Mapping social practices through collaborative exercises and visualizations

Andrea Botero Cabrera
Arki Research Group, Media Lab,
University of Art and Design Helsinki
+358 9 7563 0411

andrea.botero@taik.fi

Anne Naukkarinen
Arki Research Group, Media Lab,
University of Art and Design Helsinki
+358 9 7563 0411

anne.naukkarinen@taik.fi

Joanna Saad-Sulonen
Arki Research Group, Media Lab,
University of Art and Design Helsinki
+358 9 7563 0411

joanna.saad-sulonen@taik.fi

ABSTRACT

In this paper, we explore the use of collaborative exercises and mental map visualizations as tools for understanding social practices and exploring co-design opportunities for product and service development. The research is based on material gathered through a case study of a web-based data storage service in its beta stage. We use these tools to study the interconnections of the designed system to an array of other applications, tools and services, which form what we refer to as people's digital ecosystem. Our experiences suggest that taking practices as the unit of analysis is a relevant strategy to bring forward users' own knowledge of their everyday life, and link it to the professional knowledge of developers and designers; and that visualizations and collaborative exercises are relevant design thinking strategies.

Categories and Subject Descriptors

K.8.0 [**Personal Computing**]: general

General Terms

Documentation, Design, Human Factors.

Keywords

Co-design, user studies, mental maps, service design, social practices, user innovation, participatory design, living lab.

1. INTRODUCTION

The HCI toolbox already counts many robust approaches used for understanding and evaluating tasks, goals and experiences of single users with single products [1] Conversely the traditions of participatory design [10] and cooperative design [4] have long advocated best practices for including future users in the design and development process while rethinking organizational work practices. With new information and communication technologies featuring more prominently in the production and reproduction of everyday life, it becomes crucial for the design and development

of meaningful products and services to better understand the processes by which people weave, not only single, but multiple artifacts into every aspect of their everyday lives, in complex and interrelated ways. A relevant starting point for consideration is the view that system design is "...*not the creation of discrete, intrinsically meaningful objects, but the cultural production of new forms of practice*" [8] which is also happening outside traditional organizational contexts. Furthermore it is important to understand how these processes are not only defined at the design stage, but continue to be defined through creative appropriations in use [3] that bring forth co-design opportunities.

We have experimented with approaches such as visualizations, collaborative and cyclical analysis, as well as design sessions, in an attempt to shed light into these processes related to the development of everyday practices. Our first objective is to formulate design oriented tools that could help to take practices as a unit of analysis instead of looking at a product or service in isolation, and map and understand those social practices that are related to the design space under consideration. As a second objective, we aim at discovering and analyzing these practices collaboratively with users. Our third, and more long-term goal, is to identify opportunities to develop co-design strategies for the products - opportunities in which different stakeholders can contribute to the development of a product through different means and throughout the whole lifecycle of it.

1.1 Focus on practices

As a theoretical concept, practices have had a longstanding interest in philosophy, social science, cultural theory and science and technology studies. A central concern of these studies is to conceive practices as embodied, materially mediated arrangements of human activities that are shared [12], organized through practical understanding [8]; and constitute a kind of silent and ubiquitous "consumer production" [2]. Recent work also underscores the increased interest in the concept as a useful analytical tool for consumption studies, product design and innovation [7].

Building on these works, and approaching the term in a pragmatic and grounded way, we refer to practices as those "ways of operating" in everyday life that give continuity to our lives. As a framework to work with, we have highlighted the following bases for identifying practices: a) practices give continuity and meaning to our actions, b) practices are shared activities, c) practices create relations to other people, things and the world, d) practices are not about repetition but about adaptation, e) practices exemplify

everyday creativity and problem-solving, f) practices combine the shared and meaningful habits with the specific and creative.

These ordinary activities constitute, from our point of view, an interesting entry point to explore the dimensions of co-design and innovation of new technologies in the increasingly messy domains of everyday life.

2. THE CASE

2.1 A Living Lab pilot project

To illustrate the potential implication of acknowledging practices as a central concern for design and as a useful conceptual bridge between disciplines and stakeholders, we present an empirical example from a case study undertaken through a pilot project called Helsinki Living Lab (HLL) [5]. The project was set to explore broader partnerships (public/private, developers/users research/business) in the development of new products and develop user-driven innovation know-how in the Arabianranta neighborhood of Helsinki, by involving in concrete cases close to 20 different local actors (from universities to small companies and residents).

The case we refer to here is one that addressed the current user experience and future development possibilities of a web-based service for online storage and sharing of files. The service - in beta stage at the time this study was conducted - is provided by a mobile phone operator and Internet service provider in Finland. The case study was carried out by our university (design focus) in cooperation with the business unit of the local polytechnic, a small company offering data mining solutions and a local consulting company acting as coordinator. The case started with the Arabianranta development agency office (ADC Oy) inviting, mostly by email, residents, students and people working in Arabianranta, to participate in the case. 137 people responded enthusiastically to the invitation and participated in an initial survey. 70 of them were given one year free access to the service and engaged with the project through different activities that included feedback forms, testing, focus group studies and surveys and a collaborative mapping of practices exercise.

