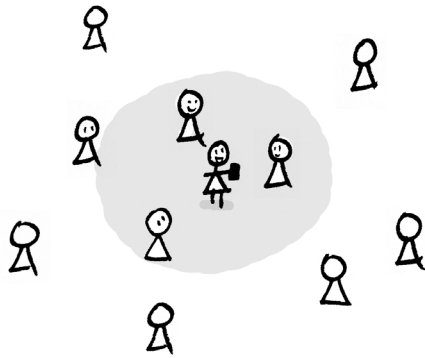# The Changing Nature of Participation in Design:



## A practice-based study of social technologies in early design research

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# Certificate of Authorship/Originality

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Signature of Candidate

_____

# Acknowledgements

This thesis was produced on the land of the Cadigal people of the Eora Nation. The Cadigal people are the traditional custodians of this land and I would like to acknowledge the living culture and pay my respect to elders past and present.

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# Abstract

Social technologies put a new emphasis on participation. This thesis investigates the impact of social technologies on how we enable, conceive and manage participation in early design. The research questions in this thesis address how, and in what ways, using social technologies as *design tools* can support participation in the early stages of design, and how using such tools creates new opportunities for participation in early design when social technologies themselves are the *subject of design*. It develops and presents concepts and strategies that account for the sharable, social and participatory nature of social technologies and encourages designers to reconsider how notions of participation are currently embedded and framed within existing design methods and models.

The questions are explored through a practice-based investigation into the use of social technologies as self-reporting tools. Over the course of two field studies a self-reporting method, Mobile Diaries, was iteratively designed, evaluated and implemented in a specific commercial design context. The analysis demonstrated that using social technologies as *design tools* enhances the capacity for self-reporting to enable participants to contribute to design from the context of their own lives. This greater integration between the activities of research and everyday life blurs some traditional design research boundaries, with ethical and methodological implications for which we are only beginning to account. In addition, when social technologies are the *subject* of design, using social technologies as design tools creates an experiential connection between the activities of researching, designing and using. This creates new opportunities for participation *through use* early in the design process that blur traditional boundaries between the activities of research, design and use. Barriers to embracing these opportunities in commercial contexts include the assumption that the activities of design and use progress consecutively and the value of early participation in design is largely embodied in the tangible outputs of design research.

This research extends existing knowledge about the nature of participation in design, and how participation can be supported, through three main contributions:

1.  The development of Mobile Diaries, a specific self-reporting method beneficial to early design research and suited to commercial use

2. Conceptual tools that reflect the impact of social technologies on self-reporting and draw attention to the new ethical and methodological implications they introduce

3. Strategies to articulate and support experiences and outcomes important to the early design of social technologies in community settings, through the use of social technologies themselves.

This thesis also makes a fourth contribution that is methodological:

4. It is an example of how practice-based design research can be conducted in a commercial context in ways valuable to both practice and research domains.

# 1

# Exploring Social Technologies and Participation in Early Design

This chapter outlines how the topics of social technologies, participation and early design research intersect to become the focus of the research presented in this thesis. The chapter begins by introducing social technologies and how they serve to motivate the research, presenting the research questions and the approach taken to investigating those questions. A background to the research and the particular research context is then provided and specific terms used in the thesis are defined. An overview of the philosophical, theoretical and methodological foundations that underpin the thesis are given, along with a summary of the research design. The four main contributions of the thesis are then detailed. The chapter concludes with an outline of the thesis structure.

*The issue of participation is revitalized in design and design*
*research...* (Binder, Brandt & Gregory, 2008a, p.1)

Social technologies put a new emphasis on participation. This thesis investigates the impact of social technologies on how we enable, conceive and manage participation in early design. Social technologies, also known as social software (boyd, 2007b) or social media (Näkki, Antikainen & Virtanen, 2008), refer to the combinations of mobile and online tools and systems that enable and seek out participation and contributions by users. Examples include *Facebook, MySpace, Flickr, Twitter, YouTube, FourSquare,* personal blogs and discussion platforms as well as more localised community or campaigning sites. Mobile phones, SMS, picture messaging (MMS or PXT) and other personal production and communication devices and channels such as 'instant messaging' are also integral to this landscape. The phenomenon of social technologies is made possible by the shift in technology ownership from organisations into the hands of individuals (Shirky, 2008) and is part of technology use becoming more domestic, public, social and personal.

There is no fixed definition of what is or isn't a 'social technology' and the use of the term here is intended to refer to both the tools and the emerging practices they constitute (Heinonen & Halonen, 2007). As boyd (2007b) states:

*...social software is about a movement, not simply a category of*
*technologies… it's certainly not complete and as a category, it's*
*difficult to make sense of its boundaries.* (p. 17)

Social technologies can however be characterised as facilitating a greater social participation in mediated contexts (boyd, 2007a). They introduce new ways in which we can connect, produce, share, replicate, locate and distribute information, bringing new capabilities and new expectations about how we communicate and interact as citizens (Shirky, 2008). Terms such as user-generated content (Pierson, Mante-Meijer, Loos & Sapio, 2008), *crowdsourcing* (Shirky, 2008), *open innovation* (Näkki & Antikainen, 2008) and *citizen media/journalism* (Cruickshank & Evans, 2008) all refer to emerging forms of digitally mediated participation made possible by social technologies. As a result, social technologies have had, and continue to have, a profound impact on our social, cultural and technological practices (boyd, 2007b). They raise questions about

what it means to participate as a broader cultural phenomenon. Subsequently, they also raise questions about what it means to participate in design.

The central research question that drives this thesis is:

*How are social technologies impacting on the nature of participation in design?*

In design, our understanding of, and commitments to, participation are embedded in our choice of design methods, tools, protocols and project infrastructures. In this thesis it is through an investigation of these aspects of design practice that an understanding of the changing nature of participation in design is made available. Two interrelated sub questions further direct and focus the research:

1. *How and in what ways can social technologies as design tools support participation in early design?*

2. *How can such tools support participation in early design when social technologies themselves are the subject of design?*

These questions have been addressed through an investigation into the use of social technologies as tools for self-reporting in early design research. Self-reporting is a valuable focal point for an investigation into participation. As a design research method it can give people control over how they participate and represent themselves in the design process and it locates the activities of research in the context of people's everyday lives. The particular focus on self-reporting in this thesis was inspired by findings from an earlier investigation into mobile practices and corresponding research methods (Hagen, Robertson, Kan & Sadler, 2005). The thesis builds on this earlier research by exploring how the appropriation of social technologies as self-reporting tools impacts on the 'conditions for participation' (Bødker, 1994).

An underlying premise of this phenomenologically inspired thesis is that design research that seeks to contribute to design practice needs to be grounded *in* practice (Stolterman, 2008). The investigation into self-reporting in this thesis is grounded through a practice-based study conducted in partnership with a small social design agency, referred to here as the CD Agency. At the time of the research it was my place of work and I played a dual role as researcher and designer. The focus of the research was further delimited by this particular research context: the agency's interest in early design research methods suitable for community-orientated projects suggested the

particular domain of design, and the commercial context introduced practical and business-related considerations inherent to industry for which the research design had to account.

The empirical research included two field studies across which a particular approach to self-reporting using social technologies, referred to as 'Mobile Diaries', was iteratively designed, evaluated and implemented at the CD Agency. The outcome of this research approach was twofold: the development of a specific early design research method that could be deployed on real world design projects and an empirical investigation into the nature of participation in early design in the context of social technologies.

The central contribution of this thesis has been the development of knowledge about participation in design that takes into account the nature of social technologies. Answering the research questions has meant establishing an understanding of, and language around, participation. In this thesis this has been framed in terms of the kinds of experiences we hope to support for participants and designers, and the design outcomes that are valuable in early design. From this basis it has been possible to investigate how the introduction of social technologies supports and enables these outcomes or, alternatively, foregrounds different kinds of expectations and possibilities for how participation might be enabled, conceived and managed. In many cases the changing nature of participation was made visible through the exposure of assumptions about participation, embedded in conventional approaches to self-reporting, and the limitations of existing design and research protocols to account for the new expectations and capabilities for participation made possible by social technologies.

## 1.1   Research Background

Four particular trends or junctures within the discipline of design motivate this research into participation, design methods and social technologies. These are: i) the changing focus of design; ii) the use of social technologies as tools for design; iii) social technologies as an emerging subject for design; and iv) an increased interest in methods for early and generative design research.

### 1.1.1  The Changing Focus of Design

Like all healthy, living disciplines, the definitions and perceptions of design and design practice are shifting and evolving (Buchanan, 2001). As the subject of design changes

so do the ways in which we conceptualise what and how we design. At the same time, notions of how participation in design might be supported are also evolving. One of the central changes in technology design to which Interaction Designers are responding is the move of technology from a work context into daily life (Bødker, 2006). Traditional design methods intended for stationary, workplace contexts cannot be expected to account for the emerging, complex contexts of technology use for which we now design (Isbister & Höök, 2009; Kurvinen, Koskinen & Battarbee, 2008). There is widespread agreement that new design frameworks, approaches and methods are required to respond to the changing contexts and motivations of technology use (Forlizzi, 2008; Lee, 2008; Ye & Fischer, 2007). Both researchers and designers are seeking methods that are suitable for more pervasive, public, ongoing, personal and domestic technologies (Sellen, Rogers, Harper & Rodden, 2009). Social technologies play a significant role in motivating this search for new methods and frameworks.

## 1.1.2  The Use of Social Technologies as Tools for Design

The extension of self-reporting methods, through the appropriation of everyday digital, personal and networked technologies as *design tools*, is one of the ways in which researchers are responding to the challenges of pervasive, diverse and mobile technology use and its increasingly personal and social nature (e.g., Hulkko, Mattelmäki, Virtanen & Keinonen, 2004; Palen & Salzman, 2002). Practitioners and design researchers alike are fast recognising the potential of everyday technologies to enable people to act as the observers of their own use, from the context of their own lives. Examples include proprietary commercial tools such as *7daysofmylife* (zilverinnovation, 2009) and *Revelation™* (August & August, 2005), research platforms such as Mobile Probes (Hulkko et al., 2004) or more ad hoc appropriations of mobile phones (Cereijo-Roibás, Vanderbeeken, Clavin & Zoels, 2009), blogs (Khalil, 2009) and email (Masten & Plowman, 2003). However the shift from participants using pencil, paper and other analogue tools to generate, collect and share 'data' about their lives, to participants using digital, personal and networked technologies has significant implications.

The implications have been noted since the early days of social technologies. For example in 2003 practitioners such as Masten and Plowman (2003) were already outlining some of ways in which digital tools were radically shifting the way people

could participate in research and pointing to some of the privacy implications that would need to be addressed. Other related and influential studies have also identified opportunities and potential implications for appropriating everyday, personal communication tools into research (e.g., Graham, Satchell & Rouncefield, 2007b; Hulkko et al., 2004; Masten & Plowman, 2003; Palen & Salzman, 2002). This thesis contributes to this growing body of work by analysing the trend to co-opt everyday tools into self-reporting as part of the broader phenomenon of social technologies. This is not the only perspective from which the evolution of self-reporting can be interpreted, however it provides one critical frame for understanding how participation is changing in the context of social technologies, and the impact this has on our choice of tools and techniques. It also helps to account for how some of the broader shifts in expectations and norms brought about by social technologies in everyday life are carrying over into practices of research and design.

### 1.1.3  Social Technologies as an Emerging Subject for Design

As a subject for design, social technologies foreground a particular set of concerns for designers around participation. Social technologies are effectively containers or scaffolds that rely on participation and user driven contributions to take their form. In this way social technologies make visible the tight coupling between design and use, and the emergent nature of design. Certain perspectives on design have always conceptualised design as being 'actualised' in use (Dourish, 2001). Indeed this notion is central to Participatory Design which is grounded in phenomenological and related positions on interaction (e.g., Ehn, 1988; Greenbaum & Kyng, 1991; Suchman, 1987). However, social technologies bring a renewed attention to the relations between design and use because so much of their form is constituted *through use*. Social technologies put new emphasis on user participation because they require user participation to exist at all. Their actual form is shaped through participation, drawing particular attention to concerns about how designs will actually be taken up and used (DiSalvo, Maki & Martin, 2007). That is, social technologies put significance on the activities that will help to connect or introduce design concepts to the world in which they will exist. The term *seeding* is often used in literature and design practice to describe activities that can act to germinate participation (e.g., Botero & Saad-Sulonen, 2008; Figallo, 1998; Merkel, Xiao, Farooq, Ganoe, Lee, Carroll & Rosson, 2004; Rettig, 1998; Rheingold, 1993). This thesis contributes to emerging theory and methods that address how

participation in the design of social technologies can be supported in ways appropriate to the nature of social technologies themselves. The notion of seeding is given particular prominence in this thesis as a concept that helps to sensitise us to experiences and outcomes important to the early design of social technologies. It is also used as a way to analyse experiences that emerged from the empirical research as opportunities for participation.

### 1.1.4  Methods for Early and Generative Design Research

Another response to the broadening scope of concern for designers is the growing attention being given to generative design research methods for use in the early stages of design (Sanders, 2005; Sanders, 2006). Early design research undertaken in these initial stages is fundamentally exploratory. Probes (Gaver, Dunne & Pacenti, 1999; Mattelmäki & Battarbee, 2002) and Context Mapping (Sleeswijk Visser, Stappers, Lugt & Sanders, 2005) are examples of such methods. Rather than evaluate or measure the usability of existing solutions, the intention is to make available people's everyday experiences, aspirations and motivations as resources to inspire and inform design (Sanders, 2005).

Such approaches are particularly important to the design of social technologies because the personal motivations, attitudes and behaviours of users are such significant factors in shaping their design and use. As a personal, subjective and contextual *in situ* method, self-reporting is often used as a component of generative design research. This thesis documents the development of a self-reporting method that aimed to privilege experiences and outcomes beneficial to early, exploratory and generative design research. The particular method, Mobile Diaries, was inspired by the extension of self-reporting methods through the adoption of everyday, social technologies.

## 1.2   Research Context

This section introduces three other aspects that contributed to motivating and shaping the research. These are: i) the practice-based context where the research occurred; ii) the significance of design methods in the academic and professional fields of Interaction Design; and iii) my personal position as a designer/researcher. Specific terms used in this thesis are also defined.

### 1.2.1  Practice-based Context

The CD Agency is a social design agency committed to working on projects with an environmental, social and political focus. The agency's clients are motivated by a desire to utilise technology to support or trigger social change, action or participation around an issue, and to engage new or existing stakeholders. Collaborative approaches that enable the design team to work closely with clients and other project stakeholders are valued. The objectives of the empirical research undertaken in this thesis were shaped both by the clients with whom we partnered and the agency's commitment to collaborative design approaches.

Much of the CD Agency's client work involves the development of social technologies. These take the form of platforms that enable or encourage community engagement and participation in social, environmental or political issues. Central to the success of such systems is participation and contributions by 'users'. The CD Agency sought to extend the range of early design methods they employed that were suited to working in community settings where questions of engagement and participation are central. The agency was interested in adopting or developing generative, early design research techniques that would help to immerse the design team into the world of the project stakeholders and engage the stakeholders in dialogue as active participants in the design process. This motivation and interest in early design research methods, combined with the knowledge of emerging self-reporting methods, provided the research with a specific focus and set of practice objectives.

### 1.2.2  Methods in Interaction Design

The emphasis on methods in this thesis is based on the premise that the methods we choose to use have an important impact on how participation is shaped. Methods embody a certain attitude to design, privilege certain types of qualities in design, and determine how those who will use the technology are represented during design (Robertson, 2006). However methods can be a bit like a black box; connections between methodology, method, tool and technique are not always easily visible, or readily discussed (Sleeswijk Visser, 2009). At times designers might unconsciously adopt values embedded within certain methods (Bowen, 2007; Sengers, Boehner, David & Kaye, 2005), or unwittingly use methods that contradict their original methodological commitments (Boehner, Vertesi, Sengers & Dourish, 2007). In addition, as is further

discussed in Chapter 2, methods developed within academic contexts have not necessarily been done so in a way that account for the questions and conditions faced in professional design practice (Stolterman, McAtee, Royer & Thandapani, 2008). These issues are particularly pertinent as professional design practitioners adopt and adapt methods into their practice that were potentially developed for other contexts and/or with contrasting epistemological commitments.

From my perspective as a practitioner and researcher, a defining aspect of the emerging discipline of Interaction Design within commercial design practice has been, and continues to be, the introduction, adoption, mastering and appropriation of suitable methods by design practitioners to handle the complexity both of what we are designing as well as how it will be used. While a familiarity with and accountability to the use of particular methods may be a given in academic domains, in my experience this is not necessarily the case for design agencies whose background is in communications or graphic design traditions. This is relevant because many of the commercial design agencies that now 'sell' Interaction Design services, such as the CD Agency, had their origins in communication design. Over the last five to ten years many agencies have transformed their identities from that of communications or graphic designers into interaction or user experience designers, as they "*acknowledge the influence of digital technology and media on their own core materials and practices*" (Lowgren, 2008). For these design practitioners, part of the process of shifting to doing Interaction Design has often meant utilising design methods that have been developed by academics within the working environments of academic research. This shift within the CD Agency provides a backdrop to this thesis. It also motivates a commitment within this research to develop design methods, and research about design methods, which have value to both researchers and design practitioners and support a critical approach to their use.

### 1.2.3  A Position on Design

My understanding of the nature of design practice and of *doing* design is formed through 13 years of working at the intersection of the technology design industry and the community sector. It has also been significantly shaped through time spent working in academic contexts. This academic experience has allowed me to cultivate a reflective practice and develop a richer understanding of design practice as a practitioner. In

addition it has provided me with a perspective on, and fluency with, design methods and theory that I would have had difficultly obtaining in an industry context.

My practice is based on the premise that the role of the designer is not to design solutions to a particular problem or to communicate a message, but to facilitate communication, sociability and mutual learning within the design process through the provision of flexible tools, whatever form they take. This thesis is inspired by the possibilities that have been made available through social technologies for more people to participate in social, community and political activities and create platforms that enable grassroots and community-level action and engagement. My philosophical beliefs about my role and responsibilities as a designer in the world, and my experience as a design practitioner and researcher preface the philosophical approach to research taken in this thesis and the questions posed.

### 1.2.4  Definitions of the Terms

For clarity a definition of some of the terms used in this thesis is provided.

*Stakeholders and Users*

At the CD Agency, the term 'stakeholder' is preferred over the term 'user', particularly in the early phases of the design process. 'User' is often (mis)interpreted to mean only end-users, and this has historically lead to a tendency by designers and clients to overlook those who manage and administrate the system when considering how to design 'for the users'. A focus on 'stakeholders' encourages clients and the project team to think more broadly about who might be impacted by the design and therefore who might need to be involved in the design process. The term also clearly positions the people who use the technology as having a stake in it. Therefore the terms 'stakeholder' and 'user' are used interchangeably in this thesis to mean any person who can be considered a primary stakeholder of the system we are building that needs to be involved in its design.

*Design Research*

The term design research is used in design literature to mean different things. The term can refer to design research being done *about* the design process; an inquiry focused on the production of knowledge *about* design (Buchanan, 1992; Cross, 1999; Moggridge, 2008; Zimmerman, Forlizzi & Evenson, 2007). This kind of design research is generally

located in an academic context. The term is also used to refer to design research that is project related, research done *as part of* the design process. This kind of design research is common within a practice or industry context.

While it is important to distinguish between these two levels of research, it should not be read into these distinctions that design and research are necessarily separate activities. Indeed the act of researching is central to the practice of design (Buchanan, 2001). However for the purposes of this thesis, which seeks to conduct design research *about* design, in part by examining design research methods used *as part of* design, it is important to be able to distinguish what aspect is being referred to when the term is used in this thesis. To do so capitalisation will be employed, with the former written as Design Research, and the latter as design research.

*Design Researchers*

According to Sanders (2008), the shift towards more generative methods at the beginning of the design process has meant that the boundaries between the activities of research and the activities of design are becoming blurred. This has lead to the emergence of a new hybrid role of designer/researcher or design researcher. This is a phenomenon I also recognise from practice. In this thesis the term design researcher is used to refer to the people from the design team working with participants during the early design research phase, acknowledging that in practice these people may have different job titles in the design organisation (e.g., designer, researcher).

## 1.3   Approach

This section describes the theoretical frames that orientate the research and the approach taken. A brief summary of the field studies is also provided.

### 1.3.1   Researching Design

The approach to research taken in this thesis is inspired by a phenomenological view of how knowledge is generated. Phenomenology puts ordinary human experience at the centre of our analysis, emphasising the 'lived experience' as the source of knowledge and theory (Alvesson & Sköldberg, 2000). It can be argued that phenomenology is a particularly helpful perspective for understanding how we generate knowledge about design, because as Schön (1983) suggests, design is the domain of the specific, the situated and the concrete. Practice-led research, which takes a particular experience of

practice as the source of our understanding about design, can be considered a phenomenological approach to Design Research. It is common in practice-led research for the production of a design artefact to be the means through which research is generated (Hobbs, Fenn & Resmini, 2010; Rust, Mottram & Till, 2007). In this thesis it is not an artefact or design being generated as the source of the research, but rather a particular application of self-reporting as a design research method. It is the process of iteratively designing, evaluating and implementing this self-reporting method in a practice context that enables the generation of knowledge about practice.

The theoretical perspective taken on design as a practice in this thesis is supported by the descriptions of design practice and how professional design practitioners *do* design offered by Schön (1983). Schön's notion of the reflective practitioner, and his description of the design process as cycles of reflection-in-action and reflection-on-action, provide a basis for understanding the practice of design. These descriptions of design have been taken up by Scrivener (2000a; 2000b) and Scrivener and Chapman (2004) and used to develop a model for reflective practice-led art and design. This model helps to frame the research approach taken in this thesis (described further in Chapters 2 and 4).

Discussions of, and approaches to, the analysis of participation in design in this thesis are informed by Participatory Design (PD) (e.g., Greenbaum & Kyng, 1991; Schuler & Namioka, 1993). PD privileges the domain knowledge of the stakeholder in the design process and assumes their right to representation and determination over what is designed. PD offers an evolving set of critical and conceptual tools for framing and motivating discussions about design, participation and methods in new and different contexts (detailed further in Chapters 2 and 3). Projects that ask questions of participation find a natural affinity with PD and much contemporary work in design and Human Computer Interaction (HCI) is a move to engage with issues that have always been at the heart of PD. As a methodological, theoretical and analytical anchor in this thesis, PD provides resources for understanding the significance and complexity of participation, the potential ways in which conditions for participation can be created, and how choices about participation become manifest in our use of methods.

## 1.3.2 Research Design
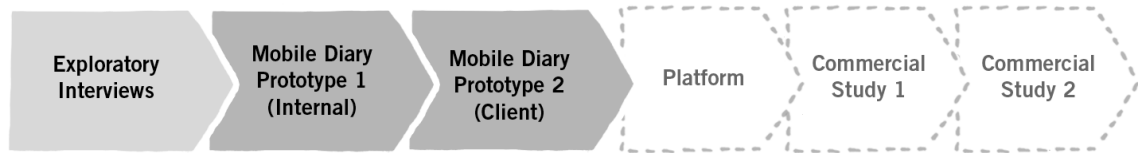


**Figure 1. An overview of the different empirical studies and activities**

The research design was crafted and negotiated in response to the particular practice context at the CD Agency. Figure 1 provides an overview of the empirical studies and activities that contribute to this research. Each activity or study informed the next. Exploratory interviews were used to initiate the research and these assisted in focusing the research. They confirmed that using mobile technologies to support self-reporting was a viable design research method in our context and worthy of further investigation through field studies. In the first field study Mobile Diary prototypes were used in a self-reporting study over a period of three weeks by the internal design team. This allowed us to test claims from the literature in our own context, compare different tools and techniques and gain an experiential understanding of what it might mean to use such self-reporting methods from the perspective of both a participant and design researcher. This first field study acted as a proof of concept for both the prototype and the approach to evaluating it. The study also provided us with the confidence to deploy such a study in a client context. The second field study allowed the evaluation of a more refined Mobile Diary prototype in a real-world design project with a client. Running the Mobile Diary study as part of an actual design project enabled us to experience and evaluate the method more fully in terms of the design outcomes and experiences it could support, and the role of the different tools in enabling those experiences.

The result of these two field studies was a refined version of the Mobile Diary method and online platform, which was implemented as an early design research method at the CD Agency for commercial projects. For reasons of confidentiality it is not possible to describe the commercial uses of the method in detail. However the experience of two subsequent commercial deployments that followed closely after the field studies (represented by the greyed-out boxes in the far right of Figure 1) helped to validate the findings of the initial field studies in different project contexts. As such a brief summary

of the commercial studies, within the bounds of commercial confidence, is provided in Chapter 7 to account for their influence on the conclusions drawn in Chapters 8 and 9.

## 1.4    Findings

In responding to the central research question, the findings of this research have shown that social technologies impact on participation in design in a number of ways. They enable new kinds of *design tools* and methods, such as the Mobile Diaries developed through this research. They constitute new *subjects* for design such as community platforms, social networks, and mashups that foreground a tight coupling between design and use and put emphasis on design *through use*. In addition, the expectations and capabilities enabled by social technologies as a broader cultural *context* for design are impacting on how stakeholders can, and expect to, participate in design. The everyday, emergent and social nature of social technologies demands and enables an emphasis on participation from the context of people's everyday, ongoing lives. At the same time the more public and participant-led approaches to research and design enabled by social technologies challenge traditional assumptions about the nature of participation in design, as well as concepts about how and where design is done, and by whom.

The findings are reported in two parts that correspond to the two research sub questions. The first sub question asks: *How and in what ways can social technologies as design tools support participation in early design?* This is addressed in Chapter 8 as **Designing *With* Social Technologies**. The results demonstrate how social technologies, *as design tools*, can support participation in early design by extending and enhancing the capacity of contextual design methods such as self-reporting. For designers, using social technologies in self-reporting has the potential to enhance the sense of immersion into the world of participants and create a greater sense of proximity to their lives. The digital, personal and networked nature of social technologies can allow designers to 'move even closer' to the lives of participants. For participants, the rich, personal and 'everyday' nature of social technologies increases the integration of self-reporting activities across the mobile, social and personal practices of daily life, enhancing the ability of people to participate in design research in ways relevant to them. The social nature of social technologies also shifts self-reporting from a focus on 'self-documentation' to a process of co-discovery played out over the course of the study.

The traditional boundaries of participation in self-reporting, as a research activity, blur as the reach of self-reporting as a contextual method is extended. At the same time designing *with* social technologies also raises questions about privacy, ethics and ownership not accounted for in traditional methods. The 'sharability' of the tools and the increased capabilities of production, publication and distribution they bring to individuals challenge some of our existing assumptions and conventions about how participation is conceived and managed in early design. In Chapter 8 these findings are presented as seven experiential qualities of self-reporting and a discussion of the ethical and methodological issues that these raise.

The second sub question locates the investigation of social technologies as design tools within a particular domain by asking: *How can such tools support participation in early design when social technologies themselves are the subject of design?* This is addressed in Chapter 9 as **Designing *With* and *For* Social Technologies.** As a subject for design, social technologies foreground particular outcomes valuable to early design that go beyond informing and inspiring design to supporting participation in design *through use*. The results of this research show how social technologies as self-reporting tools can seed design, opening up new potential for participation *through use* in the early design of social technologies themselves. This is due to the creation of an experiential, concrete connection between the activities of researching, designing and using, and the location of the research activities within the context of people's everyday lives. Activities that were once associated with use, such as user-generated content or appropriating the 'project', can move into the early phases of design creating opportunities for community members to be active in shaping the design, through use. Such forms of participation are not accounted for in many traditional notions of self-reporting. Embracing such approaches again has a number of implications for how we conceive and manage participation in design, and how we support researching, designing and using as concurrent practices. In Chapter 9 this is presented through an analysis of how self-reporting can create potential opportunities for *seeding* the early design of community platforms and the impact of this on how we conceive of participation within design projects. The discussion of opportunities is balanced by the identification of challenges and barriers that exist within standard commercial design project infrastructures to embrace such emergent approaches.

### 1.4.1 Contributions

The four main contributions of this thesis to design theory, practice and research are described below.

1. *The development of Mobile Diaries, a specific self-reporting method beneficial to early design research and suited to commercial use*

As a result of this research a specific self-reporting method, based on a particular set of methodological principles, was developed. The method is applicable for use in early design research in a commercial context. The method supports immersion by designers into the world of participants and creates conditions for dialogue with those individuals as active project stakeholders. It puts particular emphasis on gaining access to the mobile, social, ongoing aspects of people's daily lives, and their right to represent and share their lives, in their own way, on their own terms. This contribution includes:

- A descriptive analysis of the iterative design of the specific method
- The communication of the method, processes and principles to the research and design practitioner community
- The development of technical and practical guidelines to assist other designers in the use and evaluation of this and similar techniques
- A detailed demonstration of how the technique can be applied in practice.

This contribution can be found in Chapters 5, 6 and 7.

