

Full-Score-Lite

From video analysis and transcribed interactions to snapshot strips and chor(e)ographies of communication

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ABSTRACT

In this position paper for the MUM 2003 workshop in Norrköping, December 10th 2003, *Designing for ubicomp in the wild: Methods for exploring the design of mobile and ubiquitous service*, a brief description is given of methods used in connection with a series of ‘quick and dirty’ ethnographic studies of mobile ICT users. These studies were carried out as commissioned research during 2000. Because of predetermined constraints on the studies and resulting reports, alternative ways of describing and annotating interactions on the move were devised and tested. As a result, the initial single time line approach was abandoned and a number of messier, multi-branched chor(e)ographies of communication were developed. These were finally discarded at the time as failures. However, in connection with becoming more of a mobile ICT user myself, the issue of the social and situated construction of time, and the need for supporting several themes in parallel, along different time lines, has surfaced again, and now seems more relevant than ever.

Keywords

Mobile services, ethnographic field studies, annotation practices, ICT design

1. INTRODUCTION

In the following, a brief description is given of methods used in connection with studying mobile users of ICT in a series of ‘quick and dirty’ ethnographic studies [6] that were carried out as commissioned research during 2000.[2]¹ Time constraints and other predetermined conditions concerning the reporting of results from these studies motivated trying out alternative methods of docu-

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¹ The reports are confidential. The reflective text about methods in this paper is new and was not included in the reports.

mentation and analysis. Video recording was used during the field studies, and subsequent interaction analyses of parts of the recordings were also carried out more or less according to the book. However, rather than transcribing a number of recorded interactions in detail, and selecting the most interesting of these to highlight design issues in the report, a ‘comic strip’ approach was adopted.

This involved pasting together strips of frozen frame ‘snapshots’ from the video and combining these with sketchy time lines of observed interactions. Focusing on snapshots rather than sequential strips of film allowed for developing a more kaleidoscopic approach to what was being observed. This in turn opened up for alternative ideas about annotating interaction in order to inform design of mobile services, as well as design, more generally, of ICT support for mobile users.

As a result, the initial single time line approach was abandoned, and messier, multi-branched chor(e)ographies of communication were developed. In the end, these sketches got so messy they were discarded as failures. As ICT becomes more pervasive in everyday life, however, and more and more people become mobile users, the issue of the social and situated construction of time, and the need for supporting several themes in parallel, along different time lines, now seems more relevant than ever.

In reflecting on the methods used in the series of studies carried out in 2000, and attempting to explore this direction of method development further in subsequent studies of mobile users, the idea of developing a light version of a ‘full score’ for annotating mobile communication and interaction has stayed with me, but is still more of an intuitive idea than a method.

2. STUDYING MOBILE USERS

During the spring and summer of 2000, as commissioned research for a large software company, I carried out four short-term case studies of mobile users of ICT. [2] The studies included a systems developer from a consultancy firm who telecommutes from home, a project manager who travels extensively on the job, a teacher who does consulting on net-based education and travels a lot, and the use of an alarm application on cellular phones by a municipal

homecare unit in a municipality in Southern Sweden. For these studies, I used what has been termed as ‘quick and dirty’ ethnography [6], combining informal interviews with ‘shadowing’ of the informant, that is, following each informant around with a video recorder during a number of hours, during several ‘ordinary work days’. Time constraints and other conditions of the commissioned research motivated exploring alternative ways of documenting and analyzing the material I had gathered in.

2.1 From Video to Snapshot Strips

The greatest challenge for me at this time was the seemingly self-evident fact that the results from each case study needed to be presented in a written report of limited scope, which I would not be able to present in person. This meant that important issues for design that I might see in the video recordings had to be described and conveyed via sequential text, selected frozen frames, i.e. ‘snapshots’, from the video recordings, and any other form of illustration I could fit in to the report format. In contrast to writing academic papers about case studies, where it is permissible as well as advisable to select a specific, de-limited issue, and explore this in depth, writing reports from case studies carried out on commission entailed providing a comprehensive over-view of each study, while including as many relevant details as possible. Theorizing, with all the elaborate needlework of relating findings to an academic discourse and vice versa, was not the task at hand. For me, this type of reporting of results was a new and challenging genre.

However, the work of selecting relevant snapshots from the video recordings and putting them together to transmit an idea of something that might be an issue for future design of ICT support turned out to add a new dimension to the analysis of what was going on.

