 20) as was the sample of trialist households in the present study (n =16).

One author from this field, Danielle Chabaud-Rychter, showed the power of getting 'images' of the user wrong in the design stage showing lack of congruency between: "the relations that the designers of domestic appliances establish with domestic practices in the course of their work."¹⁶ She did this in two specific ways. First, she considered the codification of women's cooking practices and their consequent incarnation in [designed] mechanical operations. The facsimile of 'women's' 'knowledge' and 'experience' here is translated into a series of "scientific" and "technological" practices and benchmarks which highlight 'flaws' and 'presumptions'. The design teams members had elaborate strategies worked out with their 'straw women'. They were: "distributing skills, responsibilities, and actions between the user, the technical object, and possibly other actors."¹⁷ Thus, the lip service that one often finds within firms obeying methods such as quality practices such as Quality Function Deployment and Six Sigma, rigidly put in place the voice of the customer in relation to the language of the engineer. The development of household appliances requires a codification of "women's knowledge" into a series of quantifiable practices. She offered the example of a French design of a 'food robot' (a food processor) which was designed by a committee of men whose idealised versions of the female user was their girlfriends or mothers. The resultant design was a product of elegant engineering but incredibly difficult to clean after use. This was its concomitant 'flaw' or 'assumption'.¹⁸

Fusing the capacities of digital broadband and the very familiar domestic technology of television raised an important initial line of questioning; what do we 'use' television for? How would what we know as 'television' be augmented or extended by digital functioning? These questions opened a Pandora's box of questions that traversed disciplines – many of which were relatively new and obscure for someone with a traditional human factors interest. There were many of these questions that were impossible to garner from laboratory or "clean room" observational studies. Television is not ordinary, it is truly pervasive, it is truly global, ubiquitous, shared, private, a key domestic technology. Jean Baudrillard (1983: p.55) has suggested a two way process of dissolution: ". . . of TV into life, . . . of life into TV."¹⁹ Stephen Heath claims that media, and in particular, television, forms a "seamless equivalence with social life"(1990: p.267), and Roger Silverstone (1989: p.77) argued that: "Television is everyday life. To study one is to study the other."²⁰ But its effects have not been considered the following three arguments:

- a) New cultural patterns related to television's penetration of the American home have emerged since the 1950s.
- b) As *technology*, television affects collective behavior, as people duplicate, in many areas of their lives, habits developed while watching television.
- c) Television *content* also influences mass culture because it provides widely shared common knowledge, beliefs, and expectations.²¹

¹⁶ Chapter Four, "The Configuration of Domestic Practices in the Designing of Household Appliances" Grint, Keith and Rosalind Gill. *The Gender-Technology Relation: Contemporary Theory and Research*. London: Taylor and Francis, 1995. (p.95)

¹⁷ *ibid.* (p.103)

¹⁸ Danielle Chabaud-Rychter, 'Women users in the design process of a food robot: Innovation in a French domestic appliance company' and Ann Jorunn Berg, 'Technological flexibility: Bringing gender into technology (or was it the other way round?)' both in Cynthia Cockburn and R. Fuerst-Dilic (eds.), *Bringing Technology home: Gender and technology in a changing Europe* (Birmingham: Open University Press, 1994).

¹⁹ Baudrillard, J. (1983). *Simulations*. New York: Semiotext(e)

²⁰ Silverstone, R. (1989) 'Families, Technologies and Consumption: the household and information and communication technologies', Uxbridge, Middlesex: *Centre for Research into Innovation, Culture and Technology*, CRICT discussion paper

²¹ Conrad Kottak (1990) *Prime-Time Society: An Anthropological Analysis of Television and Culture* Belmont: Wadsworth Pub. Co.

Displacement effect refers to behavioral change that occurs as people alter their lifestyles to accommodate televiewing, as well as duplicating televiewing habits in other areas of their lives. Content effect refers to changes occur in shared knowledge, attitudes, expectations, and beliefs.²² Content within the ambient computing environment means 'scenarios' the combination of technical effects that happen concurrently as a person acts in the reactive environment.