2. *Conceptual tools that reflect the impact of social technologies on self-reporting and draw attention to the new ethical and methodological implications they introduce*

This contribution to practice and theory about designing *with* social technologies includes:

- Seven experiential qualities that describe the capabilities social technologies bring to, or augment in, self-reporting that benefit the goals of early design research. *Layered representations,* capturing *life on the move* and *in the moment, shared windows, continual interaction, experimentation,* and *co-experience* are experiential qualities that impact on the experiences of designers and researchers and design research outcomes. These qualities can be used by other design researchers as conceptual tools for evaluating and choosing between different

self-reporting tools. The intention in naming these qualities is to draw attention to capabilities of social technologies that impact on the nature of participation.

- The identification of ethical and methodological implications for design research methods such as self-reporting prompted by social technologies in relation to consent, anonymity, privacy and ownership that suggest how notions of participation in design are being renegotiated by social technologies.

This contribution is described further in Chapter 8.

*3. Strategies to articulate and support experiences and outcomes important to the early design of social technologies in community settings, through the use of social technologies themselves*

This contribution to practice and theory about designing *with* and *for* social technologies in community settings includes:

- An exploration of how the concept of *seeding* can be extended to describe activities important to the early design of social technologies in community settings and used as an analysis tool for understanding how such activities can be enabled
- The identification of *socialising the research*, *bridging between existing and future practices* and *developing early content* as potential strategies for seeding enabled by social technologies, that represent potential new patterns of participation appropriate to the context of social technologies
- A contribution to literature about how existing project infrastructure and assumptions about design and participation can frame and constrain the potential for participation in the design of social technologies.

This contribution can be found in Chapter 9.

*4. An example of how practice-based design research can be conducted in a commercial context in ways valuable to both practice and research domains*

This thesis presents a detailed description and reflection on the process of conducting practice-led research in a commercial design context.

This contribution includes:

- Making available to other researchers and practitioners a real-world, replicable account of the process of choosing and evaluating a particular method in practice, documenting the strengths, weaknesses and possible variations

- Extending understandings of how practice-led research can be conducted in commercial design practice

- An example of an approach to Design Research that enabled a direct contribution to practice

This contribution is developed through the entire thesis.

### 1.4.2  A Note on Technology

The field studies documented in this research were undertaken in 2006 and 2007. Any research about current and emerging technologies faces the interesting challenge of the subject of that research changing over the course of the thesis. Some things have changed significantly; for example, in 2006 the term Camera Phone had a particular meaning and significance. In 2011 it is less relevant as a way to distinguish between different kinds of phones. Other changes have not been so dramatic; for example, many of the participants we worked with in more recent studies (e.g., between 2008 and 2010) are as new to MMS and blogging as participants were in 2006. Where possible I have accounted for the potential impact of new technologies on the findings presented throughout this thesis, based on experience from practice (including subsequent deployments of Mobile Diaries) and more recently published studies. However, while the field studies do focus on the particular technologies available at the time of the research, the analysis is framed in relation to how different social, technical and physical qualities impact on participation, moving the discussion beyond specific tools. Rather than advocate for one specific technology, the presentation of findings includes concepts and conceptual tools that help support critical thinking about the introduction and impact of particular kinds of technologies to design practice.

### 1.4.3  A Note on Presentation

In this thesis visualisations have been used to highlight aspects of methods, concepts of participation or 'stages' in design. These visualisations have been important to the development of the thesis and to the identification of key theoretical and

methodological concepts. They create a visual shorthand for highlighting important points about design, participation and methods, and are included as part of retaining the designerly qualities of the research, its accessibility to more visually orientated readers, and the potential for findings to be published in more visually based formats.

### 1.4.4  Chapter Outline

This section provides a summary of the chapters that follow and is a guide to the structure of this thesis.

In Chapter 2 the philosophical, theoretical and methodological positions on design, research, participation and methods for design that underpin this thesis are introduced along with a rationale and background to the practice-led research approach taken.

Chapter 3 provides a review of the literature relating to early design research, self-reporting and social technologies, introducing the trends, concepts and techniques that provide both the background to this thesis and a springboard for the empirical research and its analysis.

Chapter 4 describes the journey of the research, outlining the impact of the particular research context in shaping the research design and providing a rationale for the particular methods used. An overview of the field studies and approach to the analysis is given along with an account of how the practice-led research process was managed.

Chapter 5 documents the first field study, the design and evaluation of the first Mobile Diary prototype by the internal design team. The structure of the study, the findings, and how these contributed to the development of the Mobile Diary method are described.

Chapter 6 documents the second field study, a second iteration of the Mobile Diary prototype refined in the context of a real-world design project. The structure of the study, the findings, and how these contributed to the evolution of the Mobile Diary method are described.

Chapter 7 summarises the practical outcomes of the fieldwork including the final Mobile Diary method implemented at the CD Agency. It documents the work undertaken to ready the method for commercial use and provides a description of how the method was used in two different client projects and the experiences gained from that process. Practical and technical considerations relevant to adopting such approaches into practice are also provided as guidelines to other practitioners.

Chapter 8 draws together the results of the previous field studies and literature analysis to investigate and reflect on the implications of using social technologies as design tools for how we enable, conceive and manage participation in self-reporting. Seven experiential qualities of self-reporting brought to, or enhanced by, social technologies identified during the design of the Mobile Diary method are presented, along with a discussion of the ethical and methodological considerations such an appropriation of social technologies raises.

Chapter 9 draws together findings from the empirical research to investigate potential forms of participation enabled by social technologies as self-reporting tools, appropriate to the design of social technologies themselves. Experiences enabled by Mobile Diaries are explored for their potential to support, or be reconceptualised as, strategies for *seeding* design *through use*. The inherent limitations within our current approaches to supporting and managing these new forms of participation are also examined.

Chapter 10 concludes this thesis with a summary of the research outcomes. The research questions are revisited and key findings and contributions presented along directions for future work.

# 2

# Perspectives on Design, Research and Participation

This chapter introduces the philosophical, theoretical and methodological perspectives that together shape the particular stance on design, methods for design, participation in design, and research about design, taken in this thesis. It situates this thesis within particular design and research traditions and articulates our accountability, as designers and researchers, to our practice. A contextual background to doing research into design methods is presented, as is a rationale for going about that research in the context of design practice. Key grounding concepts in relation to participation in design are also introduced.

The chapter begins by laying out a working definition of the term 'design'. It then introduces and defines a position on Design Research. A phenomenological perspective on the practice of design and research is established to provide a bridge between the sometimes disparate domains of design theory and practice. An opportunity for the development of design methods applicable to practitioners and guided by such a philosophical perspective is then outlined. From these, practice-led research is introduced as a means through which Design Research that accounts for the situated nature of design can be done. Finally, an overview of Participatory Design is provided to ground discussions of participation in design.

## 2.1    Doing Design

The perspectives taken on design in this thesis are inspired by phenomenological readings of what design is, and what it means to practice design. Below, four positions on design are introduced that together frame the approach to design, research and participation taken here. The positions are: *design is flexible*, *design is social*, *design is political* and *design is situated*.

### 2.1.1   Design is Flexible

While this thesis seeks to contribute to the discipline of design, it is taken as a given that there is no single definition for design. In a discussion on the nature of design Buchanan (1992) describes it as:

> *A supple discipline, amenable to radically different interpretations in*
> *philosophy as well as in practice.* (p.19)

The multiple places and ways in which the term design is used demonstrates the inherent flexibility of design as an activity. Importantly, Buchanan (1992) identifies that, at least in part, the changing ways in which we perceive design are dependent on the changing subject matter of design itself. For Buchanan the following examples represent different interpretations of subject matter in design over recent decades *symbolic and visual, material objects, activities and organized services, complex systems and environments* (ibid). Part of the essence of design then is in the indeterminacy of its subject matter (ibid). Correspondingly design refuses to be reduced to one or even a few models or definitions, rather it evolves in response to the subject with which design is concerned.

### 2.1.2 Design is Social

Discussions on design often focus on the object of design, the product, technology or service or on the individual designer. But it is not only the construction of the artefact that interests us as designers. Rather, design concerns itself with how people live in the world (Ehn, 2008). Such a perspective on design is expressed in the following statement by Walter Gropius in his reflection on the founding of the Bauhaus in 1937:

> *Our guiding principle was that design is neither an intellectual nor a*
> *material affair, but simply an integral part of the stuff of life...*
> (Gropius, 1970, p.20)

Design as a practice is caught up in the ongoing and ill-defined business of real life (Ehn, 1988). As Papanek argued in 1971, it is through design that our tools and our environment are shaped. For this reason it matters deeply how we go about design, and which philosophical approaches or perspectives underlie our design practice (Robertson, 2006).

### 2.1.3 Design is Political

Decisions we make in design and the methods we choose to use constrain and afford different practices. As designers we have a moral and social responsibility to consider what kinds of practices we might be supporting or re-enforcing through the choices we make (Verbeek, 2006). As Robertson (2006) argues:

> *Some solutions enhance the possibilities for human agency, others*
> *diminish it. This means that there can be a moral basis for choosing*
> *between alternative interaction design decisions that might otherwise*
> *be considered equivalent in terms of the functionality and usability of*
> *the technology.* ( p.49)

While we may intend to build a system in response to stakeholders' needs, our designs themselves have an effect on the way people are able, or encouraged, to act in the world. Equally, the methods, tools and techniques we choose to use also shape how it is that people can participate in design. Particular kinds of design methods and methodological approaches privilege participation while others may not and these assumptions about participation can carry forward into use.

### 2.1.4  Design is Situated

Finally, it is a premise of this thesis that design is a discipline constituted in the actual, and the particular (Buchanan, 1992; Schön, 1983; Stolterman, 2008). *Doing* design means dealing with specific, concrete situations. For this reason design has been labelled as complex (Stolterman, 2008), messy (Schön, 1983) and wicked (Buchanan, 1992). Designers are required to accommodate the specific and unique conditions of the task at hand (Stolterman, 2008). Importantly, design is not prescriptive. Rather, design is a process of learning, iteration, reflection, reframing and negotiation with the specificities of the world (Schön, 1983). This understanding of the situated nature of design practice impacts on how we consider, and go about doing, research in the realm of design.

These four foundational stances on design inspire and orientate the positions on Design Research, methods and participation outlined in the remainder of this chapter and motivate both the research questions and the approach to investigating those questions documented in this thesis.

## 2.2  Design and Research

> *Design as a discipline means design studied on its own terms, within*
> *its own rigorous culture, based on a reflective practice of designing.*
> (Cross, 2007, p. 4)

Design Research is still in the process of establishing itself as an academic research discipline (Davis, 2008; Dorst, 2008). It has gone through a number of evolutions in its attempts to demonstrate its rigour and validity as a domain worthy of academic research. Much of the early years were spent in an effort to align design to science (Cross, 2001). However a scientific model was found inadequate for the purposes of dealing with the complexities of design (ibid). Science generally seeks to describe or predict phenomena irrespective of context or situation (Forlizzi, 2008). In contrast, design (and therefore Design Research) deals with human interactions. The situations that take our focus as designers contain a great deal of uncertainty and, as noted above, are necessarily embedded in the specific and the particular (Forlizzi, 2008; Swann, 2002).

In a survey of Design Research over the last 40 years Cross (2007) suggests that design 'came of age' in the 1980s, severing the connections with the 'science of design' dialogues that had dominated the previous two decades. While arguments for a 'science' of Design Research can still be found in some contemporary literature, the emphasis in Design Research discourse since the 1980s has largely moved beyond this. The focus of more contemporary design theory is on the development of Design Research as a discipline that responds to the social, situated and flexible nature of design (Buchanan, 2001; Cross, 1999; Nelson & Stolterman, 2003).

As such there is a growing body of work that contends that design as a discipline has the capacity to maintain its own research practice, instead of being reliant on methods or frameworks of other (more established) disciplines such as science or humanities (e.g., Haseman, 2006; Wolf, Rode, Sussman & Kellogg, 2006). According to Cross (1999), Design Research is concerned with:

> *...forms of knowledge peculiar to the awareness and ability of a*
> *designer, just as other intellectual cultures in the sciences and the*
> *arts concentrate on the forms of knowledge particular to the scientist*
> *or the artist.* (p. 5)

Design has its own distinct intellectual culture, and its own 'designerly ways of knowing' (Cross, 2001). In seeking a philosophical perspective that supports this approach to Design Research many researchers in the field of technology design have drawn upon phenomenology. The emphasis on experience that constitutes phenomenology as a philosophical approach allows us to stay connected to, and explicate, the particularities of design and use (Bannon, 2005).

### 2.2.1 Phenomenology

As a practice of philosophy, Phenomenology has been interpreted in different ways by its various proponents including Husserl, Heidegger, Merleau-Ponty and Sartre (Moran, 2000). However its common thread is the emphasis on an examination and understanding of the world through our experience of it (ibid). Rather than imposing a preconceived idea or theory on our experience in advance, phenomena are understood from within (ibid). The world precedes knowledge and is always *already there* before reflection begins (Merleau-Ponty, 1962).

Moran (2000) states that:

> *The program of phenomenology sought to reinvigorate philosophy by*
> *returning it to the life of the living human subject…this call to renew*
> *philosophy went hand in hand with an appeal to return to concrete,*
> *lived human experience in all its richness.* (p.5)

The focus on actual human experience and the specificities of everyday practice as the source of knowledge building make phenomenology a natural start point for those concerned with the situated and messy practices of design and use. As such, numerous significant works in computing and technology design have taken phenomenology as their start point for understanding the human experience of, and relationship to, technological artefacts (Bannon, 2005). For example, Winograd and Flores (1986) call upon Heidegger's philosophy of technology in their frequently cited book *Understanding Computers and Cognition*. This is a seminal work in the field that has greatly influenced human-centred approaches to design (Bannon, 2005). In a similarly significant work *Work Orientated Design of Computer Artifacts*, Ehn (1988), also draws on Heidegger's philosophy of technology. Ehn takes a phenomenological perspective to develop his focus on the importance of the 'everydayness of use' (Bannon, 2005). Ehn's work has been foundational in the Participatory Design movement, which in itself could be considered a phenomenological approach to design (Robertson, 2002). In another key HCI text *Where the Action is*, Dourish (2001) draws upon phenomenology to conceptualise user interface design and use as 'embodied interaction'. Robertson (1997) used Merleau-Ponty's account of embodied human experiences as the start point for an investigation into supporting cooperative design work over distance. Loke (2008) also took a phenomenological perspective based on Merleau-Ponty and the work of Sheets-Johnstone in her research into dancers, and accessing the felt experience of the moving body in interaction design.

Phenomenology privileges lived experience, positing that our primary access to the world comes from practical involvement (Winograd & Flores, 1986). Rather than extrapolating the findings from an individual case or cases to theorise more generally, we see the general in the individual (Alvesson & Sköldberg, 2000). In phenomenology it is experiential understandings that take priority (Moran, 2000; Robertson, 2002). In this thesis phenomenology provides a theoretical framework for understanding the practice of design, as well as a perspective on how we might investigate that practice. It

also provides a perspective on the necessary dynamic between practice and theory that is helpful when navigating between the two domains of design; Design Research in an academic sense and professional design practice.

### 2.2.2  Two Domains of Design

> *Jon: ...how is it that professional designers, strategists, and managers can do their work without the larger intellectual context of theory and academic discourse?*
>
> *Richard: ...many professionals have neither the time nor the inclination to understand the relevance of theory and academic discourse. And, of course, sometimes—or perhaps often—there is little relevance, which lowers that inclination even more.* (Anderson & Kolko, 2009, p.80)

Doing Design Research that makes a direct contribution to professional design practice requires us to engage with the relationship between design in industry and design in academia (Ehn, 1988; Stolterman, 2008). The above excerpt is taken from a discussion in the March/April 2009 edition of *interactions*, an online magazine from the ACM intended as a publishing venue for practitioners. The editors of the magazine, Richard Anderson and Jon Kolko, highlight the tension between academic knowledge and industry practice. As the above dialogue suggests, the two design domains of industry and academia have traditionally remained relatively separate, and at times oblivious to the activities of the other (Rust et al., 2007). According to Anderson & Kolko (2009) many practitioners work in ignorance of a great array of potentially useful theoretical resources. Stolterman (2008) and Rogers (2004) also observe that Design Research done in academic contexts often has little uptake in industry.

A lack of understanding or collaboration between these two locations of design has also been reflected in my personal experience as a practitioner and researcher. Working across both domains there is at times little connection between the two spaces, or alternatively, efforts around similar issues fail to acknowledge the potentially beneficial insights of the other. Hobbs, Fenn and Resmini (2010) make a similar observation in arguing for the value of Design Research to 'maturing the practice' of User Experience

Design[1]. A desire for a more reciprocal relationship between these design contexts is visible in a range of design literature (e.g., Anderson & Kolko, 2009; Laurel, 2003; Sanders, 2008; Stolterman, 2008; Swann, 2002; Wolf et al., 2006). The differences between the two fields and the benefits of developing a stronger relationship between the two are further explored below.

In discussing the role of research, Cross (1999) states:

> *The whole point of doing research is to extract reliable knowledge*
> *from either the natural or the artificial world, and to make that*
> *knowledge available to others in reusable form.* (p.9)

As Cross suggests, Design Research has as its focus the development of a body of knowledge *about* design; space, time and resources are allocated to investigate, experiment, reflect and analyse aspects of design or designing. Among other things this allows for the development and dissemination of knowledge and collective learning about specific areas of design as well as overarching theories and frameworks that can help us understand broader shifts and connections between things (Davis, 2008; Hobbs et al., 2010). On the other hand, design practice in industry lacks the resources for such activity and tends to be focused on specific project outcomes. Arguing for the role of research in developing the field of User Experience and Information Architecture, Hobbs et al. (2010) describe how the nature of the professional field limits its ability to support the development of the discipline:

> *The informal structures of a community of practice are limited in*
> *their ability to store and disseminate knowledge; the validation of*
> *knowledge is not rigorous; opinion and knowledge are often*
> *confused; communities of practice tend to be impermanent; there is a*
> *lack of real progress made in the ongoing discourses (discussions are*
> *circular)...*(p.37)

Despite its more transient nature professional design practice does help to motivate and orientate research questions that respond to new patterns in use. Sevaldson (2010)

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1 The terms Interaction Design and User Experience Design are often used interchangeably within industry, however the latter is increasingly more common.

argues that Design Research based in design practice results in new knowledge that can only be found within design practice.

The current low level of dialogue between the two spaces can in part be attributed to the proprietary nature of commercial practice. Davis (2008) alludes to how such commercial sensitivities discourage practitioners (and it, could be argued, companies) from sharing internal learning, though companies such as Ideo, Make Tools, Adaptive Path, and Cheskin are obvious exceptions to this. Yee (2007) suggests the lack of design practitioners who straddle both academic and commercial domains also contributes to the problem. At the same time, academic research outputs are necessarily designed for a particular audience and context and their format can be somewhat inaccessible for practitioners with little time to locate, read and follow such literature. Lunenfield (2003) argues that in order for design practitioners to understand their own work within the historical context in which it exists, design history, theory and criticism needs to be available in a non-academic environment. As a design practitioner and researcher, my intention in this thesis is to make a contribution to research that helps to bridge both domains of design. Part of the work of this research has been to document the activity of translating and actively negotiating the use of techniques and methodological approaches from academic literature into practice and to find ways to make accessible to other practitioners existing academic knowledge about methods.

### 2.2.3  Developing Designerly Methods

In the paper *The Nature of Design Practice and Implications for Interaction Design Research*, Stolterman (2008) focuses on the gap between design methods developed in research contexts and those actually *used by practitioners*. Rogers (2004), Sanders (2006) and Stolterman (2008) all argue that methods developed in a research context are not necessarily easily translated into design practice. Rogers (2004) suggests that this is partly due to the different methodological underpinnings between the two design spaces. Sanders (2006) also distinguishes between design-led methods developed out of design practice, and research-led methods developed largely in academic contexts. Stolterman (2008) proposes that the latter fail to take into account the designerly nature of design practice, arguing that design methods that are of value to practitioners are those that are grounded in an understanding of design practice.

According to a study by Rogers (2004) and follow-up research by Stolterman et al. (2008), the kinds of methods being taken up by designers include methods like storyboards, prototyping, scenarios, use cases, cultural probes and brainstorming. Stolterman (2008) argues that what differentiates these methods from those such as GOMs, which are not taken up by design practitioners, is that they embrace the creative nature of design. Stolterman et al. (2008) use the term 'designerly' as a way of describing methods, tools and techniques that support design activity in way that is appreciated by practising designers.  'Designerly' methods are those that extend the natural abilities of creative designers, as opposed to those that are prescriptive such as engineering models of design, or those that require sophisticated theoretical knowledge. The kinds of methods that are taken up by practitioners then could be considered those that most readily connect with the way we already practise design. These observations reflect my own experiences of practice, where methods that revolve around sketching, storytelling (such as scenarios and personas), thinking-through-doing (such as prototyping) and visual or spatial analysis (such as affinity mapping and card sorting) have shown themselves to be accessible to other practitioners, actionable, and relatively easily introduced into practice.

The notion of designerly methods is important to this thesis. As a concept it helps to articulate why some methods and techniques are more popular in practice and orientates the development of new methods for practice. It also forms one of the perspectives from which methods and techniques explored in this thesis are discussed and evaluated. While the central research questions of the thesis are around notions of participation and social technologies, the vehicle for supporting participation is in part design methods and the empirical research in this thesis involves the development of a design research method for use in practice. To increase the likelihood that such methods would be useful, usable and *used* by designers, it should be possible to recognise within them designerly qualities. Based on Stolterman's research, designerly methods can be characterised as exploratory, creative, tangible, generative and visual methods. This correlates to my own experiences as a practitioner working in design, and to other literature and studies on early generative design methods (e.g., Gaver et al., 1999; Stappers & Sanders, 2003). Identifying examples of designerly qualities and explicating how they are being supported (or not) through different methods and techniques is covered in more detail in the following chapter.

Stolterman (2008) suggests that the development of rich and rigorous design methods relevant to practitioners can be achieved through practice-led research with a sound philosophical basis. In this thesis a phenomenologically inspired approach to Design Research, that starts with our experience of practice, provides a theoretical approach to research that keeps us connected to design practice. Practice-led research becomes the methodological approach through which grounded contributions to both design practice and theory can be made and bridges between the two domains of design can be built.

## 2.3   Practice-led Design Research

Research *through* practice, a phrase attributed to both Archer (1995) and Frayling (1993), depending on the literature, is increasingly being understood as a valid method for exploring and developing knowledge about design. Rust et al. (2007) propose practice as the natural arena for inquiry for Design Research, arguing this is an extension of learning-in-practice common to design, art and architecture. As Sevaldson (2010) suggests, such an approach to Design Research

> *emphasizes insider perspectives, a generative approach, operates in*
> *rich and multiple layers and relates to real life contexts. The output is*
> *new communicable knowledge that is only found within design*
> *practice.* (p.8)

Design Research that takes this approach to investigating design is generally described as either practice-led or practice-based research (Scrivener & Chapman, 2004; Yee, 2007). While some authors choose to differentiate between the two terms (e.g., Candy, 2006), the Arts & Humanities Research Council's (AHRC) major survey of Practice-Led Research in the UK and internationally does not, arguing that there is no one clear definition of practice-led research (Rust et al., 2007). As such the terms practice-based and practice-led research are used interchangeably in this thesis.

Traditionally the practices of design and research have been considered quite distinct from one another (Scrivener, 2000b). Practice-led research instigates and negotiates a much closer, reflexive relationship between the two. From a methodological viewpoint, both the terms practice-led and practice-based research have been used within design and art to refer to multiple ideas and meanings depending on the discipline, context and focus of the investigation (Rust et al., 2007). The common thread is that practice becomes the location, start point or mode of research. Practice informs knowledge

which in turn informs practice (Hobbs et al., 2010). In order to understand how design practice itself becomes a mode of research, it is useful to start by first explicating the nature of design practice and defining a language through which it can be discussed and reflected upon. Schön's (1983) theories of the Reflective Practitioner provide us with the theoretical tools to do this.

### 2.3.1  Reflective Practitioner

Schön's (1983) theories on design have been fundamental to many descriptions of design that seek to explicate the often implicit and tacit aspects of practice (e.g., Loke, 2008; Ludvigsen, 2006; Sengers et al., 2005; Stolterman, 2008; Wolf et al., 2006). Stolterman (2008) posits that Schön's work has been taken up extensively by designers because Schön "*managed to find a way to describe design practice that can be recognized by practicing designers…*" (p.61).  Similarly, according to Cross (2001), Schön's notion of reflective practice allows us to *"put trust in the abilities displayed by competent practitioners*" and tries to "*explicate those competencies rather than supplant them*" (p.52).

Schön (1983) captures the investigative nature of design, characterising design as the exploration of a problem space, rather than a response to a clear hypothesis: problem-setting rather than problem-solving. Importantly Schön (ibid) names and makes available for discussion processes within design that are often thought of as inexplicable, in particular designers' 'tacit' knowledge. Tacit knowledge, first presented by Polanyi (1966), assumes "*we can know more than we can tell*". Tacit knowledge is typically difficult to formalise and describe (Spinuzzi, 2005), but acknowledging how embodying such knowledge shapes us, and how the world presents itself to us, is essential to understanding how design is practiced by design professionals. As Schön (1983) explains:

> *When we go about spontaneous, intuitive performance of the actions*
> *of everyday life, we show ourselves to be knowledgeable in a special*
> *way. Often we cannot say what it is that we know… the workaday life*
> *of the professional depends on tacit knowing-in-action.* (pp. 49-50)

Schön's concept of *knowing-in-action* articulates how our design 'knowing' is embedded implicitly *in* our actions (Scrivener, 2000b). At the same time, Schön proposed that as reflective practitioners we engage in a constant conversation with the

design situation, and that the design situation 'talks back' to us (Wolf et al., 2006). We apply our existing knowledge as designers to propel design forward. When our moves result in something unexpected or unwelcomed we step back, evaluate, and then move forward again with a modified stance (Ehn, 1988). It is this reflection, this conversation between designer and situation, that allows us to move forward in iterative cycles of refinement. Schön terms this *reflection-in-action* (1983). Sengers et al. (2005) describe this process of reflection as an active, visceral process rather than one of detached cerebral analysis.

*Reflection-in-action* that occurs naturally throughout the design process is complemented by the more conscious activity of *reflection-on-action* (Schön, 1983). This occurs at break points, where we are able to consciously reflect back on, and perhaps share or document, aspects of practice as we have experienced it. As designers we oscillate between these two states of involved design and detached reflection (Ehn, 1988). Similarly as we move through a project we come to learn more about the subject matter and the problem domain (Schön, 1983). The talkback from the situation can, in turn, lead to a reframing of the problem. This articulation of the design process is at the centre of many methodological discussions about practice-led or practice-based Design Research studies (e.g., Rust et al., 2007; Scrivener & Chapman, 2004; Scrivener, 2000b).

## 2.3.2  A Model for Reflective Practice-led Design Research

Scrivener has used Schön's theories of reflective practice, and in particular the activities of *reflection-in-action* and *reflection-on-action,* to develop a model for practice-led research in art and design (Scrivener & Chapman, 2004; Scrivener, 2000b). Scrivener (2000b) suggests that by making our naturally occurring episodes of reflection more public, and their documentation more systematic, the practice of design also becomes a rigorous research practice. According to Scrivener (ibid) the difference between design and Design Research in practice-based research exists only in the extent to which reflection in, and on, action and practice, and reflection on reflection are conducted. He employs Schön's notion of the reflective practitioner to explicate our naturally occurring processes of reflection, as well as to make them available for scrutiny (Scrivener, 2000a; Scrivener & Chapman, 2004).

Scrivener's model (depicted in Figure 2) differentiates between reflection-in-action-and-practice (RIAP) that takes place during a 'work episode', from reflection-on-action-and-practice (ROAP) that takes place at a break point (e.g., the end of the day or week) or at the end of the activity. He also identifies three significant stages of reflection during the research process. These are pre-project, within project, and post reflection (Scrivener, 2000a).
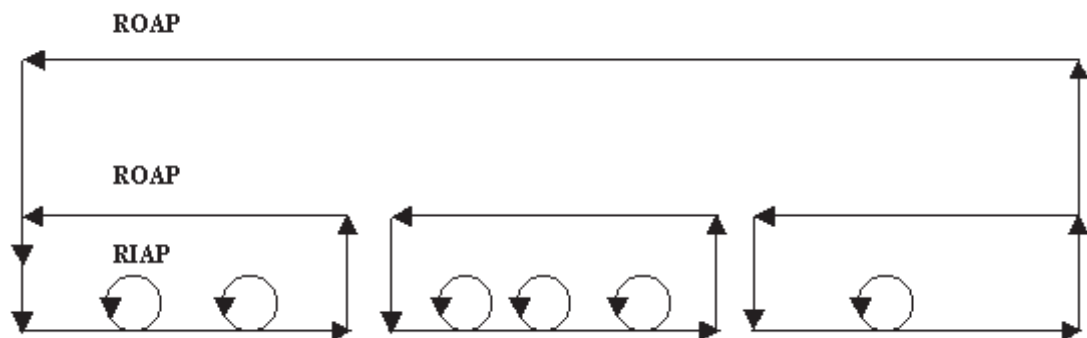


**Figure 2. A reproduction of Scrivener's model of reflection in and on design episodes and projects**

[Production Note: The author gratefully acknowledges the permission of the University of Hertfordshire to reproduce Figure 2 on page 34, Stephen Scrivener's model for practice-led research in art and design.]