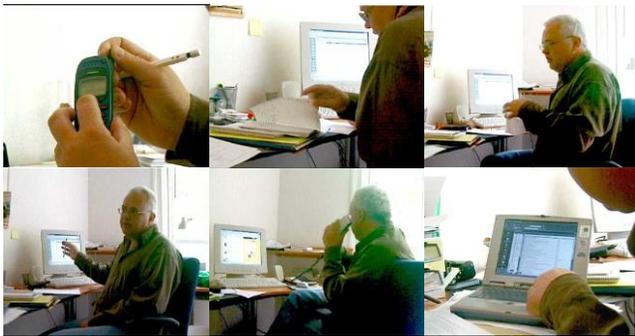


Figure 1. Cellular phone, pencil, diary, loose sheets of note paper, stationary PC, desktop phone, laptop – all interwoven and synchronized in/ through purposeful action.²

For instance, this way of working permitted highlighting certain issues by juxtaposing snapshots from different parts of the same video recording. The closely interwoven ways in which the traveling project leader used modern ICT and more traditional tools such as paper and pencil (see Figure 1) is one such example.

² Permission has been granted by the informant as well as by the commissioning software company for these pictures to be published in this context.

Through working with this scrap-book technique, patterns emerged that I hadn’t caught sight during the field studies themselves. In *grounded theory*, categories and relations between categories are, ideally, developed from the material gathered in field studies as it is collected and analyzed. [8] The theoretical reasoning developed in this bottom-up manner is grounded in an empirical reality, and gains its scientific validity and reliability (according to its founders and followers) above all through the careful application of structured coding and analyzing procedures. The cut-and-paste procedures used in the case studies referred to here were less meticulous. Patterns emerged as snapshots were ‘taken’ from the video recordings, laid out on the digital desktop, moved around, and clustered in different ways, in order to explore themes as they came to mind.

Some discoveries coming out of this work were seemingly paradoxical; thus, ‘the mobile user’ does not necessarily use ICT most intensively when he or she is on the move, but rather in those spaces in time and place where there is opportunity for organizing, coordinating and synchronizing notes on paper, spiral-bound diary, cellular phone, laptop and stationary PC, for getting back to people who have called and left messages, for reading and answering e-mail, exploring certain issues via Internet, taking care of administrative tasks – ‘cleaning the desk off’, as it were.

2.2 The Everyday Messiness of Time Lines

As the illustrative strips of snapshots were developed along with, and interdependently with, the text in each report, I left space for including a time line, which I hoped would help bind together, tidy up, and help the reader make more sense of, the many interactions that I had observed and described.

Initially, I had planned to draw a single time line and order all the interactions along it. This, however, when tried, did **not** make sense. Instead, I began to see that the people I had been studying at work were making sense along several parallel time lines. Sometimes these would branch out to even more complex and messy different tracks or themes, then perhaps two or more different tracks would merge and become one, simplifying the overall picture again, as a problem was explored and dissolved through actions taken, or by what sometimes seemed, at least for the uninformed observer, serendipity or pure magic.

Putting purpose back in to function, as one is forced to do in making sense of ethnographic field material, thus adds a richness to the picture that I believe has a value of its own in design discussions around ICT support for mobile work. Supporting multi-tasking in a mixed and perpetually unpredictable working environment seems to require an open-ended, multi-branching way of thinking.

2.3 Chor(e)ographies of Communication

How might it be possible, then, based on ethnographic field studies, to sketch coherent choreographies – and chorographies – of communication, which could be used to inform and enhance design for the constant improvising that goes on as mobile workers use ICT and other technologies to get their everyday work done? Long after the reports were done and handed over in the cases I have briefly recounted above, I found myself exploring possibilities for constructing alternative notations, i.e. some form of Full-Score-Lite, as a way of bringing the constant multi-

thematic improvising of ICT being used by mobile workers more squarely into focus in design discussions.

Choreography, here, is used metaphorically, and in the sense ‘*notation of sequences of movements and steps of a ballet or dance*’, that is, as a stylized form of description, rather than prescription, of action. Chorography, on the other hand, means description and mapping of a small area, and is thus more about space than dynamics.

