Walking the interface: uncovering practices through 'proxy technology assessment'

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This paper describes the method of "proxy technology assessment", which implies the formalisation of using current technological objects available on the market to generate a richer understanding of future everyday life practices with new media technologies. First, the theoretical framework grounded in theories of social constructivism and domestication is being outlined. Here the concept of "users as innovators" is placed at the centre. Next the concept and the method of proxy technology assessment is presented and elaborated. The results of a recent case study on mobile television on a handheld device are used to illustrate this method. In conclusion we reflect on the possibilities of the integration of the insights gained with this method in the design loop.

Introduction

This paper formalises a method to inform the technology development process with most likely everyday usage of a technology by a certain group of people. These insights are the result of a social research process using similar state-of-the-art technologies. We call this method "proxy technology assessment" (PTA).

Figuring out the potential behaviour of consumers has typically been the main topic of marketing research. Yet then the focus tends to be on activities people engage in

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when acquiring products. In our research we focus on the (future) practices of the user: the usages and the "habitualisation" (Rammert, 1999). In this regard we start from the notion of users as innovators. This view on usage has typically been the core of the domestication school in media studies. Therefore we next elaborate on the meaning and added value of a domestication approach in user research, in specific on our area of specialisation: new media technologies. Yet, when media technologies are not yet developed, we need to elicit future practices. Because these practices are situational, we use "proxy technologies", referring to devices and applications that incorporate as much as possible similar functionalities and characteristics as the future media technology. This technique enables us to make future possibilities for the present "user" more palpable and integrate them in the "thick descriptions" that are made of their accounts. We applied this method in our research on mobile television (MADUF - Maximize DVB Usage in Flanders) (see notes). The project has a technological focus as it explores the essential possibilities and constraints for the DVB-H standard (Digital Video Broadcasting on Handheld devices).[1] Finally, these results relevant from a social scientific view, are part of a collaborative project with Belgian partners in industry. For this we discuss their reflections on the method used and result for technological development process.

Users as Innovators

The classical market research, as well as studies on consumerism, approaches the "consumers" as "end users" (e.g. Warde, 1990). The user is seen as a receiver who has to conform to the products' functionalities or otherwise does not adopt the product. At that moment the creative process is considered as ended, and being stabilized by inscription into the product. Therefore the focus is on the acquisition.

But different insights from social constructivism got us to think about the user as an innovator him- or herself (Frissen, 2004; Bergman & Frissen, 1997). Unanticipated use is a recognised problem (Robinson, 1993). Oudshoorn and Pinch (2003: 2) state that "*there is no essential use that can be deduced from the artefact itself*". Therefore technologies should be studied in their own "context of use" and users and technologies should be seen as co-constructed. Technologies are not only our products, designed by people, but are also: *"(…) an expression of who and what we are that shapes how society can proceed."* (Dant, 1999)

Today different accounts state that technologies, innovations or products only exist in the everyday practices (e.g. Tuomi, 2002; Rammert, 1999; Hand, Shove & Southerton, 2005). Frissen (2004) states that true innovation can be identified in the actual use of a

[1] DVB-H is a one-way standard for one-to-many information/entertainment, thereby replicating standard television broadcasting. The battery power consumption will be lower than DVB-T (terrestrial) and reception robustness for (in- and outdoor) portable use of devices with built-in antennas will be improved. The technology also enables interactivity via a parallel access to a mobile telecom network (DigiTAG, 2005).

technology. Molotch (2003) also showed that a lot of the change is created in everyday use, for one by the slightly imperfect imitation of practices by others. In the past we have seen numerous examples of creative, innovative and unanticipated uses of ICTs.[2] These innovative or creative usages are not necessarily ground braking. They are often a direct consequence of people's daily usage of ICT and how they manage (with) them.

But also within participatory design or co-design users are seen as active participants in innovation (e.g. Schuler & Namioka, 1993; Sanders, 2002). This active participation of the users in development is not always possible, because of the commissioner or the structure of the project. Taking into account these limits, the PTA method focuses on the innovation in everyday practices. Therefore the user is more passive in the design process itself, but creative in checking out the affordances of the future technology.[3]

As already mentioned some practices are more stabilized within some contexts than others, but also that stabilised routine can change, innovate (e.g. Molotch, 2003). Getting some insights in routines, by breaching these routines is a typical part of the ethnomethodological tradition to get insight into practices (Garfinkel, 1967; Crabtree, 2004). New portable devices enable changes in social practices while moving, but also change in the practices the device enables itself- for example the practice of watching television, keeping contact with friends,.... We suppose that this recombination of "watching television" and "being on the move" leads to more variation into the practices users have in relation to their TV interface. Does reconsidering the theoretical concept of domestication help us to understand these variations? Or does this recombination force us to reconsider the notion of domestication?