Usually these processes of reflection-in-action and reflection-on-action are private to the practitioner (Scrivener, 2000b). To elevate this everyday design practice to Design Research, public and systematic documentation is required (ibid). This documentation may account for the decisions, reflections and learnings of the designer throughout the process, as well as identify the acts through which such reflection occurs e.g., writing up descriptions of the work. Scrivener's model for practice-led research provides a framework for Design Research that is located in and driven by the nature of practice. I have used this as a model for articulating how the practice-led research undertaken in this thesis was enabled and Chapter 4 provides more detail of how this approach has been applied.

### 2.3.3  Rigour in Design Research

Doctoral studies in design are relatively new and the structures to support practice-led approaches to Design Research are still being developed (Rust et al., 2007). Unlike other more established disciplines, there is, as yet, no agreed or shared set of principles. For this reason, Scrivener and Chapman (2004) note that most doctoral students doing practice-led research are in the position of having to consider *"both methodology and*

*methodological rigor*". For examples of other doctoral research that address this issue see Loke (2008), Ludvigsen (2006), McLaughlin (2008) and Sleeswijk Visser (2009). Schön maintained that design carries within it its own distinctive norms of rigour (Scrivener, 2000b). In writing about rigour in practice-based research, Biggs and Büchler (2007) suggest that what makes such research rigorous is dictated by what it means to do research *about* design. They argue that the obligations of rigour in *all* forms of research are, at their most basic, met by the practitioners' ability to demonstrate the validity of their selected method to deliver the research solution (ibid). They suggest that establishing rigour in Design Research is no different to that of other fields, because:

> *Rigor in research is based upon making explicit the necessity of a particular method, and that is what legitimizes the whole process…rigor in research is the strength of the chain of reasoning, and that has to be judged in the context of the question and the answer, for example, in the context of design as opposed to the context of physics or philosophy research.* (Biggs & Büchler, 2007, p.69)

What this suggests is that rigour in Design Research is demonstrated by a research approach that takes into account the nature and practice of design as *flexible, social, political* and *situated*. Practice-led research allows the designer/researcher to be accountable to these qualities of design.

## 2.4   Participation in Design

At the beginning of the chapter the politics of design and our corresponding moral responsibility as designers was established as a core premise of this thesis. As a design tradition Participatory Design (PD) also has its politics up front. PD is built on the premise that as domain experts users should be involved in the process of design (Schuler & Namioka, 1993). Users are empowered as co-designers that actively contribute to the shaping of the technology throughout the design process (Greenbaum & Kyng, 1991) and design is understood as *completed in use* (Balka & Wagner, 2006; Dittrich, Eriksén & Hansson, 2002; Henderson & Kyng, 1991). The origins of Participatory Design (PD) are grounded in activism and attempts to democratise technology, as workers pushed for input into changes in their workplace in the late 60s

in Scandinavia (Schuler & Namioka, 1993). While PD and the contexts within which it is practised have evolved much since its inception in Scandinavian software development in the 60's, the overarching tenet of PD is still participation within the design process of the people affected by the technology being designed. PD works from the premise that it is our obligation as designers to create conditions *for* participation in design (Bødker, 1994). PD has always been, by definition, practice-based because of its focus on participation because it recognises the expertise of those who do the activity.

According to Kensing and Blomberg (1998) PD research is largely concerned with three things: the politics of design; the nature of participation; and methods, tools and techniques for participation. Of these three aspects it is the latter that has been most widely taken up within HCI and mainstream design practices.

### 2.4.1  Participatory Design Methods

One of the goals of Participatory Design methods is to support the co-construction of understandings of practice between the design researcher and the user (Kensing & Blomberg, 1998). Ethnographically inspired methods such as observations, interviews and visualisations have been used to achieve this (ibid). In addition methods such as co-operative prototyping (Bødker & Grønbæk, 1991a), future workshops (Brandt & Grunnet, 2000; Kensing & Madsen, 1991), scenarios (Bødker, 2000), and design games (Ehn & Kyng, 1991) have been developed to allow both designers and users hands-on experimentation with design ideas. Participatory Design methods place value in play, co-operative and mutual learning, creating visions of the future and design-by-doing (participation through hands on-experience) (Greenbaum & Kyng, 1991). Rather than focusing on data collection about users, Ehn (1988) describes these approaches as practice-research. The methods used in PD are a form of intervention that enable users to experience, reflect on and share otherwise implicit knowledge, and then use that knowledge to act (Bødker & Iversen, 2002). They prioritise our obligation as designers to privilege openness, sociability and flexibility in our designs (Schuler & Namioka, 1993).

As noted above, PD methods such as prototyping and scenarios have had wide uptake in more mainstream design practice (Friedman, Borning, Davis, Gill, Jr., Kriplean & Lin, 2008). Building on Stolterman's (2008) argument that design methods relevant to practitioners should be grounded in design practice, the successful uptake of PD

methods and their designerly nature can be understood as a reflection of their basis in design practice. They enable us as designers to engage our natural creative and explorative abilities whilst also providing opportunities for users and stakeholders to participate in similar ways. In the design of Mobile Diaries documented in this thesis, I have sought to embed participatory and designerly qualities. How these might be translated into the context of self-reporting is explored further in Chapter 3 and makes up part of the evaluation of the method in Chapters 5 and 6.

While methods from PD have made their way into mainstream design practice, the use of these participatory methods does not necessarily equate to a participatory design process as first intended. Without a broader commitment to the politics of PD, these methods become ways of *involving the user*, without necessarily giving them an active role in the design process (Spinuzzi, 2002). The dilution of the political intentions of PD as it moves beyond its democratically driven source, and the ways in which PD has been interpreted in different contexts is the subject of a range of PD literature (e.g., Beck, 2002; Bergvall-Kåreborn & Ståhlbröst, 2008; Bødker & Iversen, 2002; Muller, Blomberg, Carter, Dykstra, Madsen & Greenbaum, 1991; Spinuzzi, 2002). It has been important for those seeking to return to or maintain the original intentions of PD to differentiate between participation where the intention is to enable users to influence design (Kensing & Blomberg, 1998), and that which represents 'mere' user involvement in design (Bødker & Iversen, 2002; Muller, Wildman & White, 1992). In the latter, users can become more like an information resource for designers to, for example, gain an increase in sales (Brereton & Buur, 2008).

As suggested by the above critique, while a self-reporting technique might be participatory in nature, the capacity for them to be constitutive of Participatory Design depends on the broader framework within which they are used and, in particular, the influence participants have over the actual shape of design in an ongoing sense. The politics and priorities inherent in commercial contexts can make this broader political commitment particularly problematic to support (Balka, 2006; Loi, 2008; Rönkkö, Hellman & Dittrich, 2008). Equally, while Participatory Design has long conceptualised design research as going beyond data collection to becoming participatory action research (Ehn, 1988), actually translating this into commercial practice requires negotiation. This thesis documents some of the new opportunities for participation in the design of social technologies presented by methods such as Mobile Diaries, as well

as the challenges encountered in supporting such ongoing participation in a particular practice-led context (detailed in Chapter 9).

### 2.4.2  Participatory Design as an Analytical Frame

Kensing and Blomberg (1998) characterise PD as both a maturing area of research and an evolving practice of design. Applications of PD have expanded beyond their original workplace settings into a range of other design domains and contexts. One of the first to do this was Robertson's (1996) Participatory Design Conference paper on off-the-shelf technology in small design agencies and since then many more examples have followed (e.g., Boyd-Graber, Nikolova, Moffatt†, Kin, Lee, Mackey, Tremaine & Klawe, 2006; DiSalvo et al., 2007; DiSalvo, Nourbakhsh, Holstius, Akin & Louw, 2008; Dittrich et al., 2002; Harvard, 2002; Karasti & Syrjänen, 2004; Robertson, Mansfield & Loke, 2006; Somerville, 2007; Taxén, 2004). Social technologies are another natural focus for PD and, as Lievrouw (2006) points out, Participatory Design in the context of social technologies becomes recursive:

> *...participation is both the means of designing usable and meaningful systems and content, and...the goal or outcome of well-designed technologies.* (p.122)

Several researchers have noted the need to extend PD into the areas represented by social technologies and have begun to map out the challenges and opportunities there (e.g., Bergvall-Kåreborn & Ståhlbröst, 2008; Binder et al., 2008a; Binder, Brandt & Gregory, 2008b; Brandt, Messeter & Binder, 2008; Brereton & Buur, 2008; Ehn, 2008; Lievrouw, 2006). Some of these challenges and opportunities are explored in further detail in Chapter 3. The analysis of social technologies in this thesis is motivated by, and seeks to contribute to, this ongoing research into theories and methods for supporting and conceptualising the design of social technologies within PD.

## 2.5   Summary

The positions on design, Design Research, design methods and participation outlined in this chapter set the scene for a particular stance on design. They set out assumptions, responsibilities and accountabilities pertinent to both design practice and research about design, establish the phenomenological perspective on Design Research taken in this thesis, and provide an argument for the value of academic Design Research that is

deeply grounded in practice. The work of Stolterman (2008) and Schön (1983) in particular sensitise us to choices we might make as designers about methods, and provide tools for recognising 'designerly methods' suited to professional design practice. Participatory Design provides perspectives and analytical tools through which we can ask, and answer, the question of how, and in what ways, participation is being enabled in the design process, and the role of particular tools and methods within that. As such, the theoretical and methodological concepts presented in this chapter provide a lens through which participation, design and design methods are discussed, analysed and evaluated in the following chapters.

# 3

# Early Design Research, Self-reporting Methods and Social Technologies: A Review

This chapter provides a review of related literature on the topics that form the focus of this research: early design research, self-reporting methods and social technologies. The growing interest in generative, designerly methods is explored and a background to self-reporting as a design method is provided. The evolution of self-reporting through the appropriation of everyday, social technologies is also surveyed. The discussion and analysis focuses on how choices about methods and tools impact on the experiences of designers and participants and how participation is currently framed and supported. The chapter also explores emerging concepts and considerations relevant to the early design of social technologies themselves and the focus they bring to participation. The concept of seeding is explored, and key studies from Participatory Design are examined, to better understand the nature of design and participation in this context, as well as ways in which design practitioners are responding.

The chapter begins with a discussion of the principles that underlie generative design research methods and techniques used in the early stages of design. Different approaches to self-reporting as a method for contextual data collection are then discussed through two examples common to design and HCI; diaries and probes. This is followed by examples of how self-reporting is being extended and augmented through the appropriation of everyday technologies as tools for research. The next section focuses on the challenges and considerations presented by social technologies themselves as a subject for design. Various considerations for designers working in community settings in particular are identified. The use by researchers of the concept of seeding, and its value as a metaphor for articulating and responding to these concerns for early design research is also explored. The final section looks at opportunities for design and participation 'in the wild' emerging in response to, and as a result of, social technologies, and connects this to opportunities posed by the co-opting of social technologies as self-reporting tools.

## 3.1    Early Design Research

> *To design is to have a 'project'. Getting the design process moving is*
> *to expose and transform this 'project' in a conversation with those*
> *that it might eventually affect.* (Buur, Binder & Brandt, 2000, p.16)

The domain being investigated in this thesis is the early, exploratory phase of the design process often referred to as the 'fuzzy front end' (Rhea, 2003; Sanders & Stappers, 2008). At the CD agency, this early, exploratory phase of design is known as the 'scoping phase'. At this point in the design process the project is yet to be defined. The emphasis is on gaining insights and exploring possibilities, rather than collecting specific data or evaluating or validating specific user requirements or priorities (Moggridge, 2008; Rhea, 2003; Sanders, 2005; Zimmerman et al., 2007). As designers we are seeking to gain a deeper appreciation of, and sensitivity to, the new design situation and, as the opening quote suggests, engage with the stakeholders who may be affected by the design.

Sanders and Stappers (2008) argue that while design research methods to study existing products in use, or to evaluate new products, have existed for some time, generative methods for the early stages of design aimed at generating ideas or uncovering new product opportunities with users have been the last to develop. Over the last decade

work by Liz Sanders (and that of co-researchers at Delft) has been particularly influential in shaping the face of generative design research and its associated methods. Her evolving map of design research (Sanders, 2006; Sanders, 2008) has become a commonly referenced resource for naming, describing, and locating design research methods in relation to various traditions. According to Sanders (2005), research-led methods often focus on the systematic collection of data for analysis, whereas more generative, design-led methods put emphasis on helping people to express themselves. While traditional research might have focused on informing design, early generative design research has the goal of informing *and* inspiring design (Sanders, 2005).

Generative design methods look beyond the specific product being designed, and seek to enable broader insights into contexts, actions, feelings, attitudes and expectations (Mattelmäki & Battarbee, 2002; Sleeswijk Visser et al., 2005). They put emphasis on enabling participants to share a rich, immersive picture of their world. Sleeswijk Visser (2005) (also of Delft) makes the distinction between methods such as interviews and observations which make available explicit and observable knowledge about contexts, and generative methods which aim to make available aspects of people's worlds that would otherwise remain implicit. Generative methods are designed to "*allow us to gain access to a hidden world of user experience*" (Sleeswijk Visser, 2009, p.122).

Generative methods build on the principles of participatory design with their emphasis on actual experience and in seeking ways in which to support participants to reflect on, and make available, otherwise implicit aspects of their lives (though they do not necessarily embody the same commitment to participation). At the heart of participatory design methods such as scenarios (Bødker, 2000), prototypes (Ehn & Sjogren, 1991; Spinuzzi, 2005) and design games (Ehn, 1988) is work to make the 'everyday' accessible to both participants and designers as part of facilitating conversation, exploration and co-design. As Greenbaum and Madsen (1993) suggest, people are not sources of explicit knowledge, each of us experiences the world differently. These different participatory methods act as interventions, designed to help the researcher and the user co-construct an understanding of practice (Kensing & Blomberg, 1998).

Generative methods incorporate these principles, often including activities such as collage, mapping, building things, role-play with props and visual scenarios, which become tools for expression, sharing and reflection. The outputs are personal, subjective and tangible objects that can be used as a concrete resource by designers and

participants for inspiring and informing design. Sleeswijk Visser (2009) emphasises the value of this personalised material; actual images, quotes and sketches created by participants to enable designers to feel connected to people's everyday. Such material helps designers build empathy for the lives and experiences of participants and facilitates dialogue between participants and designers (Kouprie & Sleeswijk Visser, 2009; Mattelmäki, 2005; Mattelmäki & Battarbee, 2002). It becomes a 'shared design language' that design researchers and stakeholders can use to communicate with each other (Sanders, 2006).

Examples of generative methods include Cultural Probes (Gaver et al., 1999) (discussed in more detail in the following section), generative tools (Sanders, 1992; Stappers & Sanders, 2003) and Context Mapping (Sleeswijk Visser et al., 2005). Generative tools are visual and verbal tool kits created to assist participants in expressing themselves (Sanders, 2000) and through which design researchers and participants can communicate visually and directly (Sanders, 2006). Context Mapping takes from both probes and generative tools and is a framework for mapping, and then communicating, the context of people's interactions with products (Sleeswijk Visser, 2009). In order to support the process of reflection, and to access the more private, personal and domestic aspects of people's lives, generative activities are often combined with forms of self-reporting. Cultural probes (Gaver et al., 1999) are in themselves a form of self-documentation, whilst generative tools (Sanders, 2001; Stappers & Sanders, 2003) and Context Mapping (Sleeswijk Visser et al., 2005) usually include some form of self-reporting to 'sensitise' participants prior to workshops.

## 3.2   Self-reporting

The section begins with a brief definition of self-reporting as a design research method before giving an overview of two different self-reporting methods common to HCI and design: diaries and probes. Attention is paid to the epistemological and methodological heritage of these approaches, the choices they offer designers and participants for different forms of participation, and the role of different tools and techniques in this participation. This is followed by a review of self-reporting techniques which together indicate the trend in self-reporting to co-opt everyday technologies as research tools. The opportunities for research these approaches create are summarised at the end of the section.

The aim of this section is not to provide an exhaustive review of self-reporting methods. Rather the focus is on, firstly, identifying key aspects of how self-reporting methods are defined in terms of the experiences they enable for participants and designers and the design outcomes they support. Secondly, the section considers how these methods are evolving in response to, and as a result of, the ubiquitousness of technology and its use in personal, domestic, mobile and social settings.

### 3.2.1  Self-reporting as a Method for Research

Self-reporting is a generic term for a range of techniques that have a long history across disciplines such as health, psychology and education and have more recently been adopted into HCI studies and related areas (Palen & Salzman, 2002). Self-reporting can be described as an intervention into people's daily lives that asks them to become observers of their own practices, thoughts, attitudes and/or emotions. This allows for the gathering of contextual 'data' over time and in situ without the physical presence of researchers (Reis, 1983). In situ methods allow researchers access to the everyday lives of stakeholders while research conducted over time is critical to measuring usefulness, seeing patterns of use or understanding how technologies might be appropriated by people (Blomberg, Burrell & Guest, 2003). Self-reporting methods are also useful as a way to initiate and build up a relationship with the stakeholder community (Crabtree, Hemmings, Rodden, Cheverst, Clarke, Drewsbury, Hughes & Rouncefield, 2003; Gaver, Boucher, Pennington & Walker, 2004). Self-reporting is complementary, though quite different, to face-to-face methods such as interviews or workshops because it allows people to participate in design from within the context of their ongoing lives. However it also puts the burden of data collection on participants, and the workload associated with self-reporting for participants can be considered a limitation of the approach (Carter & Mankoff, 2005; Graham, Rouncefield, Gibbs, Vetere & Cheverst, 2007a; Lucero & Mattelmäki, 2007).

Illustration 1 draws attention to the key attributes of self-reporting as a contextual method.
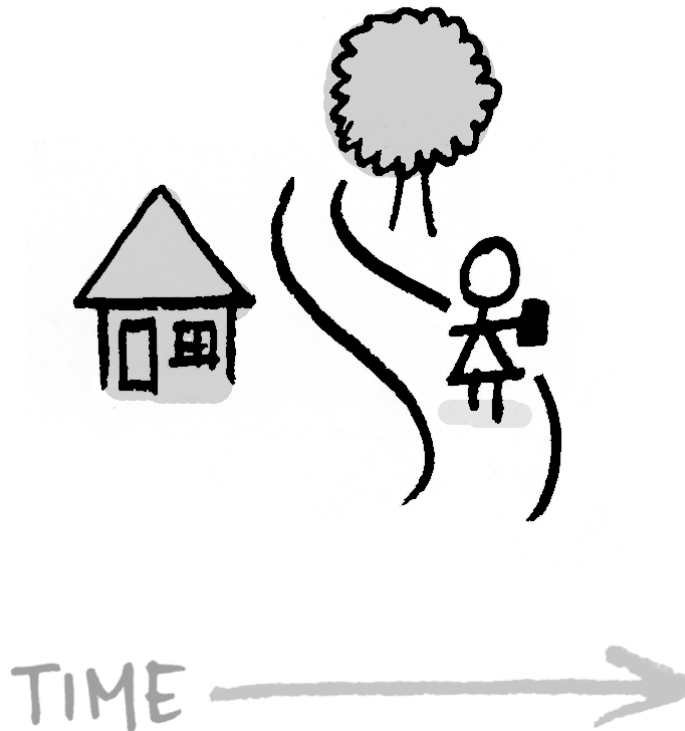


**Illustration 1. Key aspects of self-reporting**

Self-reporting is a contextual research method where data collection is conducted by the participant, in situ and over time, as part of their daily life.

Diaries and probes are two forms of self-reporting widely written about in HCI and design research literature (e.g., Crabtree et al., 2003; Gaver et al., 1999; Hemmings, Crabtree, Rodden, Clarke & Rouncefield, 2002; Hutchinson, Mackay, Westerlund, Bederson, Druin, Plaisant, Beaudouin-Lafon, Conversy, Evans, Hansen, Roussel, Eiderbäck, Lindquist & Sundblad, 2003; Jones & Marsden, 2006; Kuniavsky, 2003; Loi, 2005; Saffer, 2006). Traditionally diaries and probes have embodied different methodological emphasis. In practice their implementation varies widely with designers combining aspects of both approaches. Carter and Mankoff (2005) distinguish between probes and diaries by describing the former as more focused on general attitudes and social trends, while the latter favours everyday interactions. This distinction helps to emphasise the different trajectories from which these two approaches to self-reporting have evolved. The summary of each approach below emphasises how different tools, techniques and approaches to data treatment impact on the design outcomes and the

experiences of participants and designers, as well as how broader methodological commitments to participation are embedded within self-reporting as a method.

### 3.2.2  Diaries

Diaries have a long history within the social sciences as a naturalistic approach to studying social interaction, allowing access to what people do, as well as what they think and feel at different times in their daily lives (Reis, 1983). Diaries have been used to provide access into the private, personal and mobile aspects of people's lives that are often difficult to access through traditional methods such as observation or interviews. They have been particularly popular in studies of mobile practices, where the small scale of mobile technology, the mobile nature of use, and its private and personal functions can make observation inappropriate or even impossible (e.g., Carroll, Howard, Vetere, Peck & Murphy, 2002; Grinter & Eldridge, 2003; Ito, 2003; Jones & Marsden, 2006; Kjeldskov & Sage, 2004; Newcomb, Pashley & Stasko, 2003; O'Hara, Black & Lipson, 2006; O'Hara & Perry, 2001; Palen & Salzman, 2002; Tamminen, Oulasvirta, Toiskallio & Kankainen, 2003). For example, Grinter and Eldridge (2001) conducted a study into how teenagers used text messaging using a diary method. Participants logged their SMS activities in a handwritten diary giving researchers access to data where conventional direct observation was not appropriate.

Key aspects that differentiate diary studies from each other are their structure and the data collection methods used. In highly structured studies, such as with the Electronic Sampling Method (known as ESM or sometimes Beeper Studies), the goal is systematic data collection through a representative sample (Larson & Csikszentmihalyi, 1983). Participants answer survey questions delivered at random times via a pager or similar device, or are asked to log certain activities as they occur over the day. In more open-ended approaches data collection is only semi-structured around a particular topic. Participants have control over data collection and interpretation and are able to select information that they consider relevant and important (Palen & Salzman, 2002). In this way participants are recognised as experts of their own lives and are encouraged to choose what and how to represent their world. Such studies can be considered more participatory or, at least, participant-led (Carter & Mankoff, 2005). The aim is still to gain insight into daily practices and experiences, but exactly *what* is captured, is left open for interpretation by participants. While this gives participants control, it can also

lead to uncertainty on their behalf about what is relevant (Mattelmäki, 2005; Palen & Salzman, 2002).

The introspection and reflection encouraged through diary studies makes insights about daily practices available to both participants and design researchers (Blomberg et al., 2003). By documenting aspects of their life, participants gain an awareness of their own practices, rituals and decisions (ibid). This self-reflection enables rich dialogue around day-to-day activities that might otherwise go unnoticed or unreported in an interview (Palen & Salzman, 2002). Researchers using this method have noted that participants often find the reflective aspect of self-reporting rewarding (Lucero & Mattelmäki, 2007; Mattelmäki, 2005). In their study of teenagers' SMS habits Grinter and Eldridge (2001) also found that an additional awareness of personal practices could lead some participants to alter those practices, further demonstrating the interventionist nature of the method. For example, some participants reduced the number of text messages they were sending in a day (ibid). Both these outcomes of self-reporting were confirmed in the research documented in this thesis.

In terms of data collection tools, traditional diaries largely relied on participants logging handwritten entries. However these can place a significant burden of data collection on the participants and are not very practical 'on the move' (Palen & Salzman, 2002). As technology has evolved, many researchers have extended original paper diaries to include photography and other media (e.g., Brown & O'Hara, 2003; Kankainen & Oulasvirta, 2002; O'Hara & Perry, 2001; Perry, O'hara, Sellen, Brown & Harper, 2001; Tamminen et al., 2003). The use of such tools simplifies data collection for participants whilst also introducing new, more designerly, aesthetic and experiential qualities. For design researchers, images taken by participants themselves provide a direct 'window' into the participant's world. They also become a shared visual resource that can be used to promote dialogue and discussion in workshops and interviews (e.g., August, 2006a; Carter & Mankoff, 2005).

From a participant perspective the inclusion of rich visual media also significantly changes the experience of self-reporting. The potential for self-expression and representation offered by such tools is quite different to that offered by written accounts. Participants represent a view of the world through their own eyes and are also in control of how that representation is constructed. Self-photography has been used in social change research projects such as Photovoice (Wang & Burris, 1997), because of

the accessibility of visual imagery and the empowering nature of visual story-telling. In addition the act of actually taking photos is relatively easy, meaning it is a form of self-expression within reach of most people (ibid).

The brief discussion of diary techniques covered here draws attention to the capacity of self-reporting to:

- Support reflection by participants through the intervention of self-documentation
- Access insights into the mobile, private, personal spaces and practices of people's lives
- Make available visual artefacts that can be used as design resources.

It also demonstrates how the experiences of designers and participants are impacted by:

- The structure of the reports and the role of the participants in determining what and how data should be captured
- The significance of different tools to enable different types of data collection
- The potential 'workload' introduced for participants by self-reporting
- The potential uncertainty of participants about *what* to capture.

These are issues and concepts taken into consideration in the design and evaluation of the Mobile Dairy method documented in Chapters 5-7.

### 3.2.3  Probes

While diaries have been used at all points in the design process including evaluation, testing and data gathering and analysis, probes were deliberately developed for early inspirational design research, and can be considered specifically as a generative method. The original Cultural Probes were introduced by Gaver and his team in the seminal paper *Design: Cultural Probes* in 1999. Cultural Probes consist of 'probe packs' that are sent to participants and completed over time. They most often contain cameras, collage activities and various other provocations designed to induce autobiographical accounts of people's lives (Graham & Rouncefield, 2008). Probes share with diaries an emphasis on reflection, intervention, dialogue and a desire to make aspects of the everyday 'visible' as a resource for design. However, in their original form, probes were much more concerned with interpretation and playfulness and deliberately embraced ambiguity and subjectivity (Boehner et al., 2007; Gaver et al., 2004).

The emphasis on the creation of tangible, visual materials in Cultural Probes is partly about making them fun and accessible for participants (Gaver et al., 1999). They were deliberately structured to appeal to the visual and creative nature of designers. The value of the material that is produced through Cultural Probes stems from its personal and subjective nature as well as the visual, tangible form that it takes (Mattelmäki, 2005). Designers benefit from working with concrete things they can see and feel and the immediacy and accessibility of imagery means that it can be quickly scanned and absorbed (Mattelmäki & Battarbee, 2002). Importantly, such visual material also leaves room for, or even invites, designers to perform their own interpretation and sense-making (Gaver et al., 2004; Sleeswijk Visser, 2009). Probes were not designed to gather specific information, but rather to be a source of inspiration and empathy for designers (Gaver et al., 1999; Gaver et al., 2004; Mattelmäki, 2005).

Since their initial inception, probes have been widely taken up by researchers and industry alike and the term probes is now used to refer to a 'cluster of approaches' (Graham, Cheverest & Rouncefield, 2005). A range of other 'branches' of probes have developed such as empathy probes (Mattelmäki & Battarbee, 2002), technology probes (Hutchinson et al., 2003) and urban probes. See also Graham & Rouncefield (2008) for a review of the evolution of probes. However, as Boehner et al. (2007) argue, in the adaptation of probes to other contexts the initial methodological intentions have at times been lost. In their original form Cultural Probes reinforced a move away from rationalist models of users in HCI. Specifically, Cultural Probes rejected the notion of the researcher as the objective observer, embracing instead the subjective position of the designer/researcher (Boehner et al., 2007; Mattelmäki & Battarbee, 2002). However many researchers are not using probes in the way Gaver et al. (1999) intended. In the literature this has created a tension characterised as the *information* versus *inspiration* debate. (For further details of this debate and around the 'misuse' of the term probes in research see Boehner et al., 2007; Crabtree et al., 2003; Gaver et al., 2004; Graham et al., 2007a; Hemmings et al., 2002; Mattelmäki, 2005; Sanders, 2006). As Boehner et al. (2007) argue, the crux of the debate stems largely from people's attempts to analyse the designerly material generated by probes in the same way as traditional research data. There is a tendency for researchers to do what Gaver et al. (2004) describe as: *"appropriating the probes into a scientific process"* (p. 53). Boehner et al. (2007)

suggest that to attempt to introduce or force analytical methods onto this interpretive data is to:

> [Use] *the kind of method that the original probes attempted to resist:*
> *producing data instead of responses, closing instead of opening the*
> *design space.* (p.1084)

Rather than being codified, transformed or translated into a report as a source of information, the rich, subjective, personal and visual material was designed to stand on its own as a design resource; an "assemblage" between participants and designers (Graham & Rouncefield, 2008). As Mattelmäki (2005) argues, translating the images and words created by participants into written form negates their value. The significance of probes, then, is not just in the activities that participants engage in, but also the way in which the material developed through the probes is treated or 'read'.