Choreography, in the case illustrated in figure 1, could be about developing notations to describe the interwoven use of pencil, scraps of paper, diary, cellular phone, desktop phone, stationary PC and laptop. Choreography, here, could also, interdependently, be about notations to describe the streaming and intertwining of different series of purposeful activities that were often triggered by incoming e-mail and telephone calls. During the field study, and in the video recordings, such series of interlinked actions could be followed like different recurring themes that partly overlapped and interrupted each other. A single time line could structure this on-going work as a series of events which occurred one after the other in a certain order. However, this form of representation carried with it both the strengths and the weaknesses of a trajectory. While it could illustrate, in retrospect, *what* had happened *when*, it could not in any way suffice to show the *on-going purposeful ordering of activities*, as observed in situ. It did not succeed in illustrating the multitude of on-going themes that were managed in an ad hoc, yet structuring and structured, way throughout the day.

What might the chorography of the study illustrated in figure 1 be like? If each one of the six snapshots is seen as a possible contribution for mapping the physical layout of the workplace, that would, as I understand it, be one way of doing chorography in this case. The result might look like one of those drawings found in certain ergonomic studies of workplaces. As a base for drawing the workplace, the pictures in figure 1 are certainly far from optimal. The view is cramped, and ‘the user’ is repeatedly in the way and, actually, completely superfluous.³ More interestingly, from the point of view of design of ICT to support the mobile user, chorography here might focus on mapping the various human-machine and machine-machine interfaces, how they ‘fit’ together, and how they are placed and used in the space provided.

But the most challenging design issues here, as I see it, are highlighted by juxtaposing the choreography and the chorography metaphors, bringing time, space and purposeful action together into one framework. Rhythm, timing, harmonizing, punctuation – the interspacing of time is important for keeping track of what you are doing along different themes that run partly in parallel. This is necessary for coping, as you improvise and restructure your work around incoming phone-calls and e-mails. Associations to music come easily in thinking about this close-up view of everyday ‘work flow’. A full score is notations showing all the different parts in an orchestra. This concept, too, is used here as a metaphor, in order to see things differently and think along new lines. What might a ‘Full-Score-Lite’ look like, for making visible the multi-thematic improvising going on as a mobile user purpose-

fully organizes his/her work with the support of ICT and other mundane technologies? And could such a tool be useful, both as a method for describing work, and as a metaphor to make use of in designing the human-computer interface, to support the user’s on-going work to make his/her actions ‘visibly-rational-and-reportable-for-all-practical-purposes’, that is, accountable, in an ethno-methodological sense? [5:vii, 4] Choreography, and even chorography, if understood as mapping a delimited area, are not only about describing, but also about the art of doing.

2.4 Giving Time More Space

Video recording during ethnographic field studies provides data in a rich and detailed format that preserves the temporal dimension of whatever phenomenon is being studied. The question here is how to make use of this temporal dimension in thinking about design of ICT for supporting the mobile user. As Jordan and Henderson [7] point out, any transcription convention embodies a theory of what is relevant in interaction. Researchers primarily interested in conversation analysis often use the transcription conventions developed by Gail Jefferson [1], but for making non-verbal communication and interaction visible, as well as for analyzing verbal interaction between more than two or three people, this standard does not suffice. It becomes too cumbersome. Jordan and Henderson show examples of alternatives, such as horizontal orchestral transcript for verbal and non-verbal behaviour [7:appendix F] and a beautifully complex eight-speaker horizontal transcript with musical notation [7:appendix H]. Basically, there are two models to choose from: parallel horizontal transcripts or parallel columnar transcripts.

What I am searching for here is a form of notation for visualizing the *keeping track of* parallel activities, the ongoing purposeful ordering of communication and action/interaction along different *themes*, which is a meta-level I have begun to formulate and to focus on during the work of putting together snapshot strips from the video recordings. What I want to do is give time – the temporal dimension, seen as the interweaving of different themes over time – more space.

The horizontal orchestral transcript with musical notations is appealing, but problematic, because the metaphor of writing a musical score presupposes a set number of horizontal lines just waiting for notes to be set out. This seems somehow to force the observer into the role of composer, whereas it is the *user* who is actually doing the composing, adding and subtracting lines/themes dynamically during the course of getting work done.

So I try using very early musical notation – high notes and low notes, no lines attached – but this gets too messy. Then I try lines that appear and disappear as themes surface, are focused for a while and then fade back into the background. This works better, but calls for a framework of some kind to delimit the space in time we are actually working within. Recalling a presentation, by a visiting colleague, where he visualized with a simple drawing how he works with milestones in project management [9], keeping the pre-set dates in order to maintain an overall structure according to plan, but pragmatically adjusting the mile-stone goals if necessary, I try drawing waves above and below the thematic lines, waves that converge towards the end of the day (or whatever time limit the user decides to set for ‘closing shop’). This works better. But now I have to admit that what I am trying to develop is a Full-Score-Lite system for the user – a way of visualizing on-going

³ This is not to say that all ergonomic studies disregard the individual worker/user. It might be the right time to underline, however, that all human work science is not about ergonomics.

work that allows for keeping track of a varying number of themes, as well as for keeping an eye on various up-coming closures of one's own choosing. This could be developed into a kind of fluid flowchart, not of the future, but of on-going themes of communication and interactions.

