

UNCOVERING TRACES OF MOBILE PRACTICES: 'THE BAG STUDY'

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ABSTRACT

This study addresses everyday human practices in order to inform our thinking around the design of technology to support human mobility and mobile device use. Building on traditional ethnographic techniques, we investigated the contents of people's bags, seeking traces of planning, decision making and other social practices that people rely on to construct and maintain relations between particular mobile objects and their particular mobile lives. The research contributes to the development of novel methods for researching mobile practices and its initial findings question assumptions about information use and storage, and about the personalisation of mobile device and services.

KEYWORDS: *mobile technology, research methods, ethnography, practice*

1. INTRODUCTION

In their survey of research methods used in mobile HCI research, Kjeldskov and Graham (2003) found very few examples of studies of actual use in real settings or of conceptual and theory building research; most research focused on building prototypes and, perhaps, evaluating them, usually in artificial environments. They argued: "The bias towards building systems and a lack of research for understanding design and use limits the development of cumulative knowledge on mobile human computer interaction. This in turn inhibits future development of the research field as a whole" (p. 317). Hagen et al., (2005) investigated variations on existing research methods and the new methods emerging in response to the particular challenges of studying the use of mobile technologies. They suggested that the traditional approaches used to develop understandings of the design and use of mobile technologies, such as ethnography and other kinds of field studies, are being rethought by researchers – not in terms of their approach, motivation or theoretical commitment – but in terms of the methods used to achieve them. This rethinking results from: the challenges that physical movement and changing variables present for data collection and research design; the variety of times, ways and places that mobile technologies are being used; and the small scale and personal nature of mobile devices.

In this paper we report our rethinking of the use of a traditional ethnographic approach – the development of an object-oriented record (Jordan, 1994) – in a pilot study that aimed to investigate how people manage their mobility in their everyday lives. The study was part of a larger project that is investigating mobility as an everyday human accomplishment so as to inform our thinking around the design of technology to support that mobility, including mobile devices. Our methodological intention in this pilot study was to consider if insights into how people manage being mobile could be gained from seeking out external traces of some constitutive conditions of people's everyday performance and expression of their mobility. Specifically, we considered the contents of people's bags and pockets. Each item that people carried represented a decision made somewhere, at some time, that the item needed to be moved about with the particular person. We were seeking understandings about the resources our participants carried with them, how these were selected, organised and changed, and what resources were assumed to be available in their environment as they moved from place to place. The paper begins with a brief discussion of our approach

and of the pilot study itself. We then present some tentative, initial, findings from the study followed by a very brief discussion of some implications for the design and development of mobile technologies.

2. METHODS

In ethnographic workplace studies, one way to ensure that data are collected systematically is to focus explicitly on particular aspects of the practice/s being investigated. Jordan (1994) describes four types of focused records: the Person-Oriented Record, the Object-Oriented Record (OOR), the Setting-Oriented record and the Process-Oriented Record. While this is not the only approach to the systematic collection of ethnographic data, we have found it a useful 'tool to think with' when we are designing ethnographic research in challenging domains, such as those involving the use of mobile technologies. Developing an OOR traditionally requires the researcher/s to follow the 'career' of a particular object through a process, noting what happens to it, who uses it, who has rights to change it, move it and so on. Objects understood in this way are considered to provide some kind of shadow, or trace, of important aspects of the practices being investigated because they always have some kind of relations to those practices; it is insight into these relations that is of particular value to researchers. The inherent difficulties in following objects (and people, settings and processes) when researching the design and use of mobile technologies, makes data collection a challenge for researchers. This challenge, in turn, has inspired the development and use of a growing range of novel methods such as cultural probes (Gaver et al., 1999).

Our rethinking of OORs meant that instead of attempting to follow particular objects through time, we would focus on identifying the objects that people carried around *with them* along with contextual data that would enable us to understand why, when and how these objects accompanied people as they moved about. That is, we wanted to understand how our participants considered, constructed and maintained the relations between particular 'mobile' objects and their lives. Because the participants in our study had packed their own bags and/or pockets to support their own mobile practices, the selection and categorisations of objects they carried, and chose to present to us, was also their own. Objects in our participants' bags and pockets provided some kind of shadow, or trace, of how they managed and performed those practices that enabled their everyday mobility.

Twelve intensive, semi-structured interviews were conducted with volunteers who were asked to unpack the contents of their bags and pockets explaining what each item was, why it was in their bags and any other information they wanted to tell us about it. The pilot interviews were conducted in the volunteers' normal workspaces within a university IT Faculty. It was hoped that these people would be relatively early adopters, reasonably heavy users of available technology and would have incorporated a range of mobile technologies into their daily lives. Academics, research students and administrative staff participated with equal representation of men and women. While participants unpacked their bags, they identified each item and explained the reasons for its presence in their bag or pocket. Items that had already been removed for use and/or would be packed again later to be taken elsewhere, were also identified and added to the others. An inventory, including photographs, was made of all items in pockets and bags. Participants were also asked about non-work-related items they normally kept in their workspace and work-related items they kept at home or elsewhere. Some general demographic information was gathered as well as information on the time and distances normally travelled and the modes of transport each participant used.

The interviews were conducted in three batches, with a pause for review and redesign of the process and the data gathering tools in each stage. This was a pilot study, not just in the sense of contributing to a wider research project, but also in the sense of piloting the design of a research method and of the research instrument/s that could support it, so that both could be easily incorporated into investigations of the mobile practices of other groups of people in later stages of the larger research project

3. FINDINGS

A number of relevant issues have emerged from our analysis of this pilot study though space constraints limit us to a very brief discussion of these here. Note that these issues are deeply intertwined. Further research, using other, additional data gathering methods, would be needed before we could uncover, analyse and describe the relations between them.