Probes tell us something important about the nature of designerly research methods and how they differ from more traditional approaches to research. As Boehner et al. (2007) have noted, probes are often known (particularly in industry) by their colourful, well crafted packs and intriguing contents. But they also provide a perspective from which to approach the generation and treatment of very rich self-reporting material. Working with this kind of subjective and personal material is quite different to dealing with textual data, but it is at the core of generative design methods. While the original Cultural Probes demonstrated how such material became a raw source of inspiration for designers, work by researchers such as Mattelmäki (2005; 2008) and in particular the recent thesis of Sleeswijk Visser (2009) demonstrates how this material can be more formally organised for communication, distribution and use by participants themselves, as well as other members of the design team, whilst still retaining their personal, empathetic and designerly value.

The role of probes in enabling participation, and the nature of that participation, has also been the subject of discussion in literature (e.g., Graham & Rouncefield, 2008; Mattelmäki, 2008; Sanders, 2006). Graham and Rouncefield's (2008) analysis of probe literature determined that probes enabled a variety of forms of participation in design, though not necessarily with the political commitment implied by Participatory Design. In the original Cultural Probes, participants were not involved in the interpretation of the material. According to Sanders (2006), in order for probes to be considered

participatory in an emancipatory sense, participants need to be involved past the point of collecting the probe data by playing an active role in interpretation of the material. So while probes in themselves may not go far enough to constitute co-design, the designerly aspects of Cultural Probes, the generative nature of the material created and its potential to function as a shared (design) resource lends probes to participatory or collaborative uses. Again the variations of Empathy Probes (Mattelmäki & Battarbee, 2002) and Context Mapping provide examples of how this might be done.

In summary, when considering approaches to self-reporting, probes draw attention to the value of:

- Play and ambiguity in enabling people to make available different aspects of their lives
- An emphasis on visual materials for representation and storytelling by participants
- Visual, creative, playful and tangible methods for designers
- The generative, personal and subjective nature of the material they make available maintained as a resource for design
- Participants involvement in the interpretation of the material
- Designerly approaches that engage in alternative kinds of relationships with participants.

As with diaries researchers have continued to build on the original Cultural Probe toolkit with digital tools, for example digital cultural probes (Iversen & Nielsen, 2003) and Mobile Probes (Hulkko et al., 2004).

### 3.2.4  Co-opting Social Technologies for Self-reporting

The following section provides a review of how self-reporting methods like diaries and probes are being extended through the appropriation of everyday digital, personal and networked tools. Digital tools such as beepers (Intille, Tapia, Rondoni, Beaudin, Kukla, Agarwal, Bao & Larson, 2003), digital cameras (Brown, Seilen & O'Hara, 2000) and even video cameras (Sanders, 1992) have been used in self-reporting for some time, however as these earlier tools and techniques join an ecology of more mobile, personal, networked and digital tools and practices, they take on a different significance.

In traditional versions of probes and diaries, the self-reporting material generated by participants is accessed only at set periods during or at the end of the study. One of the

most significant changes to self-reporting enabled by emerging technologies is the ability to communicate with participants and collect reports remotely and continually throughout the study. As suggested, the design researcher becomes more involved in and connected to the activities of self-reporting when material is made available to them throughout the study using networked technologies.



**Illustration 2. Introducing networked technologies to self-reporting**

The use of networked technologies in self-reporting allows participants to send material and communicate with the design researcher throughout the study. This enables a greater connection between the participant and the design researcher during the study.

The examples of specific methods given below are organised by key indicative studies, generally differentiated by how particular tools have been leveraged and the value these tools brought to the self-reporting study. The exception is online tools which are discussed together. To date, the documentation of these tools and techniques has largely been limited to promotions by specific companies about their custom tools (e.g., August, 2006b; zilverinnovation, 2009) or write-ups of individual studies and techniques that tend to focus on specific aspects of technology (for example, *Digital Ethno™* (Cheskin), Mobile Probes (Hulkko et al., 2004), Voice-mail Diaries (Palen & Salzman, 2002)). In each of these studies or articles the tools and techniques are named and framed differently, and industry versions are often presented as new or unique

approaches to interactive or remote user research. Examined together they reflect an emerging group of methods and signal important directions and trends in self-reporting that deserve further consideration. The section concludes with a brief discussion of the limitations of such approaches, and an analysis of the various opportunities they pose for research.

A number of the examples below were developed in parallel to my own work. While they are included here as references it is worth noting that several of the academic projects are nascent, at least with respect to their use of digital self-reporting tools for self-reporting e.g., Owela (Näkki, 2008; Näkki & Antikainen, 2008; Näkki et al., 2008) and Citizen Media (Jans, Vanattenhoven & Geerts, 2007; Trogemann & Pelt, 2006). As such there is more material available about what they intend and hope to do than there is documentation about actual projects using the method. Documentation of industry examples (e.g., Cereijo-Roibás et al., 2009; Cheskin, 2003; Khalil, 2009; Pering, 2006) is similarly limited to single blog posts or articles in industry magazines. Nevertheless they all contribute to a growing international body of work that signals emerging approaches that make use of everyday technologies as tools for design research. I use these examples as secondary data in the analysis of my empirical studies in later chapters.

*Digital Ethno™*

One of the earliest examples of co-opting everyday communications tools for self-reporting was demonstrated by marketing and design firm Cheskin, in an approach they termed *Digital Ethno™* (Masten & Plowman, 2003). Cheskin made use of email, online chat via desktop computers, and random mobile phone interviews to investigate people's experiences of Valentines Day. They found that the immersive value and quality of self-reporting was enhanced as people conveyed the richness of their own lives in more immediate and contextual ways (ibid). In comparing *Digital Ethno™* to previous methods they had used, the authors suggested participants were more active in sharing findings and insights, engaged in interpretation of their own behaviours and appeared more invested in the outcome (Masten & Plowman, 2003).

*Voice-mail Diaries*

In Voice-mail diaries by Palen and Salzman (2002), participants made use of phones as their self-reporting tool, leaving voice messages for researchers that described their

experiences with first time mobile phone use. Participants could use the mobile phones themselves to leave reports *in situ*, and researchers had access to the reports as they were logged. This technique was later included in Digital Diaries (Pering, 2006) by design agency Frog, as well as studies into mobile telephony by O'Hara et al. (2006). Using the inbuilt recording capacities of mobile phones had a significant advantage over handwritten paper diaries, reducing the workload for participants (Palen & Salzman, 2002). They were also easier to conduct whilst on the move (ibid). The ability to monitor participant contributions as they happened also meant problems such as lack of user feedback or extraneous reports became apparent early on when there was still an opportunity to intervene (ibid). In addition, Palen and Salzman observed that having one point of contact across the study helped to build continuity and loyalty with participants. In reflecting on the use of mobile phones to investigate mobile phone use, Palen and Salzman (2002) noted that the ubiquitousness of these personal devices allows them to be more easily incorporated into daily life than other extraneous recording devices or techniques.

*SMS Probes*

Also building on the potential of the mobile phone as a research tool, Jönsson et al.'s (2002) 'SMS probes' used random text messages to prompt participants to capture something about their current situation. A similar technique of reminders was also used by Church and Smyth (2008), Cereijo-Roibás et al.(2009) and Raijmakers et al. (2009). These kinds of prompts could be compared to more formal methods such as ESM however they differ in that communication methods like SMS are very popular two-way communication methods. Indeed Raijmakers et al. (2009) describe one of the advantages of SMS for supporting self-reporting is that it is an "intimate tool for communicating". Jönsson (2002) noted that in addition to supporting more *in situ* recording, the sustained and frequent contact helped to foster the connection and relationship between researchers and participants. These tools double as data collection devices *and* channels of communication between design researchers and participants.

*Mobile Probes*

Researchers and designers have continued to appropriate new technologies as they have emerged. In their Mobile Probes study, Hulkko et al. (2004) took advantage of built-in cameras in mobile phones and the real-time distribution capabilities of mobile devices

to study shopping habits and mobile work practices. Multimedia messages (MMS) containing text and images were sent by participants *in situ*, and automatically displayed on a website visible to researchers and participants in real-time (ibid). This made it possible for both participants and researchers to monitor and reflect on the material over the course of the study (Hulkko et al., 2004). Graham and Rouncefield (2007) subsequently built on the idea of Mobile Probes in their study of families. Cereijo-Roibás et al. (2009) used a similar technique combining SMS, email and MMS to explore the behaviours and needs of mobile phone users in developing markets. The use of personal, mobile, networked devices, mobile phones in particular, enables participants to easily generate reports *in situ* and share with researchers in (near) real-time, regardless of participant location. This enhances the *in situ* nature of self-reporting as people convey the richness of their own lives as it happens. Reflecting on the potential for design research suggested by Mobile Probes, Hulkko et al. (2004) imagined an "*interactive dynamically changing system where user replies would direct the research focus*" (p.50). While they were unable to achieve such a vision at the time, others have continued to build on this, including the Mobile Diaries developed through the empirical research in this thesis.

*Reporter Tool*

In 2005 Carter and Mankoff did a comparative study of different types of portable media tools in self-reporting, comparing participants' abilities to recall situations based on the use of audio recordings, images or objects. They reiterated the value of using portable recording tools over traditional paper diaries, as it increased the likelihood that participants would capture experiences, thoughts and actions as they happened, rather than report retrospectively (2005). Their study also demonstrated the value of enabling participants to choose between different modes of data collection (e.g., audio, text, image) depending on the context. Different media afforded different reporting qualities and experiences for participants, for example, although images were easy to capture, audio reports could be done more clandestinely. Enabling participants to annotate images and therefore provide additional contextual information was also important. To support this, Carter and Mankoff (ibid) recommended tools that enabled lightweight, *in situ* capture in-the-flow of daily activities, as well as opportunities for more detailed *ex situ* reports later. Based on these results they developed the Reporter Tool which made use of custom reporting software on a Nokia phone to support in situ reporting and

allowed participants to add annotations later. However it relied on participants to upload the reports via a desktop when they returned home, removing the capacity for researchers to receive reports in real-time, and creating more workload for participants. The Reporter Tool was evolved in later work into Momento (Carter, Mankoff & Heer, 2007), which used SMS and MMS to exchange information between researchers and participants and included the automatic gathering of log data. Data collected via the mobiles was stored on a desktop platform, although this was only accessible to the researchers. Inspired by Mankoff and Carter's earlier work, Brandt, Weiss, & Klemmer (2007) developed the 'snippet technique'. This approach encouraged short-hand *in situ* reports using text, audio or image via the mobile and sent in real-time, and allowed this to be combined later with more in-depth reports via an online interface.

*The Experience Clip*

In the Experience Clip method (Isomursu, Kuutti & Väinämö, 2004) pairs of participants were recruited at a shopping mall. One person received a new mobile shopping device to trial, the other a mobile phone on which to video record their experiences and impressions of the new device.  The researchers found:

> *Instead of staying within the predefined roles of user and data*
> *collector, the user pairs took a much more active stance as design*
> *collaborators, and created, acted out and recorded mini-dramas and*
> *mini comedies around use situations to make their point clear.*
> (Isomursu et al., 2004, p.87)

The Experience Clip method demonstrated the possibility of self-reporting tools to facilitate playful interaction *between* participants, using mobile devices to play off the natural dynamic that occurs between friends and the 'movie making aspect' of video. Video has long been valued as a tool in research and Buur et al. (2000) recognised the value of video for play and creative storytelling in particular. However it is only recently that video has become accessible as a mobile self-reporting tool with its integration into phones and the advent of cheap, small video cameras such as the KCam used in Mobile Diaries, or the more recently released Bloggies and Flipcams. In Raijmakers et al.'s study (2009) for the design of a new telecommunications service, participants created video diaries using the palm-sized Flipcam which they carried with them during the day. Raijmakers et al. (ibid) noted in particular the rawness of the video

reports, describing them as "undigested reality". The authors found the SMS-prompted video material was particularly useful as a resource for empathy and inspiration throughout the design process, effectively putting designers "in the shoes of the participants".

*Online Tools*

The online platform used in Mobile Probes (Hulkko et al., 2004) was an important inspiration for the Mobile Diary method and many more examples of online platforms have emerged in parallel to this research. Some are proprietary custom tools such as *Revelation*™ (August, 2006b) and *7daysinmylife*[2] (zilverinnovation, 2009) while others, like Mobile Diaries, are configurations of existing, everyday software such as blogs (e.g., Brandt et al., 2007; Cereijo-Roibás et al., 2009; Khalil, 2009; March & Fleuriot, 2006). A platform for 'Online Probes' is also part of Owela, an online participatory tool being developed by researchers at VTT (Näkki & Virtanen, 2007).

The inclusion of online platforms as part of self-reporting is significant because it creates a persistent location for the aggregation of self-reporting material that both participants and design researchers can access, throughout the study. They also become places where participants can edit and annotate early reports, or provide more reflective accounts as in Brandt et al.'s (2007) 'snippet' technique mentioned above. In Digital Cultural Probes, which made use of the blogging platform *Tumblr*, Khahil (2009) extended the data collection to include the aggregation of other existing life streams from sites such as *Flickr* and *Twitter,* websites visited and IM chats. An online platform can also support groups of participants collaborating in shared data collection and discussion, such as in the 'friendship groups' that were part of March and Fleuriot's research (2006). Online platforms also make it possible to grant access to the research material to a wider audience across client and design organisations (August, 2006a).

These examples come closer to fulfilling the ambitions of Hulkko et al.'s (2004) dynamically changing system mentioned above. Their interactive nature means it is possible to evolve the studies in response to participants' contributions. However, while Hulkko et al. (2004) used the online platform to augment the collection of mobile material, many of the online examples do not support mobile data collection, instead

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2 Based on the Context Mapping research from DelfTU.

putting the emphasis on online interactions via a web interface. Whilst participants are encouraged to upload images and video via the desktop, this can be less convenient for participants (Brandt et al., 2007) and some studies have reported less success with this approach (e.g., Vanattenhoven, 2008). The other main limitation of having participants upload via desktop, rather than *in situ* via mobile data collection, is that interaction with the research happens mostly at the location of the desktop computer. This puts the focus primarily on *ex situ* reporting, that is, reflective reports or those that take place *in addition to* daily activities, rather than *in the flow of* daily activities.

An emphasis on the use of portable tools and mobile-reporting in particular is one of the aspects that differentiates the approach taken in Mobile Diaries from other custom and proprietary 'diary' tools developed for qualitative online research such as *7daysinmylife* (zilverinnovation, 2009), *Piipl* (2009), *Revelation™* (August, 2006b) or *QualVU*. While support for mobile tools and real-time delivery have more recently been bolted on to some of these tools, they are treated as a secondary means of data collection and in many cases their function is limited. It is a premise of this thesis that tools and infrastructure that support people to document, capture and reflect *in situ*, regardless of their location, are critical to exploring and understanding the mobile, social and ongoing nature of people's lives.

*Limitations and Considerations*

An advantage of collecting digital material in self-reporting studies is that it can be more easily captured, stored and shared online than those developed as part of physical probes or diaries (Hulkko et al., 2004; Masten & Plowman, 2003). However, the ease with which such material can be recorded and uploaded also increases the amount of material researchers/designers need to handle (Hutton, 2006). Workload becomes a consideration for both participants and designer/researchers.

Other limitations of these emerging approaches to data collection identified in the literature include: the prohibition of recording in privately owned 'public' places such as shops (Hulkko et al., 2004; Newcomb et al., 2003) and the possibility of users having to learn new interfaces or technologies to operate self-reporting devices (Cereijo-Roibás et al., 2009; Jönsson et al., 2002). For example, March and Fleuriot (2006) found some participants had trouble gaining access to their blog sites due to the complicated sign-up process. Usability was also thought to be a contributing factor to the low rate of images

uploaded to the 'research blogs' used by Vanattenhoven (2008). At the same time, a number of researchers have reported that the novelty of using such tools can also increase participation and engagement (Hutton, 2006; Masten & Plowman, 2003; Näkki & Virtanen, 2007). The value of such tools for motivating participation in self-reporting was also confirmed in this research.

### 3.2.5 Considering Participation and Opportunities for Research

In the literature review of self-reporting techniques presented above, discussions of participation highlighted aspects such as structure, the value of imagery, and the importance of open-ended studies that position participants as experts of their own lives. Whether or not participation goes beyond the point of 'data collection' has also been raised as critical to whether the self-reporting approach is participatory in an emancipatory sense. In-depth descriptions of approaches such as Empathy Probes (Mattelmäki, 2005; Mattelmäki & Battarbee, 2002) and Context Mapping (Kaptein, Weisscher, Terken & Nelissen, 2009; Sleeswijk Visser et al., 2005) demonstrate how the activity of self-reporting fits into a broader co-design framework and it is not the intention of this thesis to replicate this work. Rather, the focus here is to better understand the role of the different tools and activities in helping participants to reflect on, imagine and communicate different aspects of their lives, and to identify some of the implications of co-opting these tools into design practice.

In self-reporting studies our choice of tools is the most tangible aspect and the medium through which we build our relationship with participants. The size, form, format and features of the tools and materials provided to participants will impact on what, when and how self-documentation is produced, and the experiences of participants in creating that material. It is for this reason that probe packs themselves are a designerly artefact. They are deliberately designed to provoke a response from users and to allow people to make and play in order to share particular kinds of things (Gaver et al., 1999; Gaver et al., 2004). Different tools will support particular kinds of structured (or unstructured) data collection and generation, help to make available particular types of material for analysis or interpretation, and shape the experiences of designers and participants. There is already significant existing literature that explores more traditional variations of diary tools and probe kits, describing in detail the use of different analogue tools, activities and their value to early design research (e.g., Crabtree et al., 2003; Gaver et al., 1999;

Graham et al., 2005; Graham et al., 2007a; Hemmings et al., 2002; Lucero & Mattelmäki, 2007; Mattelmäki, 2008; Visser & Kouprie, 2008).

Less work has been done on the broader changes to self-reporting brought about by the introduction of the various digital, personal and networked tools described above. From one perspective co-opting the kinds of tools described in the above section enables researchers to *access more data* (Hagen, Robertson & Sadler, 2006). Much of the recent research in mobile and pervasive computing is focused on ways to use mobile devices to combine data gathering methods such as diaries, with log data, sensors or other contextual, automated data gathering tools (e.g., Carter et al., 2007; Froehlich, Chen, Consolvo, Harrison & Landay, 2007). However, this thesis takes another perspective. The everyday tools and technologies being co-opted into the self-reporting methods described above are constitutive of larger and more complex emerging social practices and behaviours (e.g., sending SMS or picture messages, blogging, leaving comments, personal media production, distribution and publication). There is an opportunity to consider how the appropriation of digital, personal and networked tools is impacting on self-reporting, and the relationship between this and the emerging culture of participation within which social technologies are embedded. Taking the perspective of 'co-opting social technologies' as a way to interpret this evolution of self-reporting sensitises us to particular issues and questions about participation. In this thesis I build on earlier work of researchers such as Hulkko et al. (2004), Graham and Rouncefield (2007a) and Mattelmäki (2005) and designers such as Cheskin (2003) who noted both the potential for more dynamic and interactive methods of self-reporting, as well as the need to better understand the new kinds of ethical issues they raise.

## 3.3   Challenges for Designing Social Technologies

The first two sections of this literature review have focused on establishing key characteristics for early design methods and the potential for social technologies to become design *tools*. The remaining three sections focus on social technologies as the *subject* of design. This first section focuses on the challenges and considerations raised for design by social technologies. It begins by outlining the impact of their complex, variable and emergent nature. This is followed by a discussion of the new kinds of skills and responsibilities for designers that social technologies give rise to, with a particular emphasis on design in community settings.

### 3.3.1  Complex and Variable Contexts of Use

The complex and variable contexts of use across which social technologies are manifest present challenges for designers seeking to apply traditional contextual approaches or methods (Kurvinen et al., 2008). Methods developed in workplace contexts assumed the ability to identify and access the context of use and the users within them. Conversely, the 'social' nature of social technologies can make it difficult to identify *who* exactly the users are and *where* exactly use might take place. Use is mobile, domestic, and woven through complex, ongoing social contexts (Isbister & Höök, 2009). 'Users' are heterogeneous (Ehn, 2008), geographically distributed (Bergvall-Kåreborn & Ståhlbröst, 2008) and potentially anonymous or unknown (Clement, Costantino, Kurtz & Tissenbaum, 2008; Ehn, 2008).

Adequately simulating *what* it is that people are using social technologies for is equally difficult. Rather than tasks or clear goals, social technologies support activities like *hanging around* (Hart, Ridley, Taher, Sas & Dix, 2008), *messing around* (Ito, Baumer, Bittanti, boyd, Cody, Herr, Horst, Lange, Mahendran, Martinez, Pascoe, Perkel, Robinson, Sims & Tripp, 2009), *looking at, looking up,* and *keeping up* (Joinson, 2008). These are dependent on and prompted by emotional or/and experiential factors such as a shared experience or shared interests (Battarbee & Kurvinen, 2003; Hess, Offenberg & Pipek, 2008). As Shirky (2003) notes, the emphasis of interaction is with other people as opposed to with the system. In attempting to define the nature of the social dimensions of user experience, Battarbee (2004) has developed the concept of co-experience. She states: "*Co-experiencing means experiencing together, and it highlights the social quality of this activity*" (p.16). Co-experience is central to the 'use' of social technologies. In considering how to design for such contexts of use, Isbister & Höök (2009) state:  "*We can't rely on re-using pre- existing interface metaphors and strategies because there are too many new variables of use...*" (p.1). It is arguable that our experiences of social technologies are so complex, situated and dependent on the activities of others, that feedback about use only becomes meaningful 'in the wild' (Hutchins, 1995). New field methods and frameworks for design are required that take into account the variable and social nature of social interaction (Kurvinen et al., 2008). Contextual field methods that help to access how experiences happen in the 'here and now' are particularly useful (Battarbee & Kurvinen, 2003).

### 3.3.2  The Emergent Nature of Social Technologies
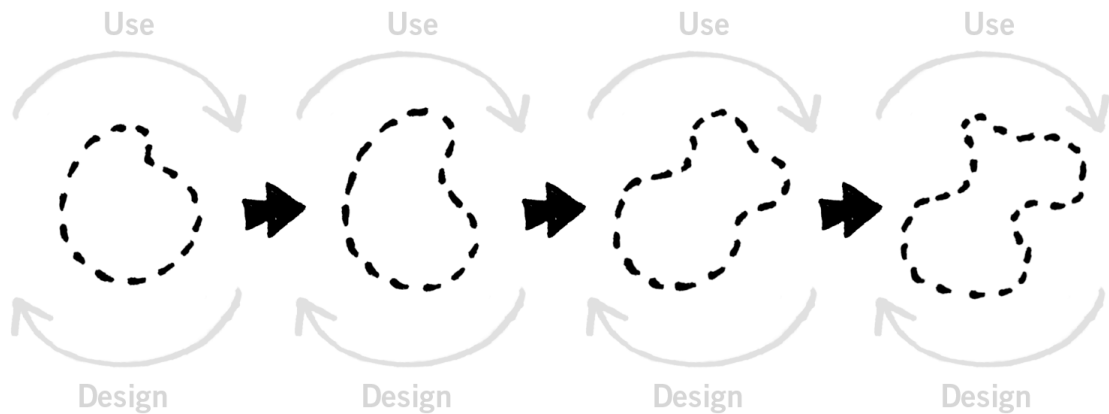


**Illustration 3. The shape of social technologies emerges over time and through use**
The dynamic relationship between design and use is emphasised in social technologies because so much of their form is constituted through use.

As suggested by Illustration 3 another central characteristic of social technologies is that their form emerges over time, through use. The concepts of *design in use*, or that design is completed in use, are basic principles of Participatory Design (Henderson & Kyng, 1991). Themes of appropriation, customisation, personalisation and tailoring are central to the work-orientated literature of both PD and Computer Supported Collaborative Work (CSCW) as can be seen in, for example, Balka and Wagner, (2006). However as Battarbee et al. (2008) suggest, *"this phenomenon* of *open products, open source and user generated innovation is not of merely customization or personalization…"* (p.299). While people do undertake specific acts of personalisation and tailoring in the use of social technologies*, design in use* also occurs in more implicit ways.  In addition to acts of 'configuration' the design is determined by the content we add as users, the messages we leave and the contributions we make. Through our contribution and participation as users we affect the experience of others, and our participation in social technologies alters their form over time (Karapanos, Zimmerman, Forlizzi & Martens, 2009; MayField, 2002; Shirky, 2003). In her discussion on the evolution of HCI, Bødker (2006) points to a similar extension of tailorability, suggesting we see it:

> …*not as individual adaptation of technology, but as adaptation and*
> *further development through interaction and cooperation among*
> *people.* (p.5)

Examples in this context might include social navigation where links between data and metadata emerge to reflect subjective and collective viewing behaviours (Chalmers, Dieberger, Höök & Rudström, 2004; Dourish, 1994), folksonomies where the relationships people make between data and metadata form collaborative categorisations or social tagging such as on the social bookmarking site, *Delicious*, or the photo sharing site, *Flickr*. The evolutionary nature of social technologies is particularly evident in popular technologies such as SMS, *Flickr*, *Twitter* and *Facebook,* which all perform radically different functions than those first envisioned by their designers. This is a challenge to models of design that presume use follows design (Fischer, 2008; Floyd, Jones, Rathi & Twidale, 2007; Hess et al., 2008). Social technologies disrupt the notion of design as a linear process by revealing the integrated relationship of design and use in quite literal and visible ways. Design activities are redistributed throughout the design life cycle (Ye & Fischer, 2007) and, as this happens, the conventional boundaries between design and use dissolve.

### 3.3.3  New Responsibilities and Concerns for Designers

As Brereton and Buur (2008) point out, "*participation is predicated upon delivering value to those who participate*" (p.112). Use of social technologies in community settings is voluntary. In designing successful social platforms around which communities grow, evolve and share, our role as designers extends beyond researching, defining, creating and releasing a product. The facilitation of participation by the 'future community' also becomes a central concern. DiSalvo et al. (2007) argue that how, exactly, communities and participants actually come to take up the systems of co-production is an obvious, yet under-addressed concern for designers. They warn not to assume that there is a motivated public willing and eager to participate (ibid). From my own perspective as a design practitioner, lack of significant participation is a central concern and risk to any social, community or political project. While luck and timing play a large part in the success of many campaigns, developing active strategies for seeding interest within the community becomes a central part of the project brief. To assist with this, DiSalvo et al. (2007) suggest strategies such as aligning the project with existing energies in the community, or seeding the project with content that makes it meaningful to the target stakeholder group. Botero & Saad-Sulonen (2008) highlight the value of working with existing communities around issues of community interest, but

the role of designers may also extend to bringing the community 'into being' as part of the project (DiSalvo et al., 2007).

A study by Karasti and Syrjänen (2004) into successful ongoing grassroots communities developed by non-professional designers showed that the technology was sustained because it was owned, maintained and evolved by the community itself. Whilst this differs from situations where an external group of designers develop the technology on behalf of, or with, the community, a deeper understanding of how technology comes to be interwoven into, and driven out, of community needs helps us to be more sensitive to the social contexts in which our design projects might be taken up. Merkel et al. (2004) argue that ownership is central to projects in community settings:

> *An important goal in doing participatory design is to find ways to*
> *seed ownership for technology projects in the community groups*
> *themselves. In terms of promoting sustainability, we must see*
> *community groups as owners of the projects, not designers.* (p.7)

Strategies for appropriately transferring ownership of the project from the designers to the user community become important to maintaining the energy, interest and momentum around projects and allowing them to continue to grow.

In many cases ownership and the sustainability of the system are explicitly tied up with the community's ability to change and appropriate technologies as needed. Karasti and Syrjänen (2004) argue that change needs to be understood as an aspect of everyday practice, not the privilege of professional design. Merkel et al. (2004) suggest that it is the responsibility of designers to provide community organisations, who are often under-resourced, with the ability to evolve and maintain the technology themselves, rather than leave them dependent on a design agency for expertise. Developing the skills of participants becomes another aspect of designing for participation in community settings (Dearden & Light, 2008; Merkel et al., 2004). The themes of 'ownership' and 'skilling up' have also been echoed in community-focused design projects with which I have been involved.

Questions about the role of design and the skills required of designers in the context of social technologies are further complicated by the use of existing platforms as starting points. Traditionally designers have been responsible for the creation of a range of artefacts (Brereton & Buur, 2008). In the design of social technologies, emphasis is on

the recomposition and configuration of existing software and pulling together combinations of existing open and free technologies (Lievrouw, 2006; Twidale & Floyd, 2008). At the CD Agency for instance, a community project might include appropriating existing platforms such as *MySpace* or *Facebook*, or customising open source platforms and APIs from other tools.  The components already exist; the 'design work' to be done is in bringing them together in a way meaningful to the individuals and their networks who will use and evolve them.

The above discussion has highlighted particular qualities of social technologies including: their variable contexts of use, their emergent and participatory nature, and our role as designers in connecting or configuring them within the community in which they will live. When social technologies are the *subject of design* these qualities introduce additional considerations for early design to those outlined in the first section of the chapter that go beyond that of *informing and inspiring design*. They draw particular attention to the activities of connecting design and use, to *seeding* interest, ownership, content, momentum and even community. The next section further explores the notion of *seeding* and its value as a concept that articulates priorities and activities important to the design of early social technologies, not necessarily recognised in more conventional descriptions of early design research.