2.5 From Transcription Notations to Sketches for Managing Everyday 'Work in Progress'

Somewhere in the process of working with snapshot strips and alternative notations for transcribing video recordings of mobile users using ICT, I began to get so involved with the rhythm and interwoven themes of the work I was observing that I shifted into design mode. These sketchy notations were no longer primarily about describing what I was observing, but about possible ways of solving problems of lack of structure and overview I was recognizing from my own work practice. To keep track of everyday 'work in progress', without over-structuring it – to be able to look back, towards the end of the day, and get a quick and comprehensive overview of what I have been working with, sketched lightly in for example color-coded theme-lines, to be able to recapitulate at a glance what is solved and what issues still need to be taken care of – and to design this support so it could be synchronized between diary, cellular phone, e-mail and my file system – that is what I was trying to work out a design for. (Like the sailor, who, by watching now and then, for a few seconds, the wake of the boat, will know more about how she is doing in getting where she is headed, and what might need to be slightly corrected in the trim of the sails.)

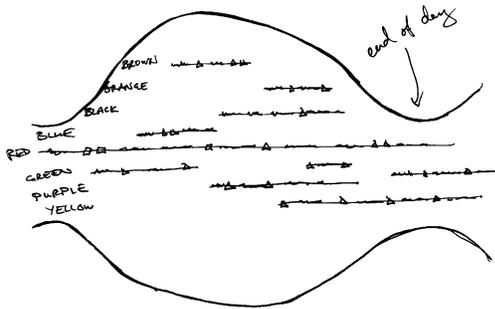


Figure 2. Chor(e)ography of communication and interaction. An attempt at sketching thematic time lines of communication and interaction, with different colors for different themes and different scribble symbols for writing e-mails, talking on the phone, sending SMS, writing documents. Note the rough indication of an outer time frame with a 'closure rhythm'.

The solution still eludes me, but the idea of multiple time lines, of putting themes in focus, and relating these themes to rough representations of overall time frames that need to be considered, seems to me worth exploring further.

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4. REFERENCES

- [1] Atkinson, J.M. and Heritage, J. (1984), Transcription Notation. In Atkinson, J.M. and Heritage, J. (eds.), *Structures of Social Action*. Cambridge University Press, New York.
- [2] Eriksén, S (2000). *Field Studies of Wireless Users*, #1, #2, #3, #4. Unpublished, confidential material.
- [3] Eriksén, S. (2000), "Please hold on a minute..." (while I change modes). Position paper presented at the workshop "Technologies That Cross Boundaries: Exploring the gap between wireless networks, bits, interfaces, and work practices", led by Churchill, E., Trevor, J. and Marshall, C., from FX Palo Alto Laboratory, at CSCW 2000, Philadelphia, USA, December 1-6, 2000.
- [4] Eriksén, S. (2002), Designing for Accountability. In Berthelsen, O., Bødker, S. and Kuutti, K. (eds.), *NordiCHI 2002 Proceedings of the Second Nordic Conferens on Human-Computer Interaction, Tradition and Transcendence*, Oct. 19-13, 2002. Århus, Denmark (pp.177-86).
- [5] Garfinkel, H. (1967). *Studies in Ethnomethodology*. Here from reprint, Polity Press/Blackwell, Oxford, UK 1984.
- [6] Hughes, J.A., King, V., Rodden, T., and Andersen, H. (1994), Moving out from the control room: Ethnography in system design. In *Proceedings of CSCW'94*, Chapel Hill, North Carolina.
- [7] Jordan, B. and Henderson, A. (1995), Interaction Analysis: Foundations and Practice. *Journal of the Learning Sciences*, 4(1): 39-103.
- [8] Strauss, A. and J. Corbin (1990), *Basics of Qualitative Research. Grounded Theory Procedures and Techniques*. Newbury Park, USA; Sage.
- [9] Presentation by professor Jacob Buur, while visiting Blekinge Institute of Technology, Ronneby, September 2001.