Unpacking the domestic and why it is different

The way in which humans began to value the prospect of living together in settlements, as they began to live in separate dwellings within these settlements, was a highly significant event in the history of human social and cognitive evolution. Homes dictated for the very first time a very real, static and concrete difference in social, psychological and physical space (Wilson, 1988). They designated and designed space, which gave rise to quite distinctive behaviours and rituals, which in turn became associated with the use and ordering of space in other designed, planned dwellings (Rapoport, 1969).²³ Olivier Marc in *Psychology of the House* states:

"Are we perhaps on the verge of grasping that the environment is ourselves, for it has given us form, and that creation is nothing but a dialogue between the inside and outside? Do we not have to exhale and inhale in order to live? . . . our unconscious self prompts us to act, produce and do. It is through our action and their products that we reveal ourselves to ourselves." (Marc, 1977: p.80)²⁴

Since early settlement, around 15,000 years ago, we have not changed so much as biological creatures, but the means by which we make sense of the world, how we derive worldviews and communicate to each other has been privy to considerable intensifications (Wilson, 1988). This has been a long-drawn out gradual process. We have also created a set of behaviours and routines (usage patterns) that have slowly adapted over time, as have the technologies used to support these new routines. The 'home' and the 'domestic' are important concepts for nearly all humans and as ideas, they are often suffused with notions of security, safety and support (usefulness).

"From that perspective, the home is 'naturally' a haven of intimacy and security and the ideal environment for the expression of human qualities and family values. The word domestic has thus evolved into evoking feelings such as closeness, warmth and affection, and thus the use of expressions such as 'domestic violence' or 'domestic abuse' spawn intense feelings of shock and outrage. Similarly, when we talk about domestic animals, the word evokes notions of loyalty and attachment as well as docility and gentleness. And we can see that, more generally, the verb 'domesticate' is used, not only in reference to animals, but also to humans or groups of humans. 'Domesticating' a person often involves the idea of disciplining them, taming them or bringing them closer to a particular idea of civilisation. Whether the word 'domesticating' is used in connection to human, animals or even objects or ideas, it generally means making something fit for life in the home or to participate in a particular type of society."²⁵

The architecture of the home clearly shows a co-shaping principle. The home's physical structures denote something of their functions, and what goes on in each room. The home is initially chosen to suit the occupants, spatially and economically, at one strategic point in life's development, and may require adaptation to suit it at another junction, say, when a new child

²² Pace, R. (1993) *First-Time Televiewing in Amazonia: Television Acculturation in Gurupa, Brazil* *Ethnology* 32(2), pp.187-206

²³ Rapoport, A. (1969) *House Form and Culture*. Englewood-Cliffs, N. J.

²⁴ Marc, Oliver. (1977) *Psychology of the House*. London: Thames and Hudson.

²⁵ Habib, L and Cornford, T. (2001) 'Computers In The Home: Domestic Technology And The Process Of Domestication' *Global Co-Operation in the New Millennium' The 9th European Conference on Information Systems* Bled, Slovenia, June 27-29, 2001 p.129

comes along, or its inhabitants are challenged by infirmity or old age. What the designer or architect of a long gone generation has left is 'personalised' by the current user. The home over successive generations and over many different proprietors is always shaped and been shaped. It is by family and other social relationships, as has the furniture and the tools and devices which mediate what goes where and what goes on in its spaces everyday.

The technological constituency of the home is not insignificant. As spaces of consumption homes easily dwarf the consumption of energy of industry. Today fridges and freezers, dishwashers, tumble dryers and washing machines account for nearly thirty per cent of UK household energy consumption, while water consumption in the home has increased by 70% over the last thirty years. Habits of use and consumption are socially shaped, Elizabeth Shove presents clear evidence supporting the view that routine consumption is controlled by conceptions of 'normality' and profoundly shaped by cultural and economic forces. Shove maintains that habits are not just changing, but are changing in ways that imply escalating and standardising patterns of consumption.²⁶ You have more processing power in your home than a mainframe that ran a Fortune 500 company 10 years ago. Broadband is becoming ubiquitous. This indirectly showcases the home as a *major* space of consumption.