## 3.4   Seeding: Early Design of Social Technologies

According to the *Macquarie Dictionary* (2003) the term *seed* refers to the germ or beginning of anything.  Within design the term *seeding* is often used to describe the kinds of activities that can act to germinate participation. As seen in the previous discussion, seeding is already a commonly used metaphor in texts that address design, use and participation (e.g., Botero & Saad-Sulonen, 2008; Darren, 2007; Fischer, 1998; Light, Briggs & Martin, 2008; Merkel et al., 2004). It is also used in campaigning, for example, in an online marketing campaign a solid and well targeted seed list of email addresses increases the chances of campaign success because of the higher number of likely send-ons. Seed posts and seed advertising might also be key to a digital campaign (e.g., RedAnt). In the development of early virtual communities, the use of seed content, conversations and groups was an important strategy for encouraging, prompting and guiding new contributions and members (Figallo, 1998; Merkel et al., 2004; Rettig, 1998; Rheingold, 1993). Botero & Saad-Sulonen (2008) make use of seed prototypes

when developing community tools for use in civic contexts, in order to understand how people might put new technologies to use in context (discussed in more detail in the following section). Merkel et al. (2004) use the term to specifically articulate the processes of handing over ownership from designer to community.

As a design concept, seeding allows us to talk about the movement and relations between design and use, specifically, the work that needs to be done to move design from the 'abstract' into what Lee (2008) refers to as the "concrete places" where people live. As Ehn (2008) suggests, successful designs are taken up as part of people's existing "ecologies of devices" in people's "already ongoing life-worlds". Seeding draws attention to how this 'taking up' happens, and our role in creating conditions that make it more likely to occur.



a) A 'new' design in the world

b) Connections developing between a design and its potential future community: seeding activities can facilitate this connection

c) Design being taken up in the world
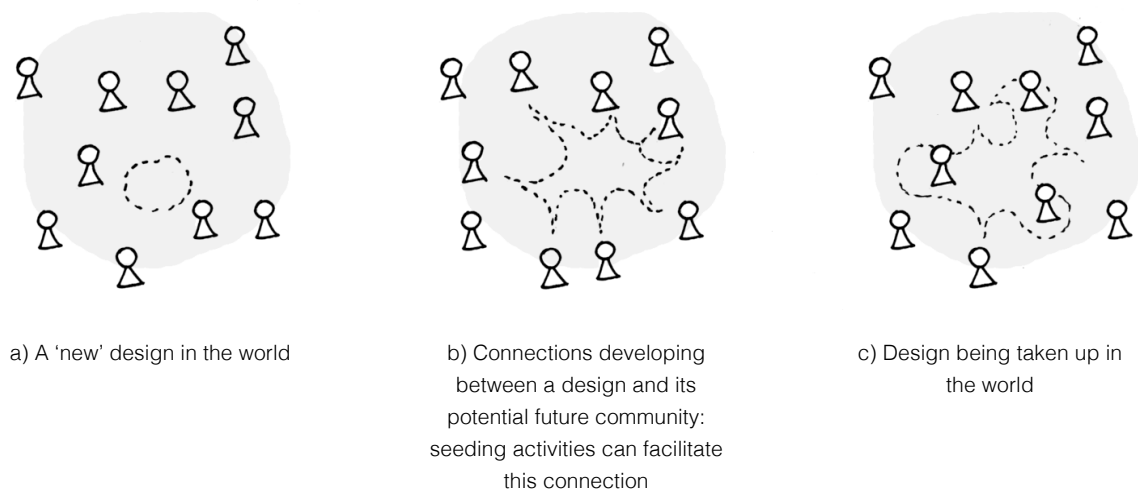
**Illustration 4. The role of seeding**

A simple description of the role of seeding is provided in Illustration 4 which depicts three different 'states' of design over time, as a new design is appropriated into the world. a) shows a design that exists or has been 'released' into the world as a public object. b) shows the seeding of connections between the design project and people's daily lives. c) represents that design having been appropriated and taken up as part of (some) people's existing ecology of devices. In the process of moving from a) to b) to c), which takes place over time, the shape of 'the design' changes as it becomes co-opted into people's daily lives. The term seeding serves to name activities we can do within the design process, as designers, to try and bridge the gap between state a) and

state b). Seeding suggests activities that aim to embed design in the world; create connections between the design project and the people who may use it; and create opportunities for those people to shape the design in meaningful ways. In the depiction of state c), the design is not taken up by all the people, because, even in such a simplistic representation, it is important to acknowledge that we can only create conditions for participation through seeding, we cannot guarantee it.

It can be argued that seeding is a particularly valuable concept in the context of social technologies. As previously noted, luck and timing have a role to play in the success of many campaigns and community projects. However, in the design of social technologies, developing active strategies for seeding design, that is seeding interest, momentum and a sense of ownership within the community, becomes as important as informing and inspiring design *with* that community.

Part of the value of seeding as a metaphor is that it conveys both the intentions and the limitations of designers in their capacity to achieve this. The designer has control over only a small set of variables. As a metaphor seeding aptly reflects the fragility of human relationships and connections, the organic nature of design and use 'in the wild', and designs will take different shapes depending on the conditions. The concept of seeding sensitises us to aspects important to consider in the early design of social technologies.

While the value of seeding as outlined above might be implicitly (and in some cases explicitly) understood as important by researchers and practitioners working in these contexts, little infrastructure exists for supporting this within most of the commercial design contexts with which I am familiar. In this thesis the term seeding is explicitly taken up and extended to name activities that can be considered important to the early design of social technologies, especially community platforms. It is also used as an analytical tool for interpreting experiences and outcomes observed in the field studies.

## 3.5    Opportunities for Designing Social Technologies

The previous sections outlined particular challenges and considerations for the design of social technologies and explored the notion of seeding as a concept that sensitises us to the importance of connecting design and use in social technologies. This section reviews examples from Participatory Design that can be considered emerging responses to the above challenges and demonstrates how social technologies themselves provide particular opportunities for participation in design that directly engages the dynamics of

design and use. The examples cited have largely evolved in parallel to my own work and highlight emerging opportunities for, and approaches to, the design of social technologies in social and community settings. They provide further insight into the changing nature of participation in design and the evolving roles and responsibilities of designers and users. They are introduced here as current and related work, and are also used as a secondary source of data to support the discussion and analysis of the empirical work in Chapter 9.

### 3.5.1  Prototyping as 'PD in the Wild'

In 2002 Dittrich, Eriksén and Hansson wrote a paper titled 'PD in the Wild; Evolving Practices of Design in Use'. The paper explored the multiplicity of ways in which design was taking place beyond the traditional boundaries of IT software development projects. The authors called for 'PD in the wild', highlighting the need for new methods and models that better supported design as ongoing and intertwined with use. They stated:

> *Design and use should not be regarded as two separate and*
> *sequential activities, but rather as on-going in parallel, intertwined,*
> *overlapping, with shifting foci and agencies. The question this raises*
> *is: how might these different, co-existing practices of design be more*
> *deliberately and consciously put in dynamic relation to each other.*
> (p.124)

The authors pointed out that the malleability of software creates the opportunity for the integrated co-development of design and use. Social technologies in particular lend themselves to this approach, and the examples of 'prototyping in the wild' discussed here have emerged as a result of, and in response to, the malleable nature of these technologies.

As a collaborative and experiential method, prototyping has always been an important part of the Participatory Design toolkit (e.g., Bødker & Grønbæk, 1991a; Ehn & Kyng, 1991). Extended 'into the wild', prototyping becomes a 'living form' of design research that can enable designers to co-design with community members in the context of their daily lives. For example, Redhead and Brereton (2008) deployed an electronic-noticeboard prototype into a community setting. The prototype was then evolved in situ, in response to use and community feedback. The authors reported a lack of success with

traditional methods such as workshops which were only attended by a few of the identified stakeholders (Redhead & Brereton, 2008). Instead, installing a functioning prototype in a location (a local store) that was physically shared by many members of the community allowed people to experience the design as part of going about their daily lives. The authors saw this approach as a significant departure from earlier consultative Community Informatics approaches; rather than seek consensus on intended use, stakeholders were able to indicate *"usefulness through use itself"* (Brereton & Buur, 2008, p.111).

Patchwork Prototyping (Twidale & Floyd, 2008), a method for designing collaborative software, takes a similar approach, relying on the combination of open source tools, local code and mashups of existing services. Rudimentary prototypes or 'patchworks' are pulled together and immediately integrated and used as part of daily practice; an easy way of supporting real user participation in actual use (ibid). Importantly, Jones et al. (2007) note that Patchwork Prototyping was observed as a phenomenon emerging out of practice, rather than being a method designed a priori. The researchers have since formed a research program around the approach.

Botero and Saad-Sulonen (2008) also took a similar but deliberate 'living research' approach in the development of the Urban Mediator software. In seeking to understand how social technologies could allow citizens a more active role in shaping council policies and responses to community issues, prototypes were used in a co-discovery process with the community. The Urban Mediator allowed citizens to track and contribute data about events in their city. Rather than undertaking traditional usability evaluations of isolated software components, Botero and Saad-Sulonen (2008) re-purposed existing software to create 'concrete interventions' that could be co-evolved. The authors described these as seed prototypes, and the process of seeding the project included engaging people who were already active in the community, further demonstrating the appropriateness of the term for considering the early activities of design in the context of social technologies.

The approaches to prototyping 'in the wild' described here are possible because social technologies lend themselves to the deployment of simple prototypes that can be modified and evolved through feedback (Brereton & Buur, 2008). Twidale and Floyd (2008) argue that such approaches only exist as a result of the current ecology of information technologies. The plethora of readily available and open source tools make

rapid deployment and reconfigurations feasible and achievable, further supporting the argument that reconfiguration is a key aspect of design in the context of social technologies (Lievrouw, 2006).

Floyd et al., (2007) described the advantages of such an approach in the following way:

> *The development proceeds and design decisions are made based on the users' collaborative experience of integrating the software into their every-day activities, not based on abstract design principles or predictions of what the users might need.* (p.3)

Through this experiential process both researchers and community members come to understand how such technologies become useful and meaningful in people's lives (Botero & Saad-Sulonen, 2008). Participants are provided with what Twidale and Floyd (2008) describe as 'concrete and visceral' experiences of use as a way to evolve and participate in design. In all three examples the projects have been seeded through putting something into the community and letting it grow.

These approaches show how social technologies both demand and enable an engagement with the dynamic relations of design and use inherent within them; giving rise to new forms of participation *through use*. The practices of design and use become connected early in the design process by using (and evolving) social technologies *themselves* as design materials; prototyping is being extended or reconfigured to become design 'in the wild'. Community members are able to shape the design through use, and through feedback based on actual experiences of use. This approach to the design of social technologies provides inspiration for the analysis of findings about design and participation in this thesis, and, specifically, approaches to supporting participation in the early design of social technologies (presented in Chapter 9).

The approaches outlined above have an overlap with agile software development (Chang & Kiesler, 2006), which advocates 'release early, release often' and is associated with beta releases which can be evolved or 'tested' through use (O'Reilly, 2005). Such 'use-driven' approaches to evolving and testing design have also been described by designers as adopting (necessarily) a 'throw it out there and see what happens' approach (Merholz, 2006; Porter, 2006). While there is not room within the scope of this thesis to expand on this particular aspect, some of the similarities and differences with agile development have been further discussed by Hagen and

Robertson (2009). This thesis focuses on the opportunity to understand how the experiences and connections between design and use enabled by the approaches to prototyping described above might also be engaged through self-reporting, a method that already takes place 'in the wild'.

The next section creates a bridge between the first part of the literature review which covered early design research, self-reporting and social technologies *as tools for design*, with this second half of the literature review which has focused on considerations for, and approaches to, the design of social technologies as *a subject for design*. In doing so it provides background to the findings drawn about social technologies in Chapter 9.

### 3.5.2  Opportunities for Designing *With* and *For* Social Technologies

In the above examples social technologies themselves become the material through which design is explored. When using social technologies as self-reporting tools in the design of social technologies, there is also an experiential relationship between the method and the subject studied that does not exist in the case of 'generic' methods like interviews, observations or focus groups. Other researchers have also observed this and noted its significance in different ways. In their Voice-mail study, Palen and Salzman (2002) identified the significance of the "device as subject *and* means of investigation", and pointed to the potential implications for studying usage when the mobile phone used for the study is also the subject of the study. Perkel (2007) digital photo-elicitation study was a "technology-dependent method for a study of technology use". They noted the value of this for exposing people's existing technology knowledge and practices in particular. In their study of a particular online community involving young girls, Isomursu et al. (2003) talked of the "comfort created" for participants by replicating aspects of the online communities to explore aspects of that same online community. Both Näkki et al. (2008) and Khalil (2009) note the natural connection created when studying online tools through online tools. Trogemann and Pelt (2006) describe the use of social media as tools for the exploration of social media as enabling 'thick' triggers, and highlight the importance of this 'thick' relationship between method and subject in their research into the development of tools to support Citizen Media. The prototyping examples provided above also demonstrate an opportunity to explore how the methodological connection enabled by designing *with* and *for* social technologies creates the potential for new forms of participation in the design of social technologies.

A contribution of this thesis is the identification of new forms of participation and strategies for seeding enabled by the use of social technologies as self-reporting tools in the design of social technologies themselves.

## 3.6   Summary

This chapter has given a background to current trends in early design research, demonstrating the growing importance of generative design research techniques that enable and put emphasis on facilitating participants to express their experiences and that respond to the natural capabilities of designers. It has shown the value of self-reporting as a way to access personal, mobile and tacit aspects of people's lives and the potential for different approaches to tools, structure and data treatment to reflect and embody different commitments to design and participation within self-reporting. Examples of how everyday technologies are being adopted as *tools for design* that extend the capacities of self-reporting were also presented and discussed in terms of how they enable access to the ever more mobile, social and personal aspects of technology use.

The second half of the Chapter focused on key concepts in relation to design and participation when social technologies are a *subject for design.* Particular attention was paid to how social technologies blur the traditional boundaries of design and use and foreground particular kinds of skills and considerations for designers around enabling participation, not necessarily accounted for in traditional design research approaches. Examples from current Participatory Design literature were used to help contextualise this in relation to community settings in particular. Seeding was explored as a concept used by designers to help plan, convey and give value to the how the design is moved into and taken up in the world, and its particular significance for naming aspects important to the early design of social technologies outlined. The final section of the Chapter reviewed how emerging approaches to 'prototyping in the wild' allow designers to engage directly with the dynamics of design and use inherent in social technologies and enable new forms of participation based on use. The trends, concepts and techniques identified in this chapter provide the background to this thesis. They also created a start point for the empirical research and are instrumental in shaping its analysis.

# 4

# The Research Journey

This chapter reports on the design of the research documented in this thesis and provides a rationale for the approach taken to data collection and analysis. It explicates how the theoretical and philosophical perspectives that guided this research influenced the design of the field studies. The chapter tells the journey of the research, its analysis and findings, and accounts for the impact of the particular practice context on the shape of the research.

The chapter begins with a description of the evolution of the research questions. The role of the practice context in shaping the research and the sequence of the studies is then provided along with a rationale for the approach to recruitment. The exploratory interviews, which helped to transition the research from theory into the field and so define the focus of the field research, are documented. The field studies are then summarised and the approach to data collection justified. The role of the subsequent implementation of the Mobile Diaries into commercial practice in this research is also outlined. This is followed by an overview of the approach to the analysis of the studies and structuring of the findings in the thesis. The chapter also provides an account of how the role of 'insider researcher' (Gothe, 2006), inherent to practice-led research, was managed and kept rigorous throughout the different stages and modes of reflection and documentation. A brief comparison to, and distinction between, the approach taken to research in this thesis and in Action Research is also provided.

## 4.1   Evolution of the Research

The overarching research question driving this thesis is:

*How are social technologies impacting on the nature of participation in design?*

Two sub questions further focus the research:

1. *How and in what ways can social technologies as design tools support participation in early design?*

2. *How can such tools support participation in the early design of social technologies themselves?*

These questions did not exist prior to my research; rather they emerged as a result of initial investigations, and then further reflection and iteration. Schön (1983) describes design practice as a problem setting activity. We take action, reflect upon it, and then make a move based on our new understanding of both the object of design as well as the 'design space' in which we are operating. This process of iterative action and reflection underpins the design of my research.

At the outset my research was prompted by questions emerging from a review of literature into mobile research practices (Hagen et al., 2005). One of the trends identified in that review was the use of mobile and connected technologies to augment traditional self-reporting methods. In 2005 I was able to experience one of the most

innovative methods, Mobile Probes (Hulkko et al., 2004), as a part of an Aware (Aware, 2005) workshop in Sydney. I was encouraged by how straightforward and engaging the process was and motivated to understand how it might be put to use in a commercial context.

The CD Agency was planning future projects with a mobile focus. Inspired by these emerging design methods, the initial research questions focused on how mobile technologies as self-reporting tools could assist design practitioners in understanding mobile practices. A phenomenological approach to research requires that any investigation be grounded in actual human experience, suggesting that questions about practice should start with practice. As described in Chapter 2 (Section 2.3), taking a practice-led approach to research places practice at the centre of knowledge generation. Locating the research within the design agency where I was working provided the opportunity to conduct an empirical investigation into methods within a real world context and meant the research would be grounded by the constraints of actual design practice.

The process of conducting the research and analysing the results allowed new knowledge about the 'design space' I was researching to emerge, and this lead to a reframing of the central research questions. It became clear that I needed to account for the ways in which social technologies were impacting on the potential for self-reporting as a method for early design research, and subsequently on the practices of research, design and use. The analysis of self-reporting, in light of social technologies, made available aspects important to participation and design not readily available in earlier literature. By asking how participation can be supported in a particular context, I also came to better understand the nature of participation and design *in* that context.

## 4.2   Accounting for Practice in Research Design

As outlined in Chapter 2, addressing the dual accountabilities to practice and research embedded within a practice-led approach is not resolved through the use of any one particular existing theoretical framework. Equally it was not a matter of picking and applying a particular approach or set of methods. Instead, a constantly changing set of variables and accountabilities needed to be navigated. These relate to professional design practice and included: the culture of the CD Agency, business ethics, the market and environment, the team, the clients and the broader project stakeholders.

The following four aspects, particular to the context of the study impacted upon and helped to shape the research:

*Agency objectives and motivations*

Interest by the CD Agency in extending the range of contextual methods used within the 'scoping phase' of the design project focused the research on early design research methods. It provided the practice-led objectives as well as a space for that research. Also underpinning and helping to motivate the research was a desire by the agency to bring on board more formal use and knowledge of 'methods' and to develop greater fluency with design research methods as interaction design practitioners.

*The research participants*

One benefit of doing the research in a practice context was being able to evaluate the method in the context in which it would be used, from the perspective of those who would use it. At the same time the CD Agency is a small commercial business with few resources for activities that do not directly generate revenue. This meant the potential impact on the team, on projects, and on client relationships of undertaking such research was a serious consideration. A rationale for how this was formally addressed is provided in Section 4.2.2 on recruitment, but it also required an ongoing consideration of what was appropriate for each step in the research as it progressed.

*How participant involvement was managed*

By prototyping the Mobile Diaries in context, it was possible to actively involve the research stakeholders in the design and evaluation process, and ensure that the reflection on, and evaluation of, the method was based on the lived experience of participants. At the same time this needed to be managed within the constraints on time and access that a commercial context brings. Further details of the use of a 'prototyping approach' are provided later in this section (4.4.1).

*The approach to analysis*

The approach to analysis was shaped by a commitment to understanding and informing practice. The evaluation of the method was informed by existing concepts within literature, but its value as a design research method was also based on the contribution it could make to design practice at the CD Agency.

For the above reasons the field studies did not just commence one day, rather they were carefully negotiated into being. An overview of the sequence of empirical activities that support the research undertaken in this thesis is described in the following section. A fuller description of the field studies is provided further on in the chapter.

## 4.2.1 Research Design: Role of the Studies and the Relationship Between Them

The design of the empirical research was iterative, with each activity informing the next. The progression of the empirical activities that contribute to this research was briefly introduced in Chapter 1 and Figure 1 is reproduced here for clarity.
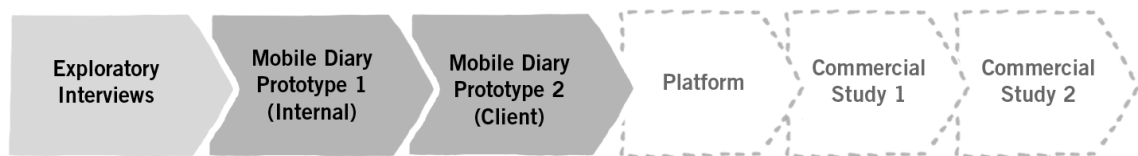


**Figure 1. An overview of the different empirical studies and activities**

The shift from theory to empirical research began with Exploratory Interviews. These grounded the investigation in a practice context and prefaced the field studies. The core empirical activities were the Mobile Diary prototypes where a hybrid self-reporting technique was trialled and iterated over two studies. The first prototype field study (Prototype 1) was done internally with the design team at the agency, resulting in a proof of concept for the Mobile Diary technique. The second (Prototype 2) was undertaken with a client as part of a real-world design project. While the second prototype built on the first, each study was designed to answer a different set of questions and to make available particular information or data for analysis. As such the results (in Chapters 5 and 6) are written up according to the specific objectives of each study. Reflective activities common to design such as interviews, workshops and questionnaires were used to assist the evaluation of the Mobile Diary 'prototypes' by participants.

These iterations lead to the development of a Mobile Diary platform and self-reporting method that was deployed in two subsequent commercial studies with clients (further documented in Chapter 7). While these last two studies were not formally covered in this thesis, due to reasons of confidentiality, their successful deployment did verify

findings from the field studies. To avoid creating a conflict of interest in this thesis, but to allow the influence of these studies to be felt on my research I have provided an overview of the two studies in Chapter 7. This overview is sufficient to demonstrate how they were able to confirm the findings from the field studies with regard to the experiences enabled by the use of social technologies as design tools for the design of community platforms. However, no identifying details of the client, the participants, the material or commercial-in-confidence findings produced as a result of that research are given.

### 4.2.2 Recruitment

It is one thing to read about emerging methods such as mobile probes and photo diaries but another entirely to begin to use them with paying clients. The agency had no previous experience publishing research and there was no system for sharing Design Research findings outside of an individual project. As the research evolved it was necessary to develop strategies for appropriately integrating and managing the relationship between academic research and commercial practice. Particular care was required with regards to recruiting participants. Which clients, and which projects, might be appropriate was considered at length and in conjunction with my employer. Considerations for recruiting in this environment included:

- The circumstances of clients and their availability

- Whether they would be keen, willing and open to an experimental research project

- The ability to commit the time and resources to being involved

- The ethics, administration and power relations involved in gaining consent from participants inside larger more complex organisations

- Whether clients would be willing to allow research to be published.

In addition, this research equated to unfunded research and development (R&D) work for the company, not something that could be charged to the clients in its developmental stages. Introducing an R&D project to a new or potential client raised confusing issues of contractual boundaries and expectations about what work was being paid for, and what was being done under the banner of R&D in mutual collaboration. This was compounded by my dual role as the design project lead *and* researcher. It needed to be

clear what activities I was working on in order to know who, if anyone, was paying for my time. While it is not uncommon for university researchers to do work with design companies, I was not able to find any precedence or examples of other designers working simultaneously as researchers and employees within design organisations.

To address the possible confusion around financial contracts the first two stages of the field research (the Exploratory Interviews and the first Field Study) were deliberately conducted outside the context of a commercial project. The initial exploratory interviews were conducted with people with whom we already had a close personal relationship. The first field study, which evaluated the initial Mobile Diary prototypes, was deployed internally with the design team rather than with clients. While the second Mobile Diary study was part of a larger project, it was possible to easily differentiate the research portion from the rest of the project. In this way, work undertaken by myself or anyone else at the design agency related to the Mobile Diary study could easily be kept separate from work undertaken on aspects that involved financial contracts and payment. Care was also taken that the client who was successfully recruited for this last study had a keen interest in participating in the research and was open to its experimental nature.

The client was recruited on the basis of the timing of the project, their availability, and their willingness to be involved. In addition, they were self-employed and this meant that communications and decisions about process and participation were undertaken with them directly, rather than involving some form of 'management'. Even when enthusiastic consent from all parties was given, and there was considerable support from the design agency for the research, particular care was still taken not to disrupt too significantly the commercial activities or relationships of the design agency. The studies themselves and the data collection methods are described in more detail in the following sections.

The complexities described above that needed to be considered when undertaking research as part of a commercial project contributed to why the clients of the later commercial deployments of the Mobile Diary method were not approached to participate in this broader research project. The process of successfully pitching this new and relatively different design research method to clients was complex enough from a commercial perspective. We felt that an unnecessary burden could be placed on the client relationship by the extra layer of consent and negotiation that would be

required with clients and participants to formalise these commercial deployments of Mobile Diaries as Design Research field studies.

## 4.3   Exploratory Interviews

Stakeholder interviews are often used in design projects during the requirement gathering phases of a project (Preece, Rogers & Sharp, 2002). They are a starting point for exploring issues and provide an opportunity to connect personally with stakeholders (ibid). If kept brief and conducted in a convenient location, they can be little burden on the participant. For these reasons interviews were selected as an appropriate stepping stone to the field studies. They provided a safe and familiar start point for exploring the issues and generated data to focus the research. They also offered some early validation that the issues were genuine and appropriate for the research.

An understanding of the methodological considerations involved in doing research in a commercial context was central to this first step. The initial interviews provided a vehicle for initiating discussions with my employer about appropriate approaches as well as instigating a research relationship with clients. The exploratory interviews were designed to help clarify and focus the research questions around the use of mobile tools, to identify appropriate methods for collecting data in a commercial context, and to test findings from literature in our particular context. A brief summary of the exploratory interviews and their contribution to research design is provided below.

Figure 3 summarises the purpose of the exploratory interviews, the research questions that guided the development of the interview questions and the key outcomes.



**Exploratory Interviews**

| **Purpose/Objective** | **Guiding Questions** | **Outcomes** |
|---|---|---|
| Ground my research in its situated context | Are mobile phones a viable mode of research enquiry/data collection in this practical context? | Decision that mobile-supported self-reporting was a viable design research in our context and worthy of further investigation |
| Expose preliminary insights into mobile use of clients | How are mobile phones being used by our client base? | |
| Test findings from literature | | |

**Figure 3. Overview of the role of the Exploratory Interviews**

## 4.3.1 Structure

Two pilot interviews were conducted in August and September 2006, one with a participant from an existing client organisation and one from a potential client organisation. Participants were both highly mobile workers and likely to be heavy mobile phone users. The interview questions enquired into how mobile phones were currently used within the workplace and how participants used their phones to negotiate remote access to work and personal practices. The extent to which the participant knew or used various mobile technologies such as Bluetooth, camera, MMS, email etc, was also explored. Participants were asked about various forms of communication in the workplace such as email and face-to-face meetings to build up a picture of usage.

## 4.3.2  Discussion

Clearly two interviews is not an in-depth study. However the purpose of these initial interviews was to begin to gain a sense of mobile phone use in our particular client organisations, understand the issues in the context in which I was working and compare them to existing literature based on more extensive studies (examples of which are noted below). These initial exploratory interviews provided four key insights that influenced the next phase in the research design. Firstly, that mobile phone use was ubiquitous within these workplaces, suggesting the easy adoption of mobile devices as data collection tools. Secondly, that support and instructions might be needed when using mobile phones as research tools. This observation was made on the basis that both participants had fairly new phones with a range of features, but a limited knowledge or experience in using many of them. The third and fourth points correlated directly to findings in literature about mobile phone use. The first of these was the habitual use of mobile phones 'in-between times' (e.g., in between meetings or appointments) also reported for example by Ito and Okabe (2005), Perry and Brodie (2006) and Perry et al. (2001). Such behaviours would potentially provide opportunities for reflective data collection. The other was the benefit to be gained from supporting a variety of input mechanisms. For example, Carter and Mankoff's (2005) comparative study of devices suggested that allowing participants to choose recording modes, perhaps through multi-modal devices, is important to the success of self-reporting methods. Both interview participants had expressed different preferences for input types at different times. These things suggested that mobile devices would be viable as research tools and pointed to some aspects to consider if they were to be used for this purpose.

## 4.3.3  Impact on Research Design

The process of locating the research into a practice context and moving into the field shifted the focus of the investigation. The original intention had been to continue with further interviews, however several factors led to a change of plan. Firstly, several client projects that involved mobile-services design were put on hold and thus obvious interview candidates were no longer available. At the same time, the experience of the two pilot interviews encouraged the shift of focus away from mobile services towards the contribution that mobile devices as self-reporting tools could make more generally to early design projects. The next step in the research was to design a field study that provided empirical insight into the experiences of using digital, personal and networked

tools in self-reporting and how they might benefit our practice. Other methods besides interviews, such as prototyping, employed in the subsequent two studies described below, were more appropriate to achieve this requirement and so it was decided that further interviews were not a priority.