Domestication View and Recombinations of Everyday Practices

Within sociology and media studies the domestication approach - originally stems from the cultural studies school (Oudshoorn & Pinch, 2003) - reshifted the focus since the late 1980's from content and genre to reading the media technologies themselves as text. The domestication approach considers the complexity of everyday life and technology's place within its dynamics, rituals, rules, routines and patterns. Domestication is not a one-way stream in the sense that the user adapts technologies in order to fit them into his daily life patterns, but at the same time the user and his surroundings change as well. The domestication perspective is also about how people deal with ICT, which is an articulation of existing practices, conflicts and meanings within the household or user community

[2] Haddon (2005) refers to examples like the decoration and personalisation of mobile phones by Finnish high school students putting stickers on them, leading to the commercialisation of GSM covers.

[3] Affordances are defined as the combination of 'perceived and actual properties of the thing - primarily those fundamental properties that determine just how that thing could possibly be used.' (Norman, 1988: 95). A term borrowed from Gibson's ecological theory of perception (1977)

(Pierson, 2005). The added value of a domestication view on new media use is linked to the idea that (media) technology can only have a significant bearing on social behaviour when it is fully embedded or "tamed" in the everyday life of people and thereby becoming obvious (Frissen, 2004). Therefore cultural appropriation of technologies is needed. (Oudshoorn & Pinch, 2003: 12). It is the result of the continuous interaction of the inscriptions and affordances within the technology with different users in different social contexts, on a micro level.

For translating the technological viewpoint to everyday user practices, we need to involve the two main practices at stake: watching television and being on the move (in a nomadic sense as well as in a mobile sense).[4] This entails a closer look at the essence of television watching, which is typically a domestic activity with the ideal image of social bonding within the family. Another typical feature is that the broadcasting scheme often provides ontological security by structuring people's lives (Silverstone & Haddon, 1996). When perceiving mobile television as a mobile technology, we can compare this medium with mobile phone experiences. An essential aspect in this regard is the publicness of using a cell phone and the creation of a private sphere within a public sphere, not only with sound but also with video. Both (opposing) practices, embedded in mobile television, need to be reconciled in some way to generate a successful mobile television practice.

Proxy Technology Assessment Embedded in "Thick Description"

Concept of proxy technology assessment (PTA)

The use of "proxy technology" points at the use of existing technologies that resemble as much as possible the functionalities under development. This approach elicits and stimulates the user experience/practices and the rationalisations about them. The term "proxy" stems from the Latin word "procuratia" and refers to terms like 'substitute' as well as to "indirect connection".[5] [6]

Although we support the tradition of social shaping/constructing of technology (cfr Rip, Bijker), we do not use the term "technology assessment" here in a classical way. The latter originally refers to forecasting possible routes the future development of a technology will or can have for different stakeholders. The concept of assessment in PTA refers to the analytic purpose of the method on micro level, to forecast everyday practices with future technologies.

[4] A distinction is made between nomadic and mobile use. The first kind of use refers to users that connect to the network from arbitrary and changing locations, but do not use the service while moving. Mobile use refers to use of services during movement (Podnar, Hauswirth & Jazayeri, 2002).

[5] http://encarta.msn.com/dictionary_/proxy.html; consulted 20 Jul 2006

[6] http://en.wikipedia.org/wiki/Proxy_server; consulted 28 Feb 2006

In our approach we incorporate the ideas formulated by Shove, Watson and Ingram on practice oriented product design (POPD).[7] An innovation has to start within the practice, not in a singular individual or product. As the practice only reveals itself when stuff is in use, we have to think with which kind of material object the practice will be done, as well as the images one has of the practice and skill needed to have the experience.

We therefore define PTA as a method for emulating everyday life practices with future technologies and applications by confronting selected user groups with existing similar tools and applications, during the concept phase of the technological development process.

PTA characteristics

Adequate proxy technologies have a number of particular affordances. This is illustrated with findings from the MADUF project As proxy technologies we selected 3G phones (with video functionality). In first place because they are telephone-based devices as the future DVB-H devices with the same kind of mobility and proportions. Secondly, television channels are available on this mobile platform.[8] Finally, the user experience in general will not differ significantly using UMTS or DVB-H.