The technological constituency of the home was first marked by technologies aimed at maintaining the home, and maintaining those living within it came first. These include devices to heat, cook and clean within the home or to bring water and address waste disposal. Peter Ward in his fascinating account of the developing habitat: *A History of Domestic Space: Privacy and the Canadian Home* sees that among the most revolutionary domestic technologies, indoor plumbing has changed the interior of the home forever.²⁷ Devices and networking the home with plumbing, electricity, entertainment and shopping separated and yet connected the home. Early domestic implements and utensils were *tools* rather than machines. The need to *socialise*, to *entertain* others and ourselves, to remove ourselves from the toil and stresses of everyday labour has also changed greatly. Devices whose sole purpose was to entertain followed as a further category of domestic activity. Books and musical instruments, letters, and later electronic devices connected the home informationally with extraneous institutions and actors. It has become a staple, especially in the last one hundred years, with the electrification of homes and the development and diffusion of broadcast media (Forty, 1986).²⁸

Television situates within the constituency of *everyday life*. And opposed to the currently popularity of the notion of 'distributed' systems and devices, it is here that it is *central* in many respects. First; it resides in the *home*, our central place in the world, the place where we depart from, to act in the world, and to where we return when we are finished. Home is what Dovey (1978) has described the 'ordering principle in space'.²⁹ Second, within the home, television is often positioned in the 'living' room, another 'central' location. Third, within the living room the television is often positioned as focal point in the living room, with other furniture arranged to assure this centrality. Televisions can also be found in kitchens, a further hive of communal household activity. Televisions can also be found in bedrooms for private viewing. Television could indeed be described as an 'ordering technology in time, information and space' as it commands yet a further 'central' roles as informant and 'friend', and temporally - as a key activity situated within the daily routines of everyday life (see for instance Argyle, 1996).³⁰ There is a plethora of surveys drawing attention to the competition of television and shopping as the most prevalent leisure activities.

²⁶ Shove, E. (2003) *Comfort, Cleanliness and Convenience The Social Organization of Normality* Oxford: Berg

²⁷ Peter Ward (1999) *A History of Domestic Space: Privacy and the Canadian Home* University of British Columbia Press

²⁸ Forty, A. (1986) *Objects of Desire: Design and Society Since 1750* Thames and Hudson. London.

²⁹ Dovey, K., (1978) 'Home: An Ordering Principle in Space', *Landscape* 22(2), pp. 27-30.

³⁰ Argyle, M. (1996). *The Social Psychology of Leisure*. New York: Penguin Books

The television as a means to selling product directly – i.e. through channels such as QVC - or indirectly - through features and advertising – is perhaps well-established, but its traditional linear format prevents people from *shopping* – i.e. searching and locating things they want, when they want them. Making television interactive, networking home shopping and other services to its basic functions raises some immediate lines of question. For instance how does the conflation of two common place activities - i.e. television 'viewing' and 'shopping' - enhance the experience of television? The experience of shopping? The experience of 'home'? Will such practice free up time for other activities? Does it relate to the similar experience that children had when they first connected video consoles to the television, or to the time shifting when VCRs first freed the viewer from the hegemony of the programme schedulers?

Daily newspapers and letters, and later the broadcast and telecom mediatechnologies brought information to the home regarding the 'rest of the world'. Now i-Tv, Internet-enabled PCs and mobile communications provide their users reach into the 'rest of the world' from the home as well. Pressing a button at home creates a not only a flurry of atoms and software executions, registrations on databases in remote locations geographically, but also human action in a distant warehouse, and subsequent operations involving bringing goods to the home in a magical boomerang type effect. Mobile devices connect the 'rest of the world' to the 'private worlds' of our bodies, minds and habitats. Many information and communication technologies (ICTs) began as magic before they become, familiar, normal, and standard. Just as humans are taking on virtual identities on databases, the home is poised to do so as well. Issues will be raised on the control and completeness of this rendition by one agency or another.

The notion of *domestication* applied to technology deals with the cultural, social and technological networks of the everyday life of households. In the early 1990s, Roger Silverstone, then at Brunel University at UK, introduced the concept of domestication to explain the general and symbolic consumption trend in modern society. In the mid 1990s, further investigations based on this approach were conducted, studies by Haddon and Silverstone looked at the process of how the use of PC transformed from a tool for teleworkers or single parents to a technological device that used by essentially everybody in the household. When certain patterns emerged, the domestication theory started to gain the attention of social scientists that were interested in social consequences of technology. Haddon (2003) provides the basic assumptions of this domestication process (p. 45 – 48): They were:

- 1) When we analyse technology, the emphasis should go beyond the function of the technology. For an example, social symbolic meaning should be considered (e.g. identity, status, etc.)
- 2) Technology adaptation or domestication is a process, five phases describe the concept.
 - Hearing about the technology
 - Appropriation: Actual purchasing of the device
 - Objectification: This is expressed in usage but also in psychological dispositions of objects in the spatial environment of the home (living room). It is also expressed in the construction as the environment as such. Users design ways in using the technology based on their own preferences.
 - Incorporation: The ways in which objects, especially technologies are used. Technologies are functional. They may be bought with other features in mind and indeed serve other cultural purposes in appropriation. They may indeed become functional in ways somewhat removed from the intentions of designers or marketers. Technologies also may have many functions.
 - Conversion: The technology device becomes a part of the user's identity and daily life.
- 3) The process of domestication reflects the overall tendency of technology adaptation: From public domain (e.g. work) to private domain (e.g. home).

- 4) Individuals, both end-users and non-users, have influence on how the technology is used.³¹

The meanings and significance of all our media and information products depend entirely on the participation of the user (Silverstone, 1996). Most of us move in our everyday lives between spaces of home, work and leisure. But the spacio-temporal boundaries that previously distinguished and rigidly delineated these spaces are blurring. Home working via the Internet is the well-hackneyed example, but only some of this is owed to technology change, the changing organisational and knowledge dynamic of the workplace also supported this. Information and communication technologies (ICTs) now broach the idea of fixed spaces of production and consumption, and security and comfort are attributes of a mobile phone or other device which we can carry with us everywhere and that can connect us to relevant others at anytime.

Work 'tasks' and domestic 'chores'

The adaptation of machines to the human operator increased human-machine reaction, the speed and performance of 'tasks'. In order to feed and clothes ourselves, to keep our houses and ourselves clean, we have had to engage in tasks and chores. 'Chores' differ from 'tasks' in that they tend to be repetitive, and representing less uniqueness and challenge, they are mundane and boring. They are done as a duty and largely motivated by social function. Tasks are undertaken or attempted without such surety of completion. Tasks in a work setting have a different meaning and value than 'tasks' within the domestic setting. A professional chef or gardener for instance has a different relationship to the task of cooking, for instance, than those who carry out these tasks as part of their leisure routines. Just as we have professional devices made more robust for professional kitchen use, the set of skills and knowledge used to cook in the commercial setting is quite different to that of the home. Evaluation, the 'success' of the activity also comes under different considerations. In the professional setting, frequent customers, repeat customers, various types of awards such as Michelin stars may be evidenced. In the domestic setting appreciative family and casual feedback are all that is necessary. In the commercial setting we cook to please a general audience in the home we cook to please a personal and sometimes selective audience. We may ask: "what do you guys want to eat tonight?" Whereas In the commercial setting it is the depersonalised menu with its "take it or go elsewhere" ethos. These are cultural forms, like the architecture of homes in different parts of the world, which remain remarkably constant and fixed over time.

Defamiliarising

It is defamiliarising to consider what we 'use' television for. Rather the words we tend to apply to this 'activity' are 'watching' or 'viewing'. While these have passive connotations, ethnographies of audiences have provided strong grounds to argue for active processes at the cognitive level in the 'decoding' of media messages. How would such ideas find meaning and translate to the world of interactive multimedia consumption. We 'use' computers, but we 'watch' television, we 'play' games and as television and computing technology melded, it was obvious that the 'passive' process of 'using' television was to become palpably more active through navigating and uploading preferences and menu selections. Also entirely new forms of human interaction were to be made available through the inclusion of multi-user online gaming.³²

But to begin with the prevailing single question arose regarding what kind of metrics could be used to quantify or qualify 'good' television usability.

³¹ Haddon, L. (2003) 'Domestication and Mobile Telephony', in Katz, J. (Ed.) *Machines that Become Us: The Social Context of Personal Communication Technology*, Transaction Publishers, New Brunswick, New Jersey, pp.43-56.

³² Doom was only reaching

A tremendous amount of HCI work had been done under the those of improving work-based systems, but at this time there was relatively nothing that addressed the world of multimedia entertainment based systems. Likewise, such systems were boasting radical new ways of advertising and selling and accessing product. They were also boasting radical new ways in which user groups could communicate and interact (multi-user online games). The early 1990s, pre-e-commerce, did not have the plethora of source material now available. The 'use' of information and communication systems for domestic use, for entertainment, represented quite a different universe than that of ICTs in the factory or office. We have spoken already about how notion of 'task' is different under an ethos of productivity improvement, improvements of effectiveness and efficiency of business and manufacturing processes, compared to that of seeking out and finding gratifying entertainment material or playing multi-user online games. Also, very significant and defiant of the 'received wisdom' of traditional usability studies was that representative 'users' of the ubiquitous technology of television traverse all demo- and psychographic groups, unlike 'secretaries who use Microsoft Excel'.