## 4.4   Field Studies

Informed by the insights gained as a result of the exploratory interviews, the purpose of the field studies was to investigate the potential of augmenting self-reporting with available technologies, to support early, generative, design research at the CD Agency. I was particularly interested in experimenting with and evaluating some of the mobile, networked and interactive technologies documented in the literature at the time. It was not appropriate or possible to just take one of the methods existing in literature and start applying it within the agency context for the following reasons. Firstly, the agency did not have access to the same technologies and resources as those documented in the literature studies. Secondly, the studies in the literature were developed for different purposes and in different contexts. Instead there was an opportunity to select, combine and compare aspects and technologies from different approaches and to develop a hybrid method, or combination of tools, suitable to the specific research context. As a result the fieldwork took the form of an 'iterative trialling and building up' of a hybrid technique, Mobile Diaries, from the resources available.

As a result of the research it was possible to gain a better understanding of what differentiated the different tools and techniques in terms of the experiences they enabled and the implications for participation. The influence of co-opting social technologies and the resulting opportunities and challenges for participation became clear during the process of designing, evaluating and analysing the results of the studies.

The sections that follow outline the two field studies and the subsequent work to implement the Mobile Diaries into practice (with full details given in Chapters 5, 6 and 7 respectively), beginning with an explanation of the 'prototyping' approach.

### 4.4.1  Data Collection: Prototyping

Prototypes are a core Participatory Design method (Greenbaum & Kyng, 1991) and commonplace in Interaction Design (Preece et al., 2002). In addition to demonstrating and advancing abstract design concepts, prototypes play an important communication

role in the design process. They enable an experiential evaluation of a possible design and create a space for shared experience between stakeholders (Ehn, 1988). Prototyping is also common in design related doctoral studies as it enables an empirical, experiential and exploratory investigation into phenomena (e.g., Axup, 2006; Ludvigsen, 2006; Muller, 2009; Sleeswijk Visser, 2009). In this research a self-reporting technique was iteratively prototyped over two field studies. The field studies took place over a period of weeks and allowed us to evaluate the prototype self-reporting method and tools over time and in context.

Inherent in prototyping are loops of action, analysis, evaluation and reflection. As demonstrated in Bødker and Grønbæk's (1991b) work on Cooperative Prototyping, this makes it possible for stakeholders to be actively involved in the design and modification of prototypes, and the method provides a channel for users to consciously influence the future product. In the field studies reported in this thesis, participants *used* the Mobile Diary prototypes and were then prompted to externalise and reflect on this experience through methods such as interviews, group review sessions, email questionnaires and other informal feedback channels. These 'reflective sessions' (described in more detail in the respective field study sections below) were intended as interventions that would create spaces for discussion and the collaborative evaluation of the method from different perspectives. They were also selected depending on what was suitable given the commercial environment of the research and the constraints facing participants with regards to time. Sessions and methods for feedback needed to be fitted in around a normal working day and be open, collaborative and informal enough that participants felt free to contribute any thoughts or feedback they might have. The active role of the participants in evaluating and analysing their experience of *doing* and *using* Mobile Diaries, was critical to both the refinement of the prototype, and to the evaluation of its success (see Section 4.5 for further details on the approach to analysis).

### 4.4.2  Study 1: Mobile Diary Prototypes - Internal Study

Study 1 focused on initiating and developing the idea of Mobile Diaries and the form they would take in the specific commercial context. Central to this was appropriating aspects of self-reporting methods and the capabilities of particular tools, observed in literature as having value to the goals of early design research goals, and evaluating them in a practice context. The initial Mobile Diary prototype was evaluated with members of the design team within the agency. The purpose of this was to sensitise

ourselves to the potential opportunities and challenges of using such tools and techniques in design research, prior to attempting to deploy the method with clients. Developing and using the Mobile Diary prototypes ourselves made it possible to test out practical aspects of self-reporting, including different tools, activities and approaches to data capture and treatment. It allowed us to experience and evaluate the approach first-hand, rather than rely on the documentation of others. A brief overview of the structure of the study and its contribution to the research is provided below. Figure 4 summarises the purpose and shape of the study, the questions that guided the analysis and evaluation and the key outcomes.

**Mobile Diary Prototype (1)**

The Mobile Diary was run over three weeks, with points of reflection (indicated by the dots on the arrow above) included throughout.

| Purpose/Objective | Guiding Questions | Outcomes |
|---|---|---|
| Prototype the Mobile Diary technique | What does the digital self-reporting method look like in this context? | Initial Mobile Diary for testing |
| Evaluate and select tools | What does it feel like to use one? | |
| Sensitise the design team to the issues | How does it contribute to our design process? (i.e. meet our early design research objectives) | |

**Figure 4. Overview of the first Field Study: Mobile Diary Prototype (1)**

*Structure and Participation*

The study took place over three weeks in September 2006 and included four members of the CD Agency design team including myself as a participant/researcher. Each team member used a different mobile recording device (either a digital camera, mobile phone, PDA or video camera), but was guided by the same set of tasks and activities.

Participants were able to formally feed back on their experience of *doing* and *using* Mobile Diaries and input into the iterative design of the method at four specific stages during the study (summarised in Table 1). The first was pre-project: a briefing session to introduce the study objectives and agree on the general structure. At this session participants also selected the recording tools they would use for the Mobile Diary prototype. The second opportunity was during the project: a workshop that occurred after we had used the Mobile Diaries for a week, designed to support discussion and reflection on participants' experiences to date. Feedback from this session informed how the Mobile Diary study was structured over the second two weeks. Figure 5 shows documentation of this workshop.
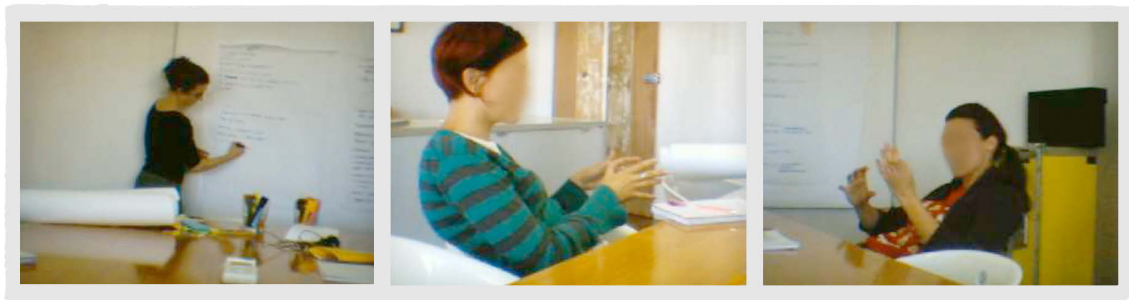


**Figure 5. Discussions and stories being shared during the workshop**

The final two formal opportunities for the design team to influence the design of the method were post-project: a shared review and a questionnaire. The shared review enabled the design team to share the material they had generated as 'participants'. This was a chance for the design team to further reflect on the experience of *doing* Mobile Diaries, as well as to experience 'reading' the data generated by other participants from the perspective of a design researcher. This involved assessing the potential value of this kind of material to the design process. The individual questionnaire allowed for participants to give personal reflections and feedback on the experience in their own time and make suggestions for improvements.

Table 1. Summary of the 'reflective sessions' in the first Field Study

| Session | When | Description | Outcome |
|---------|------|-------------|---------|
| Briefing | Pre-project | Initial briefing to introduce project goals and structure. | Participants chose topic and self-reporting tool. |
| Workshop | 1 week into diary | Workshop session to discuss and reflect on experiences of doing the diary. | Sharing of initial experiences of doing the diary and feedback about format. Resulted in change in diary format to include prompts and reminders. |
| Shared Review | Post-Diary | Session to share and review material collected. | Discussion of material generated, experiences of doing the diary and of reviewing the material. |
| Individual Questionnaire | Post-Diary | 30 questions about experiences and opinions of the method and the specific tools used. | Reflections on the method, potential improvements, potential value of method to design agency. |

## Discussion

In this study the design team became the Mobile Diary participants. The focus was the practical aspects of putting together such a study, and what it felt like to be a participant. Illustration 5 shows the emphasis on our role as participants in the study and this is where our primary learning about the technique was located. In reviewing the material that other participants had collected, we were able to gain some insight into what it would be like to take on the role of the design researcher in such a study and see the value of the method. However the primary reflections were with regards to the experience of the participant and the differences between the tools. This study enabled us to consolidate the Mobile Diary toolkit, and laid the groundwork for Study 2 where the prototype was further refined and evaluated.

**Illustration 5. Focus of the first Mobile Diary prototype study: the experience of the participant**

In the first study we were primarily sensitised to the experience of being a participant *doing* the Mobile Diary, but there was also opportunity to gain insight into the value and experience of using the method from the perspective of a design researcher.

In this first study the Mobile Diary packs also included a paper-based collage and a map, examples of generative tools and activities common to probes and generative studies. They were included in this first variation of the Mobile Diaries because the start point for the prototypes was the 'standard toolkit' of probes and primer kits in which such physical 'making' activities are nearly always included. Such generative tools and 'making' activities do enable particular important kinds of interactions with participants. As Sanders (2005) argues, what people 'make' tells us certain things that other kinds of documentation cannot. However, as part of the process of focusing and defining the research, the analysis and write-up of the first study is limited to the experiences and outcomes particular to the use of digital, personal and networked technologies. The rationale for this was that a significant amount of research has already been done on these tools (as noted in Chapter 3, Section 3.2.5) which I did not wish to replicate. Rather the analysis sought to explicate the particular qualities and capabilities that were brought to self-reporting through social technologies, as complementary to well-known and documented generative tools and activities such as maps and collages. As a result I did not include any such activities in the second study. However these analogue or 'making' tools can be and have been incorporated as part of later Mobile Diaries as complementary data collection tools.

One of the limitations of this first study was that it was not undertaken as part of an actual design project. This was addressed in the second field study which was undertaken as part of a client project.

### 4.4.3  Study 2: Mobile Diary Prototype - Client Study

Study 1 provided a preliminary format for Mobile Diaries that we felt confident to deploy with a client. Study 2 was then designed to answer questions about how the method might contribute to the goals of early design research and test out findings from the first study in a project context. To do this, the Mobile Diary prototype was used by a client as part of an existing design project, with the client in the role of Mobile Diary participant. The purpose of the study was to evaluate the method in the context of an actual design project and thereby gain access to data about the kinds of material, experiences and design outcomes that such a method could contribute. A larger project, or more participants, might have generated more, and perhaps different, data. However what was important here was not the number of participants (or even projects), but rather that we were able to evaluate whether the technique was of value to the agency and if so, the role of the different technologies in enabling those experiences. A brief summary of the structure of the study and its contribution to the research is provided below.

Figure 6 summarises the purpose of the study and the questions that guided the analysis and evaluation, as well as the key outcomes.



**Mobile Diary Prototype (2)**

The Mobile Diary was run over three weeks with points of reflection included throughout.

| **Purpose/Objective** | **Guiding Questions** (based on previous stage of research) | **Outcomes** |
|---|---|---|
| Conduct the evaluation in a real world context | What kind of data does it produce? | Principles, Specifications and Guidelines for undertaking Mobile Diaries with clients |
| Evaluate and identify contribution of method to our process | What is the experience of the participant? | |
| Confirm format of method i.e., tools and techniques | How does the method contribute to our design process? (meet our design research objectives?) | |
| Clarify requirements for final data collection and presentation platform | | |

**Figure 6. Overview of second Field Study: Mobile Diary Prototype (2)**

*Structure and Participation*

The second study took place over three weeks in November 2006. The focus of the diary was a 'day in the life' of the client. The recording tools and structure of the Mobile Diary prototype provided to the client were selected based on the findings from the first study. As summarised in Table 2, reflections on the client's experiences of *doing* the method were gathered during and after the study. Feedback was collected informally and throughout the study via phone calls and emails to 'check in', as well as face-to-face as part of project meetings. A more structured 'reflection session' took place at the end of the study via a shared review of the material with the client and the Creative Director as part of the overall design project. The client was also interviewed separately so that information could be gathered specifically about the experience of *doing* the method outside the project context. The Creative Director working on the project also provided informal feedback about their experiences.

Table 2. Overview of 'reflective sessions' in the second Field Study

| Session | When | Description | Outcome |
|---|---|---|---|
| Informal ongoing | Throughout the study | Informal feedback via phone calls and email. Face-to-face as part of project meetings. | Encouragement, confirmation that the participant was enjoying the process and insight into participant experiences. |
| Shared Review | Post-Diary | Collaborative session to share and review material collected (with Creative Director) as part of project meeting. | Discussion of material generated, experiences of doing the diary and of reviewing the material. |
| Semi-structured Interview | Post-Diary | Questions about the participant's experiences and feelings about doing the Mobile Diaries. | Reflections on the method, potential improvements, potential value of method to design agency and to participant. |

*Discussion*



**Illustration 6. Focus of the second Mobile Diary prototype study: the experience of the participant and the design researcher**

Study 2 provided an experience of *doing* and *using* the Mobile Diary in a project context, from the perspective of both the participant and the design researcher.

As indicated in Illustration 6 the structure of this study provided access to experiences of *doing* a Mobile Diary from the perspective of both the participant and the design researcher. The client, in the role of study participant, reflected on her experiences of *using* the Mobile Diary to share her world with us. I and other members of the design team were able to reflect on our experiences as design researchers, *using* the Mobile Diary to immerse ourselves into the life of our participant. This enabled learning about the method and the impact of these particular self-reporting tools from both perspectives. The real-world project context also enabled a more effective evaluation of the kind of material that could be produced than the first internal study had done. In turn this allowed confirmation and refinement of decisions made about tools in the previous study. It also highlighted the need for a more sophisticated way of collating and sharing the Mobile Diary data during the study, and provided a set of requirements for achieving this (followed up in subsequent work described below).

### 4.4.4  Subsequent Work

The experiences of the first two field studies enabled the CD Agency to see the value of the approach and feel confident to use the technique within a commercial context with clients. The findings from the studies also informed the development of an online Mobile Diary platform that aggregated participants' mobile data for later review or editing, as documented in Chapter 7. Based on this research, a refined Mobile Diary method was implemented in two subsequent commercial studies that took place outside the formal research undertaken for this thesis, and which has been repeated in other studies since. The take-up of the method in practice demonstrates the value of the research and verifies the findings that the Mobile Diary method made a valuable contribution to early design research in a practice context.

As noted, for commercial reasons there was no formal evaluation of these subsequent studies. A brief description of the two subsequent projects and key outcomes are documented in Chapter 7. The description of the projects in Chapter 7 is based on my experiences as the design lead on the projects and feedback gained from a client and design researcher involved in the studies. They are included because they further informed the development of practical and technical considerations significant to approaches such as Mobile Diaries also documented in Chapter 7. They also confirm findings from the first and second field study in different project contexts and enriched the capacity for reflection on Mobile Diaries as a method used in practice. The experience of implementing these studies contributed to the reflections in Chapters 8 and 9.

## 4.5  Analysis

The philosophical and theoretical positions on design, design methods and participation laid out in Chapter 2 underpin the approach taken to analysis in this thesis. The primary lens for analysis is developed from the premise that our choices about tools and methods impact on the conditions created for participation. In this thesis the relationship between tools, methods and experiences has been scrutinised in a particular context, in order to make available knowledge that better equips us to support participation in ways appropriate to that context.

The commitment to contribute to knowledge that is of value to both Design Research and professional design practice also informs the analysis and the way in which the

findings are presented. Throughout the thesis concepts from literature have been explored in relation to findings from practice, and experiences from practice reflected on in terms of their relationship to existing concepts in literature. This iterative moving back and forth has been an important part of understanding how academic literature can inform professional design practice. Just as importantly it has also allowed for the findings of the practice-led research to be understood in relation to, and located within, existing, ongoing academic dialogue about design methods, participation and social technologies.

The analysis and presentation of findings in this thesis can be divided into three phases. Phase 1 of the analysis was the evaluation of the Mobile Diaries as an early design research method as it was being iteratively designed and implemented. This is documented in Chapters 5, 6 and 7. The development of the method and its evaluation is both inspired and informed by concepts and technical capabilities introduced in the literature review. The second phase of analysis is performed from the perspective of asking what the impacts of designing *with* social technologies as self-reporting tools are on the nature of participation in self-reporting. This second phase of analysis is presented in Chapter 8, and draws upon the empirical research of Chapters 5, 6 and 7, as well as related self-reporting studies and research literature. The third phase of analysis, documented in Chapter 9, is a reflection on the insights gained about potential new forms of participation in the early design of social technologies themselves, which emerged from the fieldwork. This analysis was performed from the perspective of asking what the opportunities and implications are for participation when designing *with* and *for* social technologies. Key studies and concepts from Participatory Design literature helped to inform and support this last cycle of analysis. Each phase is briefly outlined below.

### 4.5.1  Phase 1 Analysis

The design, iteration, evaluation and analysis of the Mobile Diary prototypes was guided by concepts identified in the literature, our design sensibilities as practitioners about what kinds of experiences and outcomes we were trying to achieve early in the design process, and the kinds of experiences for designers and participants we were hoping to enable. The perspectives on design and participation outlined in Chapter 2 sensitised me to particular ways in which participatory or designerly qualities may, or may not, be embedded within methods. In writing up the analysis of the field studies I

sought to identify what and how, exactly, particular design outcomes and experiences were being enabled, and the role and capabilities of the different tools within that. As such the analysis of the two field studies in Chapters 5 and 6 includes an evaluation of the tools and the kinds of material produced throughout the study, and considers the perspective and experiences of the participant and the designer. Chapter 7 presents the final Mobile Diary method that was implemented into commercial practice along with reflections from the experiences of using the method in two subsequent commercial deployments. Practical and technical considerations for the use of the method, extracted from the process of implementing the method into practice, are also provided. The analysis and discussion of the two field studies and of the development and implementation of the final Mobile Diary method were structured to expose and account for the evaluation and decision-making process taking place, to highlight where particular decisions about tools and study structure were being made, and on what bases.

## 4.5.2  Phase 2 Analysis

The second phase of the analysis, documented in Chapter 8, focused on explicating the impact of using social technologies as *tools for design* in terms of how participation is being enabled. Social technologies are constitutive of larger and more complex emerging social practices and behaviours. The intention was to identify how self-reporting was being augmented by social technologies, and the impact of this on the nature of participation. This was done through analysis of how social technologies are impacting on the experiences of participants and designers in self-reporting and the role of the different tools in enabling those experiences.

As a result of an analysis of the field studies, correlated with relevant self-reporting literature, seven experiential qualities of self-reporting were identified that were enhanced, or enabled, by social technologies and important to early design research. These seven qualities describe how some of the social, technical and physical attributes of social technologies, identified and exploited in the field research, impact on the kinds of experiences that are being enabled for participants. Many of these attributes (e.g., mobile, networked, multi-modal, interactive) were identified in the literature as important to enabling particular kinds of experiences in self-reporting and were deliberately fostered and explored in the design of the Mobile Diaries. Some attributes (e.g., sharable) only emerged as significant as a result of the fieldwork analysis and the

need to account for the social impacts of social technologies on the experiences being observed. These are drawn together in terms of the experiential qualities they enable for self-reporting in Chapter 8.

The intention behind presenting these findings from an experiential perspective is to move the discussion beyond the novelty of specific self-reporting studies, tools or platforms and help to connect the use of such tools, and more importantly our choices about the tools, to the conditions for participation they enable. It also provides a critical lens through which the trend to appropriate everyday, personal tools into self-reporting can be understood.

In analysing how social technologies were enabling and extending experiences in self-reporting, it was also possible to see that some of these experiences went beyond the traditional bounds of research, exposing assumptions about participation, and how we manage the boundaries of participation, embedded within our protocols. In particular, the process of implementing the Mobile Diaries into practice demonstrated that some of the experiences, activities and expectations enabled by social technologies were not accounted for, or anticipated by, traditional research protocols. The second output from this phase of analysis, also presented in Chapter 8, is a discussion of these ethical and methodological considerations raised by the appropriation of social technologies as design research tools.

The seven experiential qualities and the discussion of methodological and ethical considerations are both presented in Chapter 8 as a way of addressing the impact of using social technologies as *tools for design*. While the former focuses on how participation is being enabled for participants and designers through the use of social technologies as self-reporting tools and the role of the various tools in enabling those experiences, the latter provides insight into the impact this has for how emerging forms of participation might be conceived and managed.

Where possible, in the presentation of the findings in Chapter 8, links to earlier literature that inspired the Mobile Diaries are retained. Where a finding identified in my research corresponds with an earlier study, that study is referenced or given as an example. Such links are largely distinguished by literature published prior to 2006. I have also used more recent studies as a secondary source of data, providing a reference

to those studies that confirm findings from my own field studies about how particular experiences are being enabled or assumptions challenged.

### 4.5.3  Phase 3 Analysis

In the process of doing the empirical research and analysis presented in Chapters 5-8 it became clear that social technologies created the potential for new forms of participation in the early design of social technologies themselves, in ways not accounted for in traditional (or indeed emerging) forms of self-reporting. In the third phase of analysis presented in Chapter 9, findings from the field studies are examined in terms of how the Mobile Diaries enabled experiences and outcomes valuable to the early design of community platforms in particular. The concept of seeding is used to identify the experiences and demonstrate how they support a connection between design and use, becoming 'strategies for seeding' valuable to the early design of community platforms. Emerging concepts and methods from Participatory Design literature are also used in the analysis to explore the significance of these strategies as opportunities for participation appropriate to the design of social technologies themselves. These findings demonstrate how the nature of participation is changing in the context of social technologies. In attempting to implement or take up these findings within design practice a number of limitations and barriers were encountered and identified. These barriers were largely created by assumptions or expectations, embedded within our existing protocols and processes, about how participation in design is managed. The barriers to embracing the new forms of participation identified in the research are also discussed in Chapter 9, providing further evidence of the changing nature of participation in design.

## 4.6   Reflections and the Rigour of the Research

This section provides an account of the modes and stages of reflection that took place throughout my research and their significance. Scrivener (2000a) argues that reflection is central to practice-based research:

> *...the relationship between the issues, concerns and interests explored and the artefacts produced is so tied up with the act of making that this can only be revealed through description and reflection.*

In my research these processes of reflection, and the documentation of that reflection, have been critical to externalising the research and making it available for analysis and scrutiny. The roles I have played during this research include that of researcher, participant, designer, employee, team member and team leader. Each has required me to maintain a different set of accountabilities and responsibilities. For two years while I worked at the CD Agency my research-thinking and activities were threaded through my daily actions and discussions with peers and clients.

The research can be broken into two main phases, each emphasising a different kind of reflection. In writing about practice-led research, Gothe (2006) talks about the dual role of the 'insider researcher'. In the first phase of my research this was my primary role. The field studies were intensely pragmatic and concentrated activities and the first phase, conducted in the rapid-paced context of commercial practice, was characterised by many cycles of reflection-in-action. All the field research was undertaken during this time. In order to externalise and capture the research process I maintained a written and visual diary of activities, experiences, thoughts, questions and decisions in relation to the research. I produced numerous sketches and documented activities with notes, recordings and photographs. Once the field studies were complete, analysis and writing up of the studies and early draft chapters became the core reflective process. Figure 7 shows examples of sketches and the visual organisation of concepts that were central to the identification of key themes and draft chapter structures. Papers and blogposts related to the research and published during the lifetime of the thesis enabled the articulation of significant ideas as well as feedback on those ideas. In addition, writing proposals and commercial documents about our research methods enabled and facilitated a reflection and maturing of ideas. Presenting to clients about the possibility of the Mobile Diaries also contributed to the development of strategies to articulate the benefits and issues of the method and helped to identify the challenges to using such an approach.

**Figure 7. Examples of documentation supporting the analysis of key themes and writing up of studies**

The second phase of the research occurred after all field studies were completed and I had moved from working in practice to being a full-time researcher. I no longer had to play the role of 'insider researcher', instead having the time and space to reflect on the practice-based research as whole. In this phase, writing and visualising relationships through methods such as card sorting became core modes of reflection (as demonstrated in Figure 8). Sketching was also particularly important for exposing key ideas and relationships and interrogating key themes emerging out of the research (see example in Figure 9). Throughout this second phase I also sought informal opportunities to share and discuss my research with other practitioners and compare my findings with their personal experiences, opinions and expectations. This process of communicating and socialising the preliminary findings helped to both make sense of the research and shape it in such a way as to be accessible and useful to other researchers and practitioners.

**Figure 8. Key concepts and connections represented through cards and sketches**
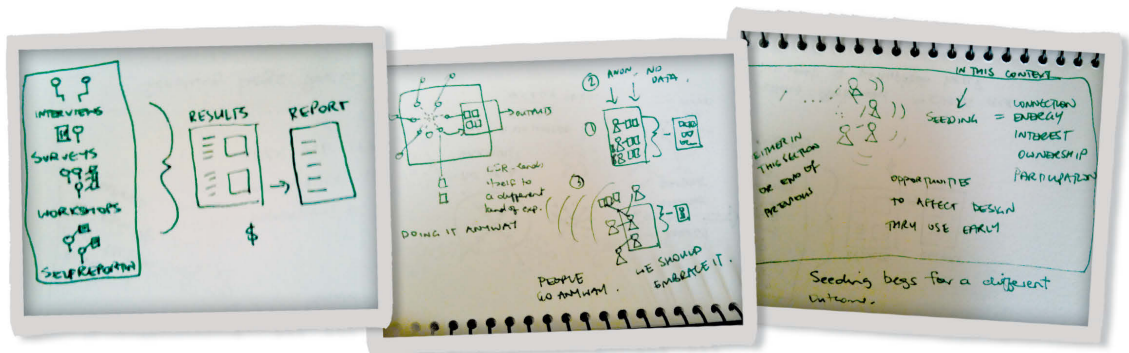


**Figure 9. Sketching out key concepts and connections as part of reflection and data analysis**

These periods of action and reflection inherent during, between and after the studies are visualised in Figure 10 in relation to Scrivener's (2000a) model for practice-led research introduced in Chapter 2 (Section 2.3.2). Each field study is a complete work episode. There were breaks within the studies that provided additional points for reflection (e.g., interviews, diary writing). During each episode is reflection-in-action as a matter of course, and between each episode is reflection-on-action. The totality of the fieldwork makes up another larger work episode upon which reflection takes place. During the first phase, particularly throughout the field studies, the predominant mode is reflection-in-action. In contrast, the later stages where I reflect on the project as a whole were characterised by reflection-on-action.

EXPLORATORY INTERVIEWS

MOBILE DIARY PR0TOTYPE 1

MOBILE DIARY PROTOTYPE 2

PLATFORM DEVELOPMENT & COMMERICAL RELEASES

Reflections on overall research and relating that back to literature

research questions emerge from literature and practice

Reflections about interview structure during study

Reflections post-project feeding into next study

Reflections during project with participants

Reflections post-project feeding into next study

Reflections during project with participants

Reflections post-project feeding into platform

Reflections post-project development & commercial releases

**Figure 10. Mapping research design to Scrivener's model of practice-led research**

Episodes of reflection *in* and *on* action that took place over the field studies and duration of the research are visualised through Scrivener's model of practice-led research.

## 4.7    A Note on Action Research

The iterative and collaborative approach taken to the design and evolution of the research in this thesis has many similarities to Action Research (AR). There is value in looking at AR as a model for Design Research, and I briefly touch on the similarities between design and AR here whilst also providing an explanation for why AR is not used as the formal research methodology in this thesis.

Swann (2002) has written explicitly about bringing an action research approach to design, highlighting in particular the value of adopting the more collaborative nature of AR. Swann starts by pointing out that the methodology of Action Research and the reflective practices of design are already very similar. While design is often articulated as a process of research-analysis-synthesis-evaluation, AR is distilled down as four stages of plan-act-observe-reflect. They both rely on iterative steps or cycles of action, reflection and evaluation and a commitment to responding to, and building upon, the initial outcomes of the research in order to shape the project direction. Swann (ibid) also draws attention to the relationship between Schön's epistemology of practice and action research stating: "*Reflection "in action" and reflection "on action" lead to "action research*."" (p.50).

Swann (2002) suggests that there are two things that tend to differentiate action research from design as approaches to research. The first is a commitment within action research to equitable collaboration between all parties (including the researcher and participants). The second is the commitment within AR to an emancipatory agenda. I have also sought in my research to work collaboratively through the use of participatory methods and by involving stakeholders in shaping the development of the research. However it was not possible within the commercial environment of the CD Agency to support what Swann (ibid) describes as the 'totality' of the collaborative nature of action research. The small size of the agency and the commercial considerations required a more patchwork approach to collaboration and negotiation of participant involvement. The relationship between the agency and its clients, and between clients and users meant there was neither the resources nor the necessary research culture available to truly undertake a systematic action research program based on the equitable collaboration of all parties.

Furthermore, as argued in Chapter 2 (Section 2.3) there are sufficient models from within design to achieve rigorous, reflective and accountable research such that the adoption of external frameworks from the social sciences are not required. Instead it is possible, and valuable, to talk about this Design Research thesis as Design Research *about practice*, being done *through practice*. Indeed one of contributions of this thesis is as an example of practice-based Design Research where practice itself is the basis for systematic research. According to Swann (2002), one of the benefits of bringing AR to Design Research are processes for externalising the research and the development of a systematic approach to documentation and reflection. As demonstrated in Chapter 2, the work of Donald Schön (1983) and Stephen Scrivener (e.g., 2000a; 2000b) also provide such frameworks, but from a design perspective.