2.2 Mapping practices collaboratively

In our part of the study, we opened up the design space and charted development possibilities. As this was more in depth work, we wanted a smaller sample of participants singled out from the 70 active users. For this we developed a set of criteria to select interesting candidates. This was based on their responses regarding background, use of the service and relationship to digital media in general; gathered in the initial registration and survey questionnaires (conducted by our partners from the polytechnic). The criteria did not attempt to define characteristics of technology savvy people, but rather interesting people that expressed multifaceted relationships and creative appropriations. We did both group analysis and also made use of visualizations of the textual data created by self-organizing algorithms and text mining (provided by the partnering company). Thus a separate invitation to participate in this part of the study was e-mailed to twelve people, six of whom responded positively.

The approach is a combination of qualitative research techniques (e.g. semi structured interviews and self documentation tasks), supported by design oriented activities (drawing, visual representation tasks, and design ideation workshops) after which a series of -mostly visual - representations were used to analyze, process collectively and present the results and insights.

2.2.1 Drawing together a personal map

The first step was to invite the six participants to a 45 minute semi-structured individual interview session, combined with a drawing activity. During these sessions, we probed and supported people, using dialogue and elicitation, to illustrate in the form of a mental map, what we referred to as their digital ecosystems. The approach was inspired by similar kinds of use of mental maps in studying e.g people's legibility of a city [6].

The sessions aimed at concretizing, both for us as well as for the participants, current everyday practices related to the handling of all kinds of digital files with their current infrastructures and in a broader sense. Participants either drew the map themselves, or described, talked and pointed out items while one of us drew their map. Drawing most often started by an inventory of the digital devices used, as this provided a very concrete entry point. As the session evolved, we focused on people with whom the participants shared practices, on places which the practices are related to, and on times of the day they unfold. After the sessions, we scanned and e-mailed the maps back to the participants for further reference.

The short and focused sessions worked surprisingly well, although we relayed on people's own recollections, which may be different from the actual reality. The concreteness of the visualizations triggered enough self-reflection, enabling the participants to become aware of and start describing their practices.

2.2.2 Shared understanding

In order to render the digital ecosystem maps' role and content clearer to everyone involved in the project, we organized several exercises. First we went through the maps and session's transcriptions to highlight emerging topics in each of them by coloring similar areas on the maps (Figure 1), to identify commonalities and differences and pinpoint practices.
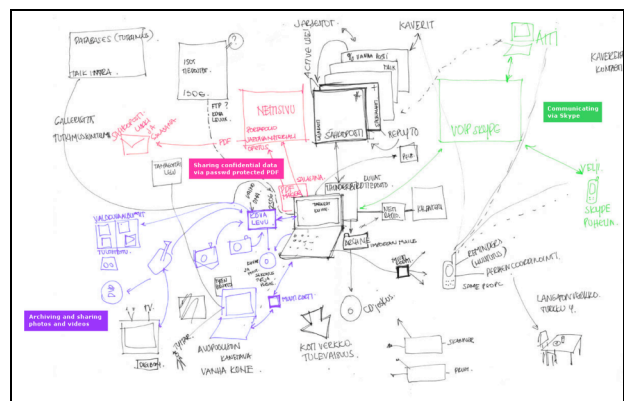

Figure 1. A digital ecosystem map with highlighted issues

Secondly, we produced a visualization of emergent topics (practices ideas) in a graphic form (Figure 2) and used it as background for a collaborative online annotation software. With it, we invited the same participants to read and comment a set of questions related to each topic, and to add new thoughts during a ten day period. With this exercise, we aimed at opening up our preliminary analysis to all the participants, as well as probing if the sharing of the documentation process with all participants, will elicit new ideas worth collecting. The online exercise was

successful in triggering further comments and ideas from the participants, but it did not result in more in depth communal online discussions which we were hoping for.
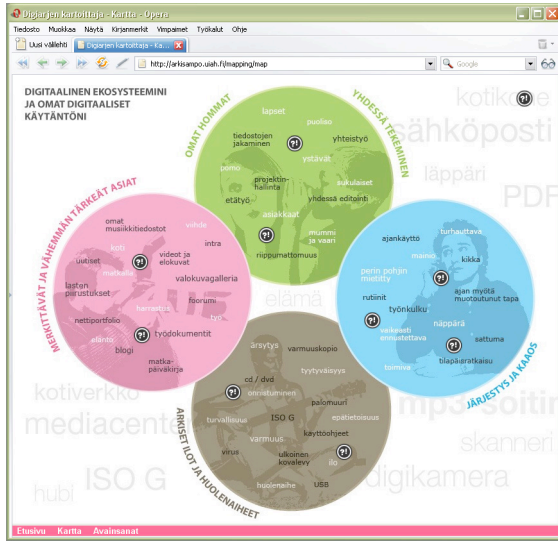

Figure 2. Annotation tool with visualization of the topics.