Many of the pre-existing examples of ethnographic style methods or studies, beginning most famously with Suchamn's *Situated Actions*, continued to aim at the commercial or industrial worlds. CI and CD are as well. A much broader agenda would have to be employed in studies of the domestic deployment of ICTs. This could, nor would, ignore the complex social and sub-cultural worlds that we cocoon ourselves with within the private space of the home. Contextual usability was developed against this backdrop, in response to unpacking something of the messy complex of radical innovations and unknown user response, in an attempt to unpack the Gordian Knot of both situational and experiential dimensions of the use process of domestic media.

Conclusion

Similar to Sarnoff's vision of broadcast television, pundits of i-Tv in the 1990s made constant reference to i-Tv's 'revolutionary' and 'epochal' nature, and had no qualms in propagating the myth regarding its potency to radically alter existing domestic practices. Such visions were perhaps made more readily digestible at the public [and journalistic] level through a wider cultural fascination at the time for tangible symbols of new kinds of lifestyle extending into the new millennium. But such potency is most powerful when presented as a whole, as a blend between the social and the technical, and when this can be couched in design and social change, again, particularly *domestic* change:

"Today many new technologies form part of, and develop as, nodes in a network that has no central unit. Rather, all the units are linked together, sometimes performing the function of requesting information, at other times that of supplying services. Whatever the actual use is made of this potential for connection, the fact remains that the experience of domestic technologies is evolving toward the image of the 'family', and that the ability to make connections strongly influences the image of individual products and the customer's decision to purchase them. In both real and symbolic terms the television set stands at the centre of this demand for interactivity, becoming the prime product of the entire system of connection." (Morace, 1995: p.15)³³

The television is a very pertinent model of a successful innovation, and a successful domestic innovation at that. Its lessons, highlighted by contextual usability analysis, can show us the way in which ambient technologies can become relevant in the future. Creating magic through technology in the public domain, and in the home would be a significant innovation but also a significant challenge as there are conservative forces at play, contexts that keep radical innovation at bay. But the march is on to pervade invisible computing deeper within the home, within the personal and private, and also the open and the public at the same time. This will no

³³ Marzano, S. (ed.) (1995) *Television at the Crossroads*, The Netherlands: V+K Publishing., 1995

doubt alter our perception of space again, but it will not threaten the architecture and physical space of the home. It maintains its unique situation, and its unique experience, and things, devices, furniture tools and information that comes to it takes on particular relevance. Everyday life—the domain of ubiquitous computing—is largely *terra incognita* for today's interaction designers and information architects, with their models based on serial, sequential interaction and one-to-one correlation between user and device.

Web-based models of security, privacy, consent, navigation, and synchronous and asynchronous communication will, if deployed in an ecology of ubiquitous systems, lead at best to frustrating and clumsy user experiences. The time to start developing new models, metaphors and understandings is here. We may find ourselves functioning like gardeners tending plants, guiding and overseeing but not controlling detailed behaviour. Ironically, adding common sense to the design process would not add cost, nor would disambiguating the relevance of feature and function (do we still need the internet-linked coffeepot). Ambient devices lack integration. When they integrate they will create 'scenarios' of use. These scenarios of trans-functionality must parse with everyday routines and desires to be meaningful. They must be reactive between themselves to best optimize to suit this. This is the new technology; it requires a new user empathetic user perspective. Could this be 'emphafocus'? Such an approach will be essential to open a marketplace for integration services, for services in general for how to make ambient come together.

I have described an approach that I have used over the years – contextual usability – to understand first how usability is not an isolated experiential dimension of the use process or domestication of devices. It co-exists and finds relevance only within a complex of other experiential and situational elements. Understanding these through common sense and/or formal study and inquiry should be the aim of those who are developing devices which boast some level of automated or 'smart' functioning, as tacit, peripheral and contextual aspects will continue to dominate the relevance and meaning of such devices in the future.