That being said, the research approach taken in this thesis and the findings about design practice are certainly complementary to areas of Participatory Action Research (PAR) (McIntyre, 2008). As Swann (2002) argues, there is significant value in encouraging and supporting designers towards more equitable relationships with the people with whom they are designing, and frameworks such as PAR could help support this evolution of practice. As such, ways to better integrate a PAR approach into design projects is included in the discussion of future work in the concluding chapter.

## 4.8   Summary

This chapter has documented the journey of the research and the evolution of the research questions, paying particular attention to how the practice-led nature of the research was managed and accounted for. An overview of the research design was presented along with a rationale for the methods of data collection and analysis. A description has been provided of why and how the Mobile Diary prototypes provided the primary source of empirical data for the research and how opportunities for collaborative reflection and evaluation of the method were sought. The final sections of the chapter outlined how the modes and stages of reflection enabled me to play the dual role of 'insider researcher'. It also outlined the relationship to action research. The chapters that follow document the field studies in full, the development of the Mobile Diary method, and the subsequent analysis of participation and design in the context of social technologies that it allowed.

# 5

# Designing a Mobile Diary

The Mobile Diary method was iteratively designed and evaluated over two separate field studies. In this chapter the evaluation of the first Mobile Diary prototype as a self-reporting method for early design research is described. Different potential self-reporting tools were evaluated and concepts from literature tested out. The process enabled an empirical understanding of the kinds of experiences and outcomes that are possible through such approaches to self-reporting and gave insight into the role of different tools on enabling those experiences. The chapter outlines how the field study was developed, its findings, and how these contributed to the development of the Mobile Diary method.

In this first study the design team at the CD Agency evaluated the Mobile Diary prototype through an internal study. This was the Agency's first foray into self-reporting as an approach to design research. The goals were to ground and explore concepts and technical capabilities identified in the literature within our specific practice context, and to understand for ourselves what it meant to conduct and participate in such a study. The study was designed, and the analysis presented, around the following three objectives:

- To experiment with and evaluate different potential recording tools
- To sensitise us as a design team to some of the issues involved in using such a method
- To enable a preliminary insight into the potential design outcomes and contribution to early design research the method could provide.

In order to achieve these objectives, Mobile Diary prototypes were trialled by four full-time members of the CD Agency design team, including myself, for three weeks. The process allowed us to experience the method from both the perspective of a participant *doing* the Mobile Diary study, and that of a design researcher *using* the Mobile Diary as an early design research method. As described in the Methodology Chapter (Chapter 4, Section 4.4.2), to enable the design team to share and discuss their experiences, specific 'reflective sessions' were held before (Briefing), during (Interim Workshop) and after the study (Shared Review & Questionnaire). The feedback gained through these sessions from the design team was critical to evolving and evaluating the method and to understanding its value as an early design research method to the CD Agency. In addition to participating in the study my main role was to facilitate the Mobile Diary study as the researcher. This dual role allowed me to have empathy for the experiences of the other designers and be sensitive to the process of using the Mobile Diaries. However, in the analysis of people's experiences and the material created, the focus has been on those of other team members rather than my own.

The chapter begins with a detailed description of the design and rationale for the initial prototype and study set-up. The outcomes from the study are then presented, structured around the three objectives and followed by an account of how the choice of tools for the Mobile Diaries was iterated as a result of the study. A summary of findings is presented at the end of the chapter.

## 5.1    Designing Mobile Diaries

The approach and tools selected for the Mobile Diary prototype were based on our experiences as design practitioners and informed by the concepts described in the Literature Review. We drew upon the principles of generative design methods, existing self-reporting methods such as probes and diaries, as well as emerging self-reporting methods that made use of digital, personal and networked technologies. The goal was to develop a method that supported immersion by designers into the world of participants and created conditions for dialogue with those individuals as active project stakeholders. An open-ended approach was adopted to put participants in the role of active contributors with the right to represent and share their lives in their own way, on their own terms. It was important that participants were able to capture material *in situ* as they went about their day and moved through various locations, places and spaces. The intention was to enable participants to share the personal, mobile, social and ongoing aspects of daily life including thoughts, attitudes and experiences, over time. To do this we aimed to leverage the opportunities offered by everyday, personal and digital technologies identified by practitioners and researchers such as Cheskin (2003), Hulkko et al. (2004) and Palen and Salzman (2002). Specifically we aimed to experiment with networked tools that would support real-time reports and tools that were both multi-modal and mobile. Tools and techniques where data collection was restricted to end-of-day reflective accounts or focused solely around desktop computer terminals were deliberately avoided.

The name 'Mobile Diaries' reflected these intentions. While the term 'Mobile' emphasises the more personal and mobile aspects of the method, referring to the method as a 'diary' was an acknowledgement that whilst seeking an open-ended, playful and participatory approach to data collection the diary would still be more focused than the intention behind the original Cultural Probes (1999). In addition, when discussing the potential name with the design team who had no prior knowledge of either probes or diaries, it was felt that the term 'diary' would be better received in a client context than 'probes'. Practical constraints around time and cost, imposed by the commercial context of the research, were also factored into the design and evaluation, encouraging the use of resources that were readily available or low cost.

### 5.1.1  Digital Tools

Four different mobile documentation tools were trialled: a PDA phone, Camera Phone, Digital Camera, and KCam video recorder. The first three were readily available while the fourth was purchased for $40 for the study. Each of the devices had different properties and qualities as recording and communications tools. The sketch in Figure 11, used to introduce the tools during the briefing session, shows the differences between the tools, including the recording media they supported and their connectivity. Not all the devices were networked, but it was expected that they were sufficiently mobile to enable *in situ* reports. All of the devices supported more than one form of data capture such as combinations of audio, text, still images and video and so could be considered multi-modal.
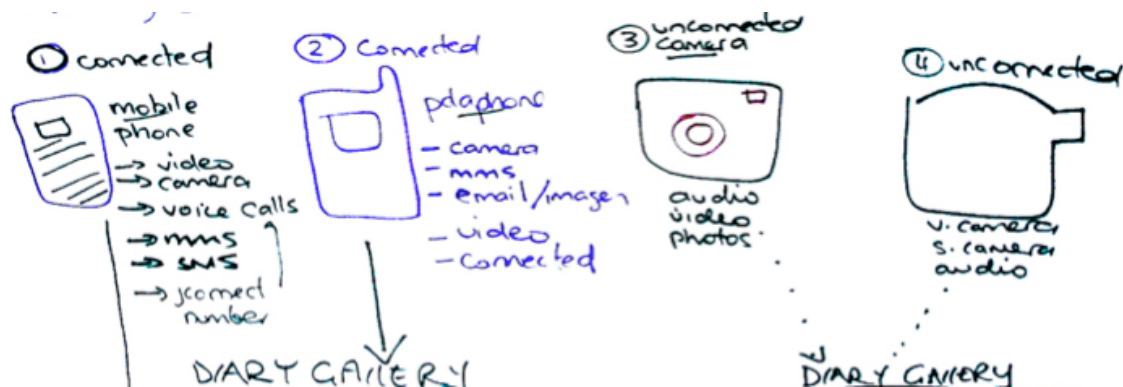


**Figure 11. Sketch of the different tools and their technical characteristics**

Each member of the design team used a different digital tool for documentation. We lacked the time and resources for a systematic comparison of tools and this approach had the advantage of allowing a rapid induction into the various issues involved in the use of each. During the briefing session each participant selected a device and shared some information about their choice. Participant 1 had never had a camera phone before and was interested to experiment with it. Participant 2 chose the digital camera because they liked photography and did not particularly like using mobile phones. Participant 3 chose the KCam because they were interested in experimenting with the low-fi and cheap video technology. These initial expectations provided some context to participants' existing relationships with the devices and their approach to using it. The fourth device was the PDA and this was the digital device that I used. To make it easier

for the participants, instructions for use were physically attached to each device as Gaver et al. (1999) had done. A voice message service had also been set up for participants to record and send messages as an audio file to a specific email address. This enabled *in situ* voice data capture in the same form as Palen and Salzman's Voice-mail diaries (2002), however no participants used this mode of data collection.

While we were able to access a range of portable recording devices, it proved more challenging to find an online platform to collect and aggregate the diary material that could compare to the Aware (2005) architecture used by Hulkko et al. (2004). At the time there were no appropriate custom 'diary' tools that we knew of. *Revelation™* (August & August, 2005), an 'immersive' commercial online qualitative research tool, was being built in parallel to our research, but it did not support mobile. Initially we sought to support the online functionality through existing free or low-cost platforms. The ability to support the display of audio and text alongside the images was critical to viewing the mobile phone reports. While third-party media-sharing websites would accept images from specific handsets, nothing would easily accept text, audio, video, or still images from the two phone types we had access to. As an interim alternative, MMS and Voice-mail messages from the Camera Phone and PDA were sent directly to a dedicated email address. The intention was to collate them manually during the project and reflect them in some way back to the participants (as indicated by the Diary Gallery in Figure 11). In practice this was not possible until the end of the study when all the participants shared their material in a review. This was due in part to time constraints and the challenge of accessing the non-connected data during the study.

## 5.1.2  Study Set-up

The topic of the study, decided collectively by the design team during the briefing session, was '*signs of sustainability in your neighbourhood*'. The topic was selected based on its interest to all the participants and its connection to the types of social and sustainability projects the CD agency was involved in. It was likely to generate experiences, reflections and data similar to some of our real-world projects.

**Figure 12. Mobile Diary prototype packs**

Examples of the packs are shown in Figure 12. The contents included: guidelines for the study, the selected recording tools, and materials for two mapping/collage exercises. As outlined in Chapter 4 (Section 4.4.2) the mapping/collage exercises are not included in the analysis. Unlike normal probe packs which are quite 'designed' (Gaver et al., 1999), the physical form of the packs was very primitive. This reflected their prototype-like nature, a desire to keep costs low and that the emphasis was on experimentation with the recording tools rather than the design of the physical packs. The prompts provided to participants around data collection (Figure 13) were intended to provide some form of direction around data collection, but remain open enough to allow participants to interpret what was appropriate, interesting or relevant from their own perspective.

**Mobile Diary Instructions**

Please use the [device] to capture your thoughts on sustainability in your home and work environment, and the journey in between.

For example you might start by describing:

• Aspects of your environment that you enjoy and why.
• Certain places that you enjoy seeing or visiting and why.
• Objects or places that inspire you.
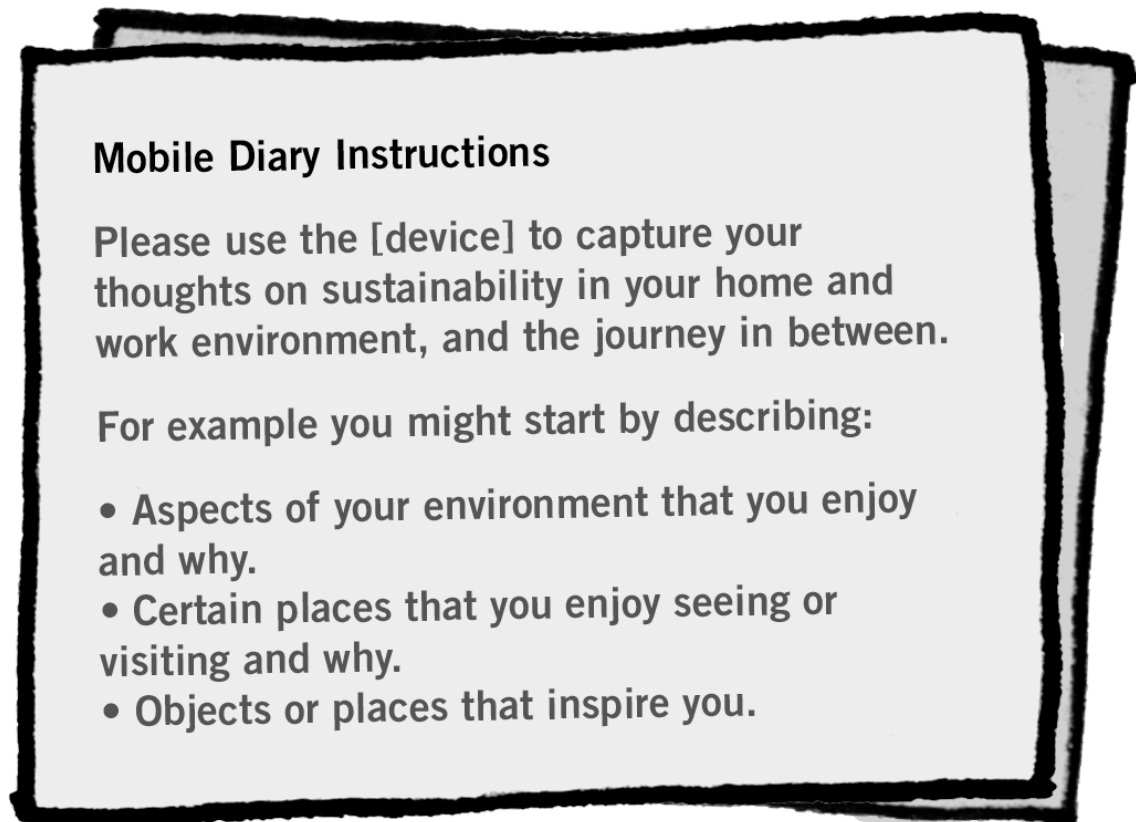
**Figure 13. Instructions on data collection provided to participants**

Some of the studies discussed in the literature review made use of SMS prompts to support data collection. In this prototype there was some hesitancy about employing this approach partly because these prompts had some similarities to the more structured Electronic Sampling Method (Intille et al., 2003); it was important not to 'over-direct' what was meant to be open-ended data collection. There was also a fear of interrupting and overburdening participants in an already busy commercial environment and thus adding to their workload. However based on feedback from participants (discussed in more detailed in section 5.2.1), SMS and email prompts were introduced in the second week. It became clear over the period of the research that the exchange between researcher and participants enabled by these technologies was a central part of the method, in particular to maintaining connection and dialogue with participants.

At the end of the study all the material was collated and reviewed collectively by all participants via a Keynote presentation. The physical reviewing of probe or diary material is not as extensively documented in literature compared to aspects such as the design of the packs themselves. Examples that do exist (e.g., Hulkko et al., 2004; Ivey & Sanders, 2006; Sleeswijk Visser, 2009) describe printing things out or putting them on the wall. However this does not account for rich media. Using Keynote allowed us to easily display the diverse audiovisual material generated by the different digital reporting tools. The material was reviewed in a group, each participant 'talking' to their data. Sharing and discussing the material in this way allowed us to take on both the perspective of the participant sharing our own material, and that of the design researcher, viewing the material of other participants. It also exposed us to some of the practical considerations of how Mobile Diary material might be shared after the study with client or participant groups.

## 5.2   Analysis

The analysis presented in this section is based on the material generated through the diaries, feedback from the participants on their experiences of doing the Mobile Diaries, as well as my observations and reflections on the study. As a result of the study, 66 different reports were created across the four Mobile Diary participants. In comparison to other studies (and our later diaries) this was a relatively low number of returns, but it was sufficient to provide a sense of what kind of material might be produced. Where relevant, our findings are also related to studies in literature. The analysis is structured around a comparison of recording tools, insights into the experiences of participants *doing* a Mobile Diary study, as well as the potential value of *using* this method of self-reporting as an early design research method. How this influenced the iteration of tools for the next prototype is also documented.

### 5.2.1  Comparing the Recording Tools

The study enabled a comparison between the tools and an insight into the impact these could have on the overall design outcomes of the study. Particular differences were noted in terms of *portability, connectivity, quality, reporting styles* and *usability*. Although there was no opportunity to evaluate the shared platform, it was possible to gain a sense of its potential value and impact based on its absence. This is also reported at the end of this section.

*Portability*



**Figure 14. Reports from different locations from the different participants, using the different reporting tools.**

We had sought tools that enabled participants to capture snapshots of their lives throughout the day regardless of their location. Figure 14 shows that all four different tools were portable enough to be carried and used 'on the move' by participants. There were, however, differences between them in terms of *how* portable they were. Compared to the other three tools that were pocket-sized, the KCam (see Figure 15) needed to be carried in a separate bag.



**Figure 15. KCam video camera**

The participant using the KCam stated:

> *[The KCam is] nice and small, maybe less appealing for men who*
> *don't have handbags ...but it's good because you don't fear breaking*
> *it.*

As the quote suggests, while the bulkier form meant it was less portable when compared in size to the other tools, its toy-like appearance still allowed it to be used in other, more playful ways. For example, Figure 16 shows the KCam being used to create a 'riding to work' video with voice-over commentary.
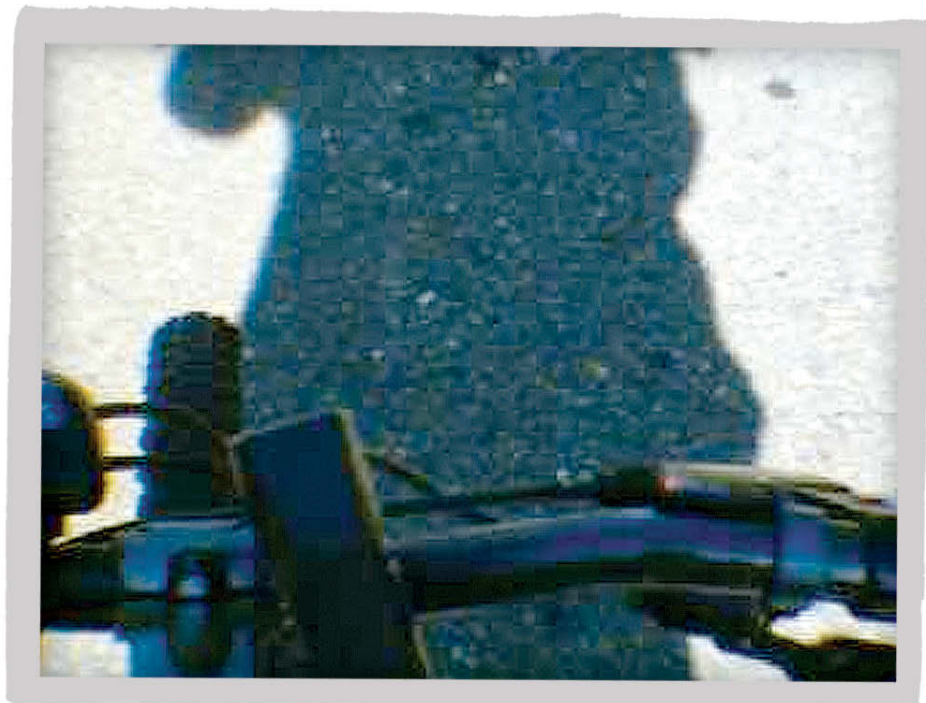


**Figure 16. Still from KCam 'ride to work' video**

## *Connectivity*

As anticipated, the Camera Phone and PDA supported the real-time sending of reports via MMS, though size restrictions limited this to images, audio and text, not video. While the KCam and Digital Camera material were collected at the end, it was possible to monitor this other material as it arrived, check that reports were being done and gain a sense of what participants were doing in real-time. This comparison of tools confirmed the value of continuous reporting proposed by other researchers (e.g., Brandt

et al., 2007; Hulkko et al., 2004; Palen & Salzman, 2002). It also drew attention to other ways in which networked devices might impact on self-reporting.

For example, the participant with the Camera Phone described recording multiple versions of the audio annotations before sending the final MMS showing that mobile reports might not be as real-time as they first appeared. This was partly due to the 10-second time limit, but it also suggested the immediacy of sharing the real-time reports could impact on how participants 'crafted' their message. This was reinforced by a comment from another participant who indicated that she would have felt the need to censor the content more had it been instantly uploaded. Using the Digital Camera, on the other hand, offered the potential for her to go back and edit which images were ultimately shared, even though in practice she did not do this.

The study also showed that real-time reports introduced a greater expectation of reciprocity than existed when using non-networked tools. Having sent something to the 'researcher', participants expected confirmation that the messages were arriving, and possibly some form of appreciation or encouragement in return. Carter et al. (2007) report a similar expectation and even frustration from their participants when trialling Momento. Although other researchers such as Palen and Salzman (2002) had emphasised the bi-directional nature of using such tools, it was the expectation of reciprocation from the participants in this internal study that prompted a conceptual reframing from my perspective of self-reporting as a conversation and an exchange with participants, rather than just a personal data collection activity. It also meant rethinking the role of the design researchers in interacting with participants and maintaining this momentum throughout the study.

*Quality and Format*

The differing digital quality and format of the material also revealed factors to consider when selecting between devices. For example, the MPEG-4 video from the KCam codec was much easier to transfer to a hard drive than traditional digital video. It could also be played back by a wide range of video players and easily shared or distributed electronically. However, the compression format greatly reduced the quality of the video and the audio, and the device was not practical for low light situations. This impacted on the types of recording activities that it could support. In contrast, the Digital Camera produced much higher resolution images than any of the other tools.

The better quality picture and digital display allowed for more creativity and flexibility at the time of capturing the image, but it was problematic for later processing and uploading the images to an online platform, making it much less sharable. This suggested a need to design self-reporting activities around the strengths of particular devices.

*Reporting 'Styles'*

Technical, physical and social factors influenced how people used the tools to create reports. Both the PDA and the Camera Phone had limits on what could be recorded, e.g., 10 seconds for audio and a 100k limit on the MMS messages. This emphasised the creation of quick, fast snapshots over detailed reports. The KCam video camera on the other hand supported longer and more in-depth narrations of the participant's surroundings, descriptions of events and associated feelings. It was natural to adopt a documentary-style approach when using it, correlating with findings by Isomursu et al. (2004) that participants readily adopted the role of 'film-maker' when using video for self-reporting.

The physical form of the devices, and existing associations about their role in our lives, also had the potential to impact on reporting styles. For example, participants picked up the KCam and immediately held it up to their eye in one hand like a conventional video camera, even though the viewfinder was almost impossible to see through. The Camera Phone on the other hand was more likely to be held up and away from the body. Existing studies of camera phone use (e.g., Oksman, 2006) suggest that camera phones are often used to capture fleeting and unexpected moments, whilst conventional cameras have traditionally been reserved for documenting special events. The results of our study suggested a potential for these associations to impact on the usefulness of the tools for self-reporting. The participant with the Camera Phone captured a range of snapshots of her neighbourhood, while the participant with the Digital Camera struggled with what to document. Our small sample prevents any systematic analysis but it is possible that this was in part due to previous associations about the role of such tools in daily life.

In future work it will be interesting to observe how new technologies which break from traditional form factors disrupt some of our existing preconceptions of how different tools should be used. For example, the Flipcam, used in later commercial diaries, is

shaped more like a mobile phone than a traditional video camera. It is not yet clear what impact, if any, these kinds of changes have to the reporting styles people adopt.

*Usability*

Usability, especially the need to learn new interfaces, can be a barrier to participation in self-reporting. In the Mobile Diary study all participants were able to generate Mobile Diary reports of some kind based on the simple instructions that were provided, demonstrating at least a basic level of usability across all the devices. However some devices needed frequent charging and this prevented participants from creating reports during those times. The KCam was the most straightforward to operate; in keeping with its toy-like character only one click was needed to start the video/audio record mode. Being video, it was also easy to capture visuals and narrate verbally at the same time. In comparison the other three devices required participants to 'learn' the interface and complete a number of steps in order to add audio or text annotations to images. The participant with the Camera Phone did not find this too prohibitive, describing the process as 'automatic' by the end of the study. However the lack of any annotation on the images generated through the Digital Camera (discussed further in Section 5.2.3) was partly attributed to the unintuitive interface.

*Shared Platform*

As stated previously, technology and resource limitations meant it was not possible to trial the automatic aggregation and display of mobile material on an online platform during the study. However, the following feedback from participants provided insight into how such a shared platform might have impacted on their experience of creating a Mobile Diary:

> *[During the study] I wasn't sure how well it was looking. I imagine if*
> *I saw them I would have been prompted to do more.*

And:

> *...wish I could have seen the stuff straight away or sent it to*
> *myself...I'd like to see my emailed pictures so I can keep track of*
> *what I'm doing and see them grow.*

The current format of the Mobile Diaries did not enable participants to reflect back on the material they had created. As these quotes suggest, this made it difficult for

participants to see what exactly they had covered in their reports, or how the reports looked to others. While an online platform that aggregated the mobile material would have obvious value for researchers monitoring the diaries, this feedback demonstrated the value of such a shared online platform for participants as well. It would be a secondary point of reflection for participants that could potentially encourage and direct future data collection. Such a shared platform would also allow participants to check for themselves that messages had arrived, rather than rely on confirmation from researchers.

### 5.2.2 *Doing* Mobile Diaries

*Doing* the Mobile Diaries provided the design team with an experiential understanding of what it felt like to be a Mobile Diary participant and sensitised us to some of the issues involved in self-reporting. It also provided some insight into potential experiences and outcomes for participants beyond the actual data collection. In particular we were made aware of issues relating to: *participant confidence, patterns of data collection* and *reporting and sharing in public*. We were also able to gain insight into *potential motivations and outcomes of participation* in Mobile Diaries.

#### *Participant Confidence*

Self-reporting requires participants to document and reflect on practices, experiences, emotions and attitudes that are normally implicit and embedded in their everyday lives. As Palen and Salzman (2002) point out, from a participant perspective such information can seem mundane and can lead participants to question the value of the material they are collecting. The domestic focus of our study, in which participants were asked to consider sustainability in their home and neighbourhood, also highlighted this potential. Participants documented things like rubbish containers, laundry habits, showerheads, cleaning products, recycling activities: all examples of domestic items and practices. There was concern from some participants about whether these were the 'right' things; the domestic subjects did not seem interesting enough to warrant the special attention provided them through self-reporting. Palen and Salzman's (2002) suggestion for dealing with this aspect is to balance the open-ended structure with guidance around data collection when reporting is participant-directed. We also considered providing further direction or more structure to the data collection to reduce participant uncertainty about what was the 'right' kind of data. It was decided, however, that the

most important thing for maintaining a participant-led approach was to ensure participants felt empowered in their role as active interpreters and decision-makers in the documentation process. Ways to support this informed the structure and approach to the next Mobile Diary prototype documented in Chapter 6.

*Patterns of Data Collection*

The study revealed potential patterns of data collection that could impact on how, and when, participants do self-reporting. The first was a tendency to create reports 'in between' times, such as on the way to or from home or work. This was likely influenced by both the activities and the topic of the study. However, it also aligned with known patterns of mobile usage; that people are likely to use mobile phones to fill voids between activities (Ito & Okabe, 2005; Perry & Brodie, 2006; Perry et al., 2001).

Another pattern was to forget to take the device and then, once remembered, use it to capture a series of images all at once. One possible response to this was to make use of participants' own phones (which they are likely to have with them at all times) as reporting tools. The implications of this approach are further discussed in sections 5.2.4 and 8.1.6. The use of SMS and email reminders, such as those used by Jönsson et al. (2002), Church and Smyth (2008) and Masten and Plowman (2003), could also help to encourage reports at different times. As noted in the study set-up, such prompts had not been used initially, due to matters of workload, apprehension about over-burdening participants with interruptions and requests and concern at 'over-directing' the data collection. However, participant expectations of reciprocity to their reports, and the difficulty participants noted in remembering to do the reports, further demonstrated their potential value. As a result, a limited number of email and SMS prompts were sent in the second week of the study to encourage participants. Some of these included random suggestions about potential images to capture, e.g., an SMS saying "take a photo of an item in your fridge". These prompts appeared to have little impact on the specific data collection in that participants did not necessarily capture what was suggested. However, positive feedback from participants about the reminders during the evaluation suggested that such messages were as important for maintaining connection and momentum in the study as they were for providing specific instructions for data collection.

*Reporting and Sharing in Public*

The literature had forewarned about legal and ethical issues involved in recording in privately owned public spaces such as shops and malls (e.g., Hulkko et al., 2004), and the need for participants to use discretion when capturing others (Carter & Mankoff, 2005). The Mobile Diary study revealed similar sensitivities about documenting in public and the potential impact of mobile reporting tools. While the focus of the method was on 'self-reporting', it was other people or scenes with other people in them that were often the subject of reports. For example, on one occasion, upon noticing they were being photographed, a curious member of the public approached the participant and asked what they were doing. Conversely participants themselves were aware of being observed by others when they were creating their reports. One participant noted feeling "*a little embarrassed*" when documenting in public, while another felt they had "*been given permission*" to do so by being involved in the study. Interestingly, the participants all felt the KCam video provided some sense of legitimacy about recording in public spaces, even though it was more like a toy than a video camera. In their study of different diary tools, Carter and Mankoff (2005) drew attention to the value of audio for clandestine reporting. The experiences of Mobile Diary participants described here also suggested people may feel more confident using some devices over others in public, while at other times participants may not feel comfortable to record at all.