Thirdly, we organized a joint workshop with all the participants where the whole process was discussed. Together we looked at all the individual maps and introduced for discussion one anecdote from each participant. This served as background to generate ideas on how they envisaged that the service could work for them, on how it could be developed further, as well as the relationship to the artifacts, devices and services they already used.

The workshop elicited vivid discussion and ideation opportunities between the participants. Interestingly enough they all expressed that making the mental maps and participating in the exercises made them more aware of their digital practices and of the amount of devices and practical steps involved in some of their everyday routines and work.

3. SHARING, ARCHIVING AND BACKUPPING PRACTICES

The material provided by the study (analysis of the maps, contributions to the online map annotation, the final workshop discussions) is a rich set of interconnected ideas that was refined as the process advanced. As a deliverable and documentation strategy we decided to create short, condensed, yet contextualized materials in the form of a document of **emerging topics and themes** for sharing, archiving and backupping practices complemented with a series of textual **portraits** and visual **practitioner portrait cards** (Figure 3). These materials condensed our collective insights of the participants' current and expected sharing, archiving and backupping practices. In these resulting artifacts we tried to keep the ideas concrete and to the point, with actual references to the service and its future.

These representations aimed to act as boundary objects [11] for the purpose of helping in further development of the service and to be used by the different stakeholders (company developers, research team partners and participants themselves) as rich and illustrative reference materials. The maps, interviews and workshop materials clearly and concretely illustrated to all the stakeholders how the participants creatively configured sharing,

archiving and backupping practices through a mixed ecosystem where the new service had a potential place. However, the material also uncovered gaps and conflicting areas in this relationship. Through the resulting artifacts we highlighted several practices:

1) Practices referred to as sharing involved illustrating surrounding mechanisms of both the sharing of files between people and the transfer of files between different devices and places. It was interesting to notice e.g. that sharing also usually involved some sort of 'bridge' place where things could be temporarily stored for others to fetch. The 'bridge' in some cases turned into an ad-hoc archive: *"Let's see if we really have a need for it [home network]… we have used camera memory cards to carry data around the house, and actually it might be faster than a home network."* Our research material pointed out the collective ownership of certain practices; there seems to be demand for features allowing shared ownership (with equal rights) to the same "sharing space", instead of a solely individualistic service idea that then prevailed in developers understanding of the service. The following participant comment illustrates the matter: *"[the common files of a family] could be there in one place, from where anyone in the family could retrieve them, but they could anyhow be in separate folders or sections…"*
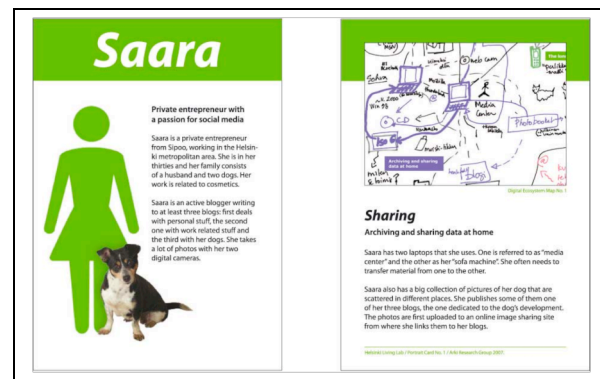

Figure 3. A practitioner's portrait card on the sharing theme.

2) By archiving, we referred to those practices that concerned the long-term storage and retrieval possibility of files and other digital belongings. These practices extend partially to issues of building memories and self-identity (I am what I have), which we did not elaborate on in this study. One important fact that arised from the study material was the absence of a single common strategy to archive and retrieve files. Thus, services such as the one studied need to support different ways of "storing" digital belongings that are open to combination with other components of people's digital ecosystems. In here the user's ability to continue the "design" of the system by linking it to other platforms will be crucial. Furthermore it seemed to us unlikely that a highly centralized solution could be adopted in replacement of the current strategy of distribution of files across devices and places. Conversely offering ready-made smart tools (or the possibility to develop new ones among the user pool) to ease the task of handling large amounts of files would definitely lower the threshold of experimenting with a new archiving service as the comment of a participant suggests: *"Then part of the files can be such that they belong to several categories, so I don't know if this foldering system is the most functional one, or would tagging be more effective, so that a file could be retrieved via several routes."*