3.1. Opportunistic carrying

Choices about what people needed to have with them depended on what they considered likely or even possible, to happen or be available to them as they moved from place to place, mostly on a particular day. But some items were carried round for weekly and longer time periods. People's choices also depended on their mode of transport; for example, participants who relied on public transport on the day of the interview carried reading material 'for the ride'. Letters that needed posting, shopping lists, items needing repair, phone numbers of different service companies, membership cards and other items were all carried by various participants in the assumption that an opportunity for their use would become available. Some participants carried items that were considered 'just in case' items that might or might not ever be used. The specific items carried varied according to individuals' (and their family's) situation.

3.2. Social identity and accountability to others

Social relationships and their resulting obligations and dependencies determined some of the items that our participants carried with them. It was significant that all the women participants, and one of the men who travelled home with a child, carried items for others such as band-aids, spare buttons, snacks, identity/membership cards, travel passes, reading material and other entertainment. These items were often carried around permanently; they were not removed from bags, even when they would not be needed. Other examples reflected very specific needs of partners and children, such as a labelling-machine being carried home from work so that a partner could reorganise their home office, pharmaceuticals, school letters etc. It may be that it is not an item's utilitarian value, alone, or even the likelihood of its actual use or need on a particular day, that guarantees its place in someone's bag. Perhaps it is, instead, the symbolic nature of the item: its function is a sign of an enduring social relationship and/or an important part of the social identity and responsibilities of the bag owner.

3.3. Managing travel time

This issue highlights the difference between being 'in transit' and being at particular places people have moved to and where they can assume resources they need will be available to them. In essence, we found that the further our participants lived from their normal work place (measured generally by them as travel time and rarely by distance), the more contingencies they will plan for and the more they will carry 'just in case' they need it. As well, the further individuals lived from work the more likely they are to have 'a store' of non-work resources in their workspaces. This is an important point because it is fundamental to how individuals manage the varying times they are on the move during their daily activities and how they organise the resources they need, including information, within their distributed environments.

3.4. Planning for access when needed

The need to use particular items was situation dependent. For example, bags were packed so that items essential for a journey were available quickly and easily during transit; these items were put in pockets in clothing or outside pockets in handbags and backpacks. Items that were essential for the day's work did not need to be accessible during transit and were packed accordingly. Some items, including wallets, keys, mobile phones and spectacles, were considered essential by all participants and were always carried. Most of our male participants were able to carry these items in their pockets though all the women carried at least a small handbag. Other items, such as toiletries and diaries, were only considered essential within certain situations. Commonly, participants maintained multiple bags, each permanently containing items considered essential to different locations and activities. For some activities, and for some locations, selection of what to take could then be made at the bag level rather than by the individual items within.

3.5. Use while moving / use in different places

A key difference between the various items participants carried was whether the item was used while a person was moving, and/or whether an item was being carried from one 'location of stationary use' to another. For example, a mobile phone could be used while a person was walking or still. A laptop was typically carried from one place to another and was used while the person was still (including while on moving transport if the travel time was long enough that the vehicle itself became a 'place' for being still).

4. DISCUSSION

These findings provide an interesting and fertile basis for grounding our thinking about the design and use of mobile technologies. As such they also add support for the continued development of novel and flexible research methods and data collection tools, that enable us to increase our understandings of this particularly challenging area. They would strongly suggest that mobile technology use, including decisions about what technology is carried, where it is stored, why it is carried, will be inextricably tied to the multitude of situations that individuals move through on a daily basis, how much of their day they spend in transit and the various social relationships that define and inform their decision making. They certainly support emerging market predictions that people are likely to own and use a number of different devices, have no difficulties selecting between them, and are most interested in having specific services provided in the way they want them at a particular time (eg Reinaudo, 2004). But we believe they also:

Problematised assumptions that people will store more and more information on a single digital device. Our participants explicitly chose to have some information, and not other information, about themselves with them at different times and in different places. They had no difficulties at all in making these decisions but did report experiencing difficulties and excessive time demands when getting information on and off their various devices and moving information between devices.

Problematised assumptions about personalisation of mobile devices and services. The periodicity for which people actually make selection and organisation decisions, about what they want to have available to them while moving or in different places, varies considerably, not just between individuals but for different kinds of activities for each individual. We could not find consistencies here except that people's practices of updating and changing the contents of their bags were invariably inconsistent, opportunistic and contingent on specific situations in ways that were quite eccentric and particular to individuals and their lives. In other words, we could easily imagine personalised services degrading over time simply because people's needs changed but, for complex and often unpredictable reasons, their various 'profiles' were not always maintained to keep up with these changes.

This study was necessarily a pilot study both to refine data collection tools and to develop and evaluate the emergent methodology. But these early findings do demonstrate the value of understanding how people manage their own mobility, how it is achieved in practice and the timeframes that fit the maintenance of their everyday lives and varied social relationships. With refinement and further research they can act as indicators of how people will use and value the mobile devices that accompany them as they move about in the future.

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Foreword

Welcome to the interactive proceedings for OZCHI 2005. This CD contains information about the conference, the conference proceedings, and other key information about the conference.

OZCHI is the annual conference for the Computer-Human Interaction Special Interest Group (CHISIG) of the Human Factors and Ergonomics Society of Australia, and is Australia's and New-Zealand's leading forum for work in all areas of Human-Computer Interaction. For historical interest or reference, a listing of [previous CHISIG conferences](#) is provided. Where applicable, the list shows publication data for previous Proceedings.

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