We implemented proxy technologies to generate a "thick description", embedded in a multi-methodological research set-up enabling data triangulation among mobile television users. The following (mainly interpretative) methods were combined: desk research, observation with contextual inquiries, profiling questionnaires, logging, diaries, cultural probes, visual clues (photographs) and in-depth interviews. To analyse these data we applied the domestication approach.

The proxy technologies enabled the test users to experience the idea of watching television while being on the move in their own everyday life practices. In general we find that the expectations on (quality of) experience of mobile television are linked to what people are used to with their traditional television set at home. Based on the MADUF findings, the following affordances of proxy technologies are crucial.

- First of all, proxy technologies should *trigger an enriched feedback* of respondents on the expected future experiences with the new technology. In the MADUF project people used the proxy technologies in different places and talked very vivid about the reasons why these places and the associated practices are suitable for watching television.
- Second the proxy technologies should certainly incorporate those *characteristics that are central for the research question*. These characteristics go beyond the typical technological

[7] Shove, E, Watson, M & J. Ingram (2006) Designing and consuming. Objects, practices and processes: <http://www.dur.ac.uk/designing.consuming>

[8] Vodafone live platform from the Belgian mobile telecom operator Proximus.

functionalities (like battery life, screen size, storage capacity, etc), but also involve more socially and culturally oriented characteristics (like symbolic value, cultural proximity of available content, etc). Therefore a *combination of proxy technologies* is recommended to explore the different possibilities of these characteristics to get more insight in the different aspects of the practices to be. By offering a proxy in the MADUF case without broadcasting functionalities but with a better quality of image, made it possible to talk about appropriate places to use a mobile television. But also the fact that one of the devices (iPod video) triggered some status connotations, was very interesting.

- Third, the *more characteristics of the technology to be* are integrated in the proxy technology, the easier it is for the users to experience potential future practices. In this way we were able to move from the interaction with the interface, to the primary affordances in relation to the habits of watching television (e.g. the need of a functionality that makes zapping as a practice possible) and finally the meeting with other practices (e.g. not being too loud in public places and not thinking of watching television with earphones).
- Finally the *technological construct behind* the proxy technology *does not matter*, as long as it facilitates the required (resembling) practice (blackboxing).

The added value of implementing proxy technologies in the development process is foremost situated in the conceptual phase. Within this phase the PTA can be applied in two ways: on the one hand people can be equipped with state-of-the-art technology that on several levels embed the same functionalities of the technology under development, on the other hand proxy technologies can also be used in a more supporting role for other interpretative research methods (e.g. focus group interviews). For the respondent it is not always that easy to reflect on a technology that only exists at a conceptual level. Moreover when only referring to a concept, there is the risk that people are talking with different images of the concept. Here proxy technologies are being used as an illustration tool, opening the door to talk about sense making of using this tool in everyday practice.

However there are also some restrictions in using proxy technologies.

- First proxies are less useful in development stages, like idea generation or piloting. *If the choice on the basic functionalities is not made yet, other methods are more appropriate* to think more creative and less restrictive on future possibilities.
- Second the technique is foremost aimed at projection on a medium long term and *less on a (very) long term.*
- It could be an *expensive method,* because one often needs to obtain cutting-edge technologies. If you only can use prototypes the odds are higher, than slightly adapting mass-market products.
- Fourth it is *not always possible to find the adequate proxy* technologies that incorporate the right characteristics that are needed in the research or where the range of comparable characteristics is too limited. An alternative approach could be to combine assessing material objects that magnify only very specific future

characteristics. This can help in focusing on the practice in relation to that characteristic.

- Finally it is clear that the outcome is *an informed guess, but still a guess*. This means that a certain extent of uncertainty always remains on whether or not the findings are transferable to the future practices.

Using technological objects as a stimulus to generate insights on human behaviour in relation to new products is not a new idea. For example taste testing by comparing different drinks or testing the usability of an electrical screwdriver in a lab setting. However these kinds of proxy technologies have been part of more behavioural experimental research streams. Also designers are using these stimuli as creativity tools, while developing new products. The PTA approach in our research differs with the above in a number of ways.

First we take a different approach in comparison to the experimental traditions by embedding the proxy technologies in an interpretative research tradition, triangulating different qualitative methods. We do not want to reconstruct one fixed sequence in the task organization of a practice, we are looking for a multidimensional contextualised accounts (e.g Robinson, 1993). Second, we also differ from design practices by formalising this process of giving humans a reference point to experience and reflect on their practices as a systematic and transparent method. Closely related, is the difference in our goal of using these stimuli. We want to collect data on the use of media technologies as rich as possible. The possible implications for the development of an innovative product are at that moment a secondary aim, unlike designers.