3) With backupping theme we denote the specific strategies related to securing preservation and permanence of digital belongings. Preservation and management of personal backupping systems was something that every participant would have been happy to delegate to a trustworthy service. Trustworthiness was a key theme here – a digital belongings' backupping service seemed to be evaluated with similar criteria of sustainability as e.g banking services, as this 'now and future' concern implies: *"I always have this concern that if I move [my data] to an external service, I don't really know how long the company will have the service, they might just quit one day."*

Our study results confirm that the features offered by these types of services are important components of many digital ecosystems and a growing area of concern for users of digital technologies. Most of the participants of the whole HLL study, either savvy or novice users, were able to articulate an understanding of the place the new service can have in their current infrastructure, even if their experience of the service did not match exactly their expectations or practices. Based on the collaborative mapping undertaken with our 5 participants, it becomes clear that the functions and actual practices are distributed, relocated and assigned to a myriad of different solutions because there is no one way that could fit all, and that this phenomenon needs to be addressed more directly in the service studied.

4. CONCLUSIONS

Any new addition to digital ecosystems becomes successful and lasting only if the users can and are willing to adapt it as part of their everyday practices [4][8]. Mapping people's everyday practices thus gives valuable insights into how new products and services can be developed to fit both current digital ecosystems and people's future practices. Maps and visualizations are an effective way to organize complex domain ideas [6] and analyze them in visual and spatial means, both for those who are not in the business of continuously reflecting on their everyday practices (users), and for those who need to understand this context (designers and developers). In our case, the resulting material was rich, evocative and succinct. We were able to mediate and communicate complex issues to the development team, to stakeholders who were not directly involved in the studies, and to the participants.

Despite the possibilities, there are however important limitations. There is a risk of focusing too much on practices that are tied to devices, at the risk of keeping invisible other, less material issues that are central to the user experience and understanding of the whole ecosystem. For the next iteration, some other strategies to make layers of everyday routines and time lapses more visible need to be introduced. Short and well-planned probe-like approaches turned digital and made collaboratively, can be tightened up more explicitly to the material, to complement it.

Moreover, the process needs to be more scalable and integrated, for example, the visualization maps could become truly indexes to the transcriptions, and further tied directly to the ideas and materials produced during the workshops. In this way the design directions and themes could be traced and referenced in simpler ways, and more possibilities for opening up the analysis and ideation for more participants could be explored. In future research we will take more advantage of the text analysis tools, self-organizing maps and visualizations to analyze and manage the whole research material.

We believe there is potential to continue developing this approach. Co-design work needs shared resources (portraits, themes, scenarios and anecdotes, etc) while offering holistic views on the design space, to all involved, through the mediating concept of practices. The study successfully informed and sensitized our partners, and the development team to the broader context at stake, and identified interesting co-design opportunities in the service.

5. ACKNOWLEDGMENTS

6. REFERENCES

[1] Brown, J. 1997. Exploring Human-Computer Interaction and Software Engineering Methodologies for the Creation of Interactive Software. SIG CHI Bulletin 29, 1. ACM Press.

[2] De Certau, M. 1984. The Practice of Everyday Life. University of California Press. Berkeley and Los Angeles. CA.

[3] Fischer, G. 2003. Meta-Design: Beyond User-Centered and Participatory Design, in J.J.a.C., Stephanidis, Ed. 2003. Proceedings of HCI International 2003, (Crete, Greece, June 2003), Lawrence Erlbaum Associates, Mahwah, NJ, 88-92.

[4] Greenbaum, J., Kyng, M. Eds. 1991. Design at work: Cooperative design of computer systems. Hillsdale, NJ: Lawrence Erlbaum Associates.

[5] Helsinki Living Lab project committee. 2006. Helsinki Living Lab Project Proposal - TEKES – Serve Program. Helsinki, Finland.

[6] Lynch, K. 1960. The Image of the City. The MIT Press. Cambridge, MA.

[7] Shove, E., Pantzar, M. Consumers, producers and practices: understanding the invention and reinvention of Nordic Walking. Journal of Consumer Culture, 5,1 (Jan 2005) 43-64.

[8] Suchman, L. Blomberg, J., Orr, J., Trigg, R. Reconstructing technologies as social practice. American Behavioral Scientist Journal, 43, 3, (Nov/Dec 1999) 392-408.

[9] Schatzki T. 2001. Introduction, Practice Theory, in Schatzki, T., Knorr Cetina, K D., von Savigny, E., Ed. The Practice Turn in Contemporary Theory. London: Routledge.

[10] Schuler, D., Namioka, A. Eds. 1993. Participatory Design: Principles and Practices. Hillsdale, NJ: Erlbaum.

[11] Star, S., L. & Griesemer, J. R. 1989. Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39. Social Studies of Science, 19, 3 (Aug 1989) 387-420.

[12] Wenger E. 1999. Communities of Practice. Learning, meaning and identity, Cambridge: Cambridge University Press.