The way we inscribe proxy technology assessment in our research fits in the 'human actors' approach (Crabtree, 2003: 22-33, Bannon, 1991). In contrast to 'human factors', an approach focusing more on issues like usability, functionality, convenience and ease-of-use, the human actors approach looks at aspects like the social context, meaning and everyday life setting. However in contrast to the general idea, we do not exclude characteristics of the user interface in our human actors approach. In our view the interface is the doorway by which people make sense and start reflecting about technological objects. One passes through this 'door' in order to get a practice-led understanding about the psychological and social processes that configure the relation of people with the respective new media technologies. In their practice of use the interface frames the way people interact with objects and applications. However this needs to be complemented with the way these artifacts are being domesticated and given new meanings within the micro and macro social spheres (routines, communities, structural actors involved etc.).

Conclusion

We have indicated our view on design and use of new media technologies, where we see users as innovators. This is based on the domestication perspective on media use. In order to assess future acceptance and use of new media technologies we apply proxy technologies in combination with other research methods.

Added value

We do not pretend in any way to have invented a new method. Our goal was to demonstrate an effective technique for applied ethnographers to elicit a more "thick description" within a multi-methodological research set-up, embedded within an interpretative research tradition (human actors approach). We denominated this technique "proxy technology assessment", which implies the formalisation of using (preferably different) technological objects for better understanding future everyday life practices with and domestication of new media technologies. We applied this technique in our research on the use of mobile television. Our findings have shown on three levels (interface interaction, primary affordance and meeting other practices) how formalising the use of proxy technologies in combination with other research methods help us in better understanding and anticipating the future everyday use of DVB-H mobile television devices and the corresponding viewing practices. We conclude by highlighting the added value of PTA for field researchers.

- PTA is geared towards supporting the conceptual phase in the product development process (especially concept design and concept development), by introducing powerful triggers among (potential) users that generate 'thick' descriptions.
- PTA reduces the unpredictability of user behaviour, by giving an evidence-based indication of innovative user practices of media technologies, before they are developed and marketed.
- PTA enables a human actors approach on features of the human-computer interface that can be linked with the social-psychological setting.
- PTA is an in-between method for generating insights on (future) practices with new media technologies. 'In-between' refers to those situations when 'classic' in-depth interviews are not sufficient and observations are not feasible within a research project.
- PTA enables a better understanding of people that are normally difficult to investigate regarding future use of new media, such as people that currently have little or no media technologies at home (non-users). The analysis can even be enriched when these people are combined with user groups on the other side of the spectrum (early adopters).
- Embedding proxy technology assessment within a multi-methodological approach also enables comparisons between people that have little or no experience with or knowledge about the media technologies to be developed (archetypes) and people that get the chance of using proxy technologies (PTA).

Integration in design loop

In order to effectively integrate the findings of our multi-methodological PTA research in the design of new devices and services, a close interaction with the (technological) actor developing the media technology is required. In our case this refers to conveying our social science findings to an industry perspective, more in particular the Belgian telecom operators Belgacom and Belgacom Mobile Proximus. This was done in three workshop meetings where researcher discussed the research set-up, progress and findings. As to the set-up we came to an agreement that a minimum period of four weeks of user testing was required, in order to enable real user behaviour with the proxy technologies.

The close interaction with industry led to an adaptation of priorities during the course of research. The industry partner shifted the focus on one-way broadcasting of mobile television to a focus more on interactivity. The use of 3G cell phones as proxy technologies also generated an unexpected outcome. These technologies were used to teach us something about the possible use of mobile television via DVB-H. However in the discussions with the industry partner they indicated that our findings would also be fed back to the further development of 3G technology. Especially because our data confirmed a number issues which were on the agenda of the 3G development. The main advantage of this approach with proxy technologies, in contrast to other methods, is that the contextualisation and the interpretation of "watching television", as a practice within the domestication framework, and the use of the proxies in a real life context provides us with very enriched data. This makes it possible to have a better understanding of the needs and requirements of the user at the one hand and the motivation on the other hand. This interdisciplinary and multi-methodological approach seems to be inspiring and useful for technology developers. Within the same company other television projects have indicated that they want to use this method as well. In collaboration with the other partners in the project in the end these results are translated into personas and user scenarios, to be tools - boundary objects - in the choice making process during the development.

Notes

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