A sense of self-consciousness was also felt by participants when hearing the material played back at the end of the study. One participant observed:

> *I went on a bit! Never great hearing your own voice but happy with it actually.*

Whilst another reflected:

> *...glad that I didn't have [video] camera or audio, too embarrassing to review in a group.*

Noyes (2004) noted a similar sense of surprise by diary participants when later watching video interviews of themselves. Listening to our own voices or seeing ourselves on video is an uncommon occurrence for most people, an aspect to be sensitive to when reviewing and sharing this kind of material with participants, particularly in a group forum. At the same time, it is the very personal, immediate and direct nature of audio

and video that make them so powerful as tools for empathy and immersion for designers (discussed further in Section 5.2.3).

*Motivations For, and Outcomes Of, Participation*

Motivation of participants is a key factor in the success of self-reporting (Hulkko et al., 2004; Jönsson et al., 2002). One of the concerns from the perspective of the CD Agency about using the method had been participant workload. There was apprehension that doing the diary could feel a bit like 'homework', an aspect also noted in other probe studies (e.g., Graham et al., 2007a). However, the majority of the feedback from the participants about their experiences was positive, suggesting that it might be more about 'finding the time' than the method itself being time-consuming. In particular, participants enjoyed the opportunity to gain a different perspective on their own lives and homes, confirming the findings of other literature about the value of self-reflection for participants (e.g., Lucero & Mattelmäki, 2007; Mattelmäki, 2005).

The Mobile Diary study also re-enforced the potential for self-reporting to enable behaviour change, as reported by Grinter and Eldridge (2003). For one participant, doing the diary study had triggered conversations with flatmates about the issue of sustainability. The result was the introduction of a new recycling system into their share flat. In turn, this demonstrated the capacity of the method to be a catalyst for change and action in and of itself, not just a method for informing designs that might support such change. This finding was particularly relevant for the CD Agency whose aim was to promote and encourage behavioural change around sustainability through design. The potential to use Mobile Diaries as a catalyst for behaviour change was intentionally leveraged in later commercial uses of the method where participants were asked to take up particular sustainability challenges as part of participating in the diary study.

Another rewarding aspect of the Mobile Diary for participants was the opportunity to play and experiment with new technologies. Mobile Diaries created a safe context for trying things out. In the words of one participant, *"[I]… felt like I could make a mistake"*. Other studies have also shown new technologies to be both an enabler *for* participation in self-reporting as well as a motivation *to* participate (e.g., Graham et al., 2007a; Hutton, 2006; Masten & Plowman, 2003; Näkki & Virtanen, 2007). This finding takes on additional significance from the perspective of designing social technologies themselves, such as the community platforms the CD Agency was involved in creating.

This is because, as a result of participating in Mobile Diaries, participants were learning new skills and behaviours around the use of social technologies. Mobile Diary activities were, in effect, skilling up participants in particular forms of interaction relevant to participation in future social technology platforms. In existing self-reporting literature the value of this connection is framed in terms of how they can assist participants to envision new forms of possible interaction (e.g., Graham et al., 2007a). But such activities could also be understood as bridging existing and future 'use' practices in ways that may help to seed the design in its future use context. The potential value of this connection between the Mobile Diary method and the design of future social technologies such as community platforms is explored in the second Mobile Diary study (in Chapter 6) and described in further detail in Chapter 9.

### 5.2.3 *Using* Mobile Diaries

The goal of this first Mobile Diary study was to gain an experiential understanding of what it would mean to deploy such a method at the CD Agency. While the emphasis was not on an analysis of the material generated during the study per se, the study did allow us as a design team to experience something of what it would mean to work with the kind of material that was produced through such a method and its value to the early phases of design. The key aspects that stood out as significant and that informed the design of the next prototype were: the impact of working with *rich, personal media* and the *value of annotation*. In addition, we were able to identify a connection between *self-reports and user-generated content*.

#### Rich, Personal Media

The approach taken to 'reading' the data at the end of the study was guided by concepts from literature relating to generative research (e.g., Gaver et al., 1999; Mattelmäki & Battarbee, 2002). Specifically we assumed that rather than a formal process of analysis or coding, the value of the data was in its raw form as a resource for immersion, empathy, inspiration, information and dialogue. Material included spontaneously captured images, audio and video such as the examples in Figure 17, home or lifestyle choices, such as in Figure 18, and more expressive moments such as those in Figure 19.

These snippets and snapshots provided a view into the participant's world, through their own eyes. This was quite different to that experienced by the design team when using different forms of research. As one designer noted, the Mobile Diary material provided:

> *...a very interesting insight into people, it really exposes people's*
> *styles, attitudes and lives in general in a way that a survey never*
> *could.*

Another identified the value of the approach for understanding patterns and habits and the capacity to shape the research as appropriate to different participants:

> *Great for evaluating lifestyle tools and their effect over time, subjects*
> *direct the research depending on their personal experiences*

Stolterman (2008) argues that designers are more likely to take up design methods that they recognise as being related to design practice. This feedback from the design team suggested that they were able to recognise the value of the Mobile Diaries both in terms of the different kinds of insights it gave, as well as the material form it took.
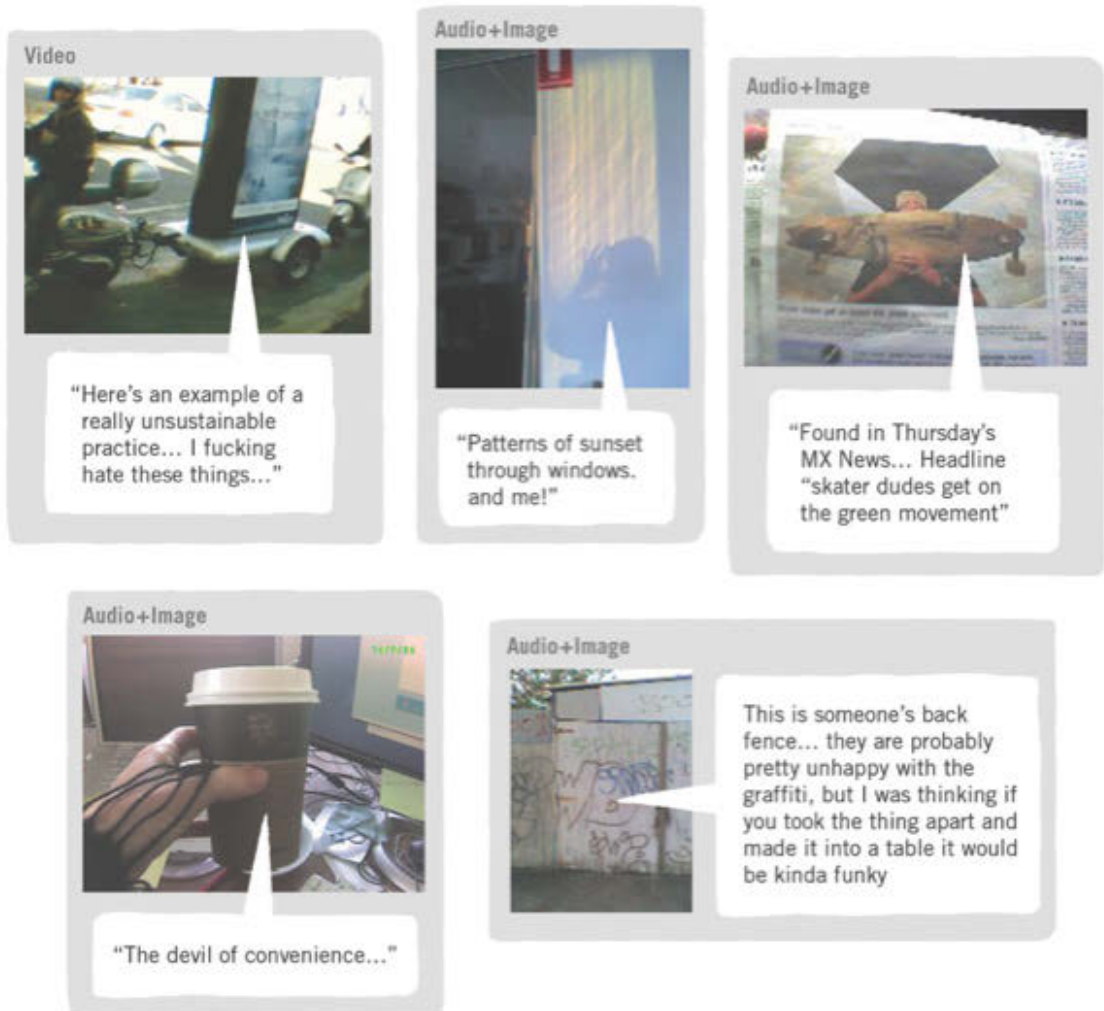
**Figure 17. Spontaneous reports responding to activities and events**

**Video**

"This is another sign of our more sustainable society, the low impact shower head... now installed to reduce my rather lengthy showers..."

**Audio+Image**

"This is our recycling bin... it freaks me out..."

**Video**

"These were installed not long ago, industrial strength machines, I've no idea of their sustainability."

**Video**

"My apartment is, I guess, a sign of the kind of living we'll need to do in the future... the main is the size of the apartment, it's very, very small..."

**Figure 18. Documenting home and lifestyle choices**

The visual and personal nature of the images and stories shared by participants supported a sense of immersion and empathy. Both still image and video were important for allowing us to see the world from the participants' perspectives and the audio recordings of people's actual voices also had a particularly emotive quality. Listening to people describing their thoughts and experiences was a little like reliving the moment with them. This created a sense of intimacy with, and closeness to, the participants. Both the audio and video content also conveyed significant information about context and surrounding in addition to what the participant was explicitly sharing. The images and videos also acted as shared objects around which dialogue could take place. The visual nature of the material made it easily accessible and open to different kinds of interpretation. It was possible to see the value of this material for both grounding the design process in people's actual lived experiences and for being inspired by those experiences.

**Figure 19. Self-portraits as 'self-reports'**

One limitation of the method was the length of some of the video reports. Ranging from 30 seconds to 5 min 47 seconds, they were time-consuming to watch all in one go. The potential increase in workload that comes from the use of video in ethnographic work is well-known (Bloomberg, Giacomi, Mosher & Swenton-Hall, 1993). The Mobile Diaries showed this could also be a potential disadvantage when viewing the material in a collaborative environment with other participants, as the video sequences were significantly longer and more time-consuming to engage with than any of the other material.

*Value of Annotation*

None of the Digital Camera images were annotated even though the device supported this function (Figure 20 shows examples of the Digital Camera images). The lack of annotation did leave more room for personal interpretation by designers, important in methods like Cultural Probes (Gaver et al., 2004) where uncertainty and ambiguity are privileged over other qualities. However, without additional context the images had less connection to the actual participant, reducing their capacity as sources of immersion, empathy and insight into people's daily lives. Even the participant herself couldn't always remember why she had taken the images. Similar difficulties working with visual imagery have been reported by Carter and Mankoff (2005) and Hulkko et al. (2004). In this case the lack of annotations was attributed to a combination of personal preference by the participant, traditional associations of how a camera is used, and the complexity of the user interface of the camera. The result emphasised the need to support and encourage participants to provide annotations, but also to make sure that the tools themselves made this easy to do.



**Figure 20. Images without additional contextual information**

*Self-reports and User-generated Content*

While the findings above reinforced the value of methods like Mobile Diaries to early design research generally, it was also possible to identify an additional 'role' for the self-reporting material important to the design of community platforms specifically. The material generated through Mobile Diaries could also be 'read' as indicative of potential future user-generated content. The videos, stories and images being shared about the topic *sustainability in your neighbourhood*, were the kinds of things that we would expect or hope to see being shared on a community platform about the topic. The potential for this material to be interpreted as seed content was in part due to the subject matter; the stories people share with the design researcher might also be stories they would like to tell each other. But the format was also an important aspect. It was visually rich and technically 'sharable': picture messages (MMS) and short compressed video clips constitute much of the 'user-generated content' that is found online. The potential value of self-reporting to generate seed content is further explored in the second study (in Chapter 6) and is central to the discussion and analysis of seeding in Chapter 9.

## 5.2.4 Iterating the Mobile Diary Tools

The outcomes and experiences from this study enabled us to refine the tools for the second prototype. In most self-reporting studies only one recording device is used, however it was decided to pair the KCam and the Camera Phone together for the next iteration due to their complementary nature. The mobile, personal, networked nature of the Camera Phone and the brevity of the messages made it suitable as a diverse 'life' documentation tool. The KCam emphasised more localised in-depth and/or reflective reports. While not networked, it used the MPEG-4 compressed digital format which lent itself to distribution and sharing. They were also the easiest out of the four tools to use and more readily supported multi-modal reports. When evaluating which of the devices were most suitable, we also considered the risk of loss or damage. The Camera Phone and the KCam were significantly cheaper and easier to replace than the PDA or Digital Camera and so were more suitable in this regard.

The possibility of having participants use their own phone was also considered. This would alleviate the need to introduce participants to new tools and learn new interfaces.

We did not proceed with this for two reasons. Firstly, it was dependent on participants having camera phones, not yet ubiquitous in 2006[3]. Secondly, it meant we would have to reimburse participants for the costs of sending MMSs. This seemed like a possible barrier to participation, one that could be avoided by supplying participants with a phone and prepaid SIM card, and this was done for the second prototype.

The Voice-mail diary phone number was not used by any of the participants and participants showed little interest in it when asked. While the reasons for this were unclear, it may have been that this tool was somewhat extraneous compared to the immediacy and tangibility of the other physical reporting devices. Given the lack of interest shown to this particular 'data collection mode' by participants, and that the second prototype would already contain two data collection devices, the Voice-mail tool was dropped entirely from the second prototype.

## 5.3   Summary

The role of this study was to enable an experiential evaluation of a particular approach to self-reporting in a specific practice context. The evaluation allowed us to confirm, ground and expand on concepts already documented in literature through an appropriation of tools and resources readily available to the CD Agency. The study enabled a preliminary insight into how Mobile Diaries could support outcomes important to early design research, and the role of various tools in enabling those experiences. For example, it was possible to confirm:

- The value of the rich, personal media and continuous, real-time reporting for enabling a sense of immersion and empathy in participants' lives
- The capacity of different reporting tools to support participants in documenting and sharing their everyday, ongoing and mobile lives
- The potential for the self-reported material to act as a source of inspiration and information for design, as well as facilitate dialogue between participants and members of the design team.

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3 In 2010 it is difficult to find a phone without a camera although it is not unusual for participants not to have used the MMS or picture messaging functions. Although the reasons have changed, the decision of whether to supply participants with a phone or have them use their own still remains a consideration in designing Mobile Diary studies. This is further discussed in Chapter 7 (Section 7.1) and Chapter 8 (Section 8.1.7.)

Another key outcome of *doing* the method ourselves was the development of a more sensitive eye as designers and researchers for planning studies, recruiting participants, relating to participants and 'reading' the material produced. We gained an empirical understanding of some of the considerations involved in managing participation in self-reporting studies. In particular, the impact of some of the capabilities, tools and practices constituted by social technologies, in terms of how participation in self-reporting was experienced by participants, and potentially managed, by designers. For example,

- The mobile and networked nature of some tools supported continuous reporting and reporting 'on the move', but also put different kinds of pressures on participants in regards to reporting in public or in real-time.

- The use of rich media and multi-modal tools was rewarding from a participant perspective, but also had the potential to be unnerving to use and review in a public setting.

- The use of tools such as mobile phones, MMS and continuous real-time reporting introduced an emphasis on reciprocity between participants and design researchers.

The findings also indicated ways in which the appropriation of social technologies was enabling other forms of participation that went beyond inspiring and informing design, such as:

- The aspects of learning, experimenting and play that came with the use of some of the tools could be a potential motivator for participation, whilst also facilitating participants to learn new skills for participation *in* social technologies themselves.

- The connection between material generated in the process of 'self-reporting' and user-generated content.

The findings of this first study also allowed us to iterate the tools for the Mobile Diary prototype and provided us with the confidence to trial the method in a real-world project. Chapter 6 documents the second iteration of the Mobile Diary method undertaken as part of a client project. Chapter 7 presents the final Mobile Diary method that was implemented as part of commercial practice at the CD Agency.

# 6

# Refining a Mobile Diary

This chapter documents the second iteration of the Mobile Diary prototype. This second study enabled the further refinement and evaluation of the Mobile Diary prototype and toolkit within a real-world design project. The study expanded our understanding of the experiences and outcomes that could be achieved through the method from the perspective of both participant and design researcher, and the role of the tools in enabling those outcomes. The chapter describes the structure of the field study, its findings, and how this contributed to the evolution of the Mobile Diary method.

The goal of the second study was to build on the first prototype by further iterating and evaluating the Mobile Diary method within the context of a real-world design project. The study was designed, and the analysis developed and presented, around the following four objectives:

- To evaluate the kinds of insights into participants' lives that could be gained through Mobile Diaries and the role of the tools in enabling those insights

- To further develop our understanding of the participant experience in Mobile Diaries and what it meant for participants to *do* Mobile Diaries

- To deepen our understanding of how Mobile Diaries could support dialogue and relationship building between participants and the design team

- To further iterate the prototype and develop the rationale for the different tools being used.

In order to achieve these objectives, the Mobile Diary prototype was trialled within an existing design project with a small business client. The client herself was the primary participant in the Mobile Diary study, with her assistant also involved to a lesser degree. Members of the design team helped to manage the diary study and reviewed the material with my role again being both designer and researcher.

The chapter begins with a description of the project context and study set-up. The evaluation and analysis of the second Mobile Diary prototype is then presented, structured around the objectives outlined above. A description of how this shaped the next iteration of the Mobile Diary toolkit is also provided. The chapter closes with a summary of findings.

## 6.1   Designing the Mobile Diary

The second Mobile Diary study was shaped by the commercial context and particular design project in which it was deployed. A brief background to the design project and how it impacted on the evaluation of the Mobile Diary prototype is provided here to ground the description of the study design and analysis that follows.

### 6.1.1  Project Context

The CD Agency had been engaged to design an online platform for a client with a paper-based lifestyle publication. The goal was to provide a 'virtual' home for the publication and connect the already loyal and enthusiastic community of readers. An initial site was being built using a blogging platform that could easily be integrated with other existing social media tools such as *Flickr* and *Delicious*. While the platform was simple in the short term, there was an intention to make greater use of social technologies to further support and encourage communication, sharing and interaction within the community in the longer term.

As a design team, we were conscious that any online presence or tools we provided needed to embrace, facilitate and enhance the existing community energy. The business was small and the current relationships were fostered at a very personal level with the community keen to give feedback and share their own experiences. The Mobile Diary would allow us to rapidly immerse ourselves into the client's world and gain sensitivity to the nature of the relationship with the community. This could better position us to work with the client in identifying and designing appropriate tools and strategies for the future.

In addition to the formal research objectives of the field study listed in the previous section, two project-specific objectives, developed in collaboration with the client, further focused the Mobile Diary study. The first was to understand potential ways for responding to the community's interest in how the publication was produced: how did it come together, who was the team behind it and so on. Specifically we aimed to explore and experiment with sharing 'behind the scenes' information from the production process. The second was to explore how new forms of online and mobile interaction (such as mobile blogging, also known as 'moblogging') might be incorporated into how information was shared and communicated with, and within, the community. The client had never used a camera phone or experimented with blogging or moblogging. By participating in the Mobile Diary she would be exploring and experimenting with new technologies and forms of interaction that could be useful in the future. This second objective deliberately took advantage of findings from the previous study: that participating in the Mobile Diary would allow participants to explore the potential use of such technologies and forms of interaction and perhaps pave the way for incorporating these practices in the future.

## 6.1.2  Study Set-Up

The Mobile Diary study was aligned with the three-week production timeline in order to take advantage of the in-depth access to the publication this would provide. This meant the Mobile Diary had to be deployed very quickly and there was only an afternoon to ready the pack. While this left little time for preparation, it was in keeping with the style and pace at which design agencies are often required to respond to opportunities or pre-existing deadlines.
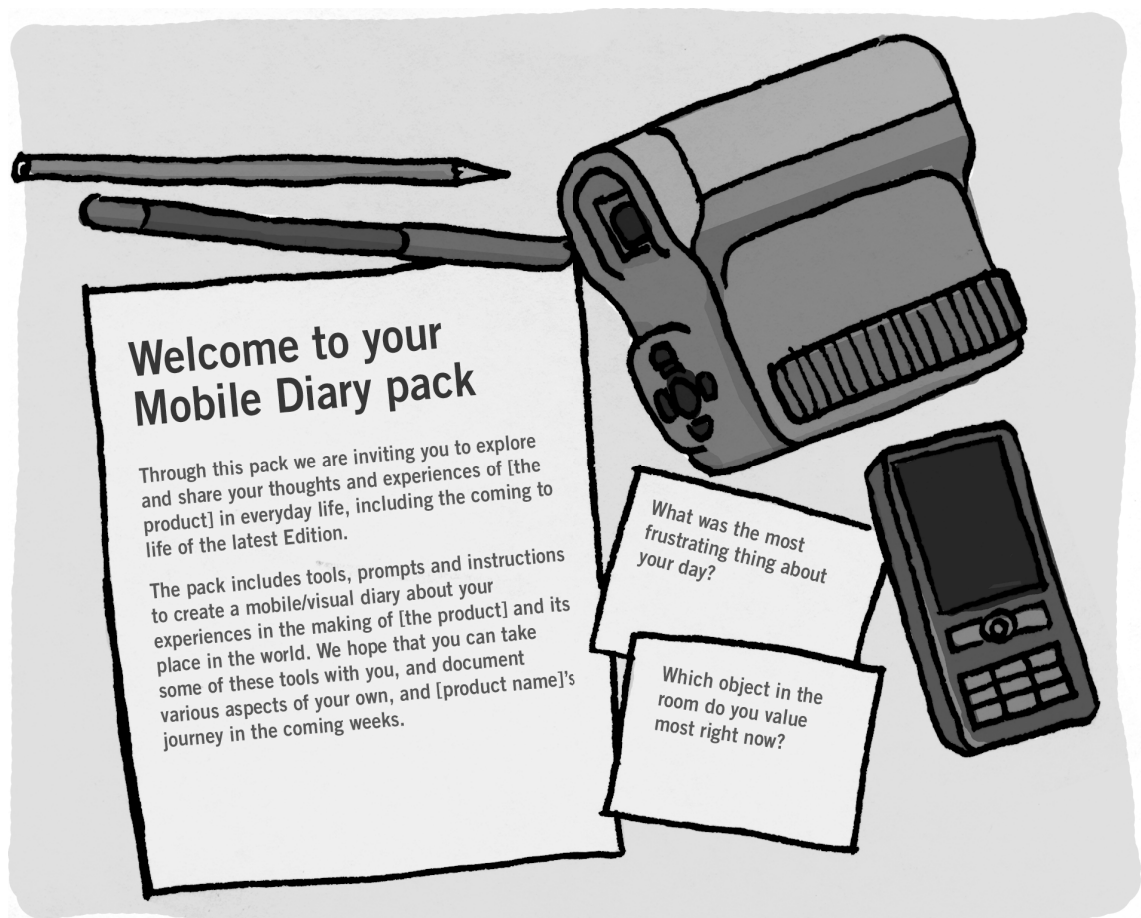


**Figure 21. Mobile Diary Pack Instructions**

As with the first study, an open-ended approach to data collection was taken. The client was not given specific directions on what to capture but instead encouraged to interpret what was important from her own perspective. Open-ended questions for triggering reports were provided as 'cue card prompts' using index cards, which were easy to generate in the short time-frame. Figure 21 shows the instructions and prompts sent to the client to guide the reports.

Based on the findings from the first study, the client received phone calls and emails of encouragement during the study. These were intended as reminders, confirmations that reports were getting through and to help build the client's confidence to capture what she considered relevant. Like the first study, at the end of the three weeks all the reports were compiled in a Keynote presentation and used as part of a co-design session with the client, the Creative Director and myself. In this session the Mobile Diary material was reviewed in context with other project discussions and updates. In order to support the evaluation of the method, opportunities for the client to reflect on her experiences of doing the Mobile Diary were included in addition to the standard project meetings, workshops and deliverables (detailed in Chapter 4, Section 4.4.3). This included informal feedback gathered through phone conversations and during project meetings and a formal interview at the end of the Mobile Diary study.

### 6.1.3  Digital Tools

The section on *Iterating the Mobile Diary Tools* in the previous chapter (Section 5.2.4) describes how the KCam and Camera Phone came to be the designated recording tools for the second Mobile Diary prototype. It was anticipated that these would support complementary forms of data collection but no specific direction was given as to how to use the different tools in relation to the other. Based on the findings in the previous study the participant was explicitly asked to annotate any images taken with the Camera Phone so we would better understand the significance of the images.

To facilitate ease of use, the Camera Phone was charged with credits and pre-programmed with an email address for sending MMS messages. As in the previous study, messages were sent to a dedicated email address where the design team could review them while the video material from the KCam material was collected at the end. Possible ways to automatically aggregate the Mobile Diary reports online were again explored. The goal was to identify an online platform that would allow the Mobile Diary participant and the design team shared access to reports throughout the study. Research conducted during the first study had established that existing third-party platforms were limited in their capacity to accommodate the variations of media we were using, and supported only a limited range of handsets. Reviewing potential tools in the context of a client study exposed additional kinds of considerations about privacy and ownership. For example, when using free media platforms such as *Flickr* or *Vox* the data is stored on their servers. In many cases these companies retain certain rights to the

data and its usage. The lack of control over the data posed ethical challenges given the potentially private, personal or commercial nature of the information that might be generated through Mobile Diaries. This concern was further highlighted by the University of Technology, Sydney ethics guidelines, which required a particular level of protection and management of research data. The tension between these expectations of privacy and the tendency towards sharing and publication embedded within social technologies is a recurring theme explored in this thesis. In this case it raised questions for the CD Agency, and for me as a researcher, about our obligations to protect the participant. We erred on the side of caution, deciding not to use any of the existing free media sharing platforms. Instead, for the purposes of the study, we developed an HTML based work-around. Mobile reports were made available for the client to review using a static web gallery. She was able to see and listen to the reports online in a format similar to that of the Mobile Probe platform (Hulkko et al., 2004). This was sufficient to allow some insight into the potential impact of participants being able to reflect on and review their Mobile Diary material during the study.

## 6.2   Analysis

The Mobile Diary ran for a period of three weeks. In total, 34 annotated images were generated and three separate video reports were created. The analysis presented in the following section is based on the material generated through the Mobile Diary prototype, feedback from the client and members of the design team on their experience of *doing* and *using* the Mobile Diaries, and my observations and reflections on the study. The analysis responds to the four objectives and is structured around:

- The Mobile Diary material, what was shared and how

- The participant's experience of *doing* Mobile Diaries

- The impact of the Mobile Diary on the relationship between participants and design team

- An evaluation and iteration of the tools.

The analysis and discussion builds on the findings of the first study and, where relevant, draws upon related literature.

### 6.2.1 *Using* the Mobile Diary Material

As anticipated from the results of the first study, the Mobile Diary allowed insights into the life of the participant in a profoundly different way to other user research methods we had experienced at the CD Agency. Of particular significance was the degree to which it enabled us to immerse into the client's (working) world and see it from her perspective. The sense of immersion was enabled both as a result of *what* was shared, as well *the way* in which it was shared. To explore these two aspects, the discussion of the material begins with an analysis of the types of content generated in the Mobile Diary study, loosely grouped around their emphasis on *activities and events*, *inner thoughts and feelings*, and *relationships and social interactions*. The focus then turns to the impact of how these different glimpses of daily life were shared and *the role of the different tools, mediums and delivery modes* in enabling them.

In reality, the content of the reports and the format in which they are delivered are intimately entwined. What is created and shared is shaped by the tools themselves, and the format or mode of delivery can impact on our reading of the content as design researchers. Discussing them separately, however, lets us firstly look at the different content themes that emerged and gauge the types of information or experiences that Mobile Diaries enable participants to share about their daily lives. A separate focus on *the way* this information was shared can then help to explicate the role of the different tools in supporting particular forms of expression and modes of delivery.

Importantly, in the process of *using* the material as designers we did not formally categorise the material in the way documented in this section. Rather, we immersed ourselves in the material as a whole.[4] The analysis and categorisation of the material presented here was done for the purposes of evaluating the Mobile Diary method.

*Events and Activities*

The Mobile Diary reports provided a deeper understanding of the activities that made up the production process as well as 'how things got done'. The series of images in Figure 22, for example, all show significant production-related events. The annotations

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4 In this field study the material was treated as an additional, informal, design resource. However in later commercial studies where the outputs of the Mobile Diaries were formalised into a 'research deliverable' we found more structure was required to account for the results of the study and communicate them to paying clients and other stakeholders. See also section 7.2.2.

describe the events themselves and provide context about their importance, in this case to the inner workings of the client's business. Palen and Salzman (2002) suggest self-report material enriches existing findings from other data. In this case the Mobile Diary material enabled us to 'see for ourselves' actual examples and instances of things that had been mentioned in meetings and workshops with the client.

**Audio+Image**

"A girl called [Name] has just ordered [the whole product range] which we love. It means she's found [the product] and she liked it so much she wants them all."

**Text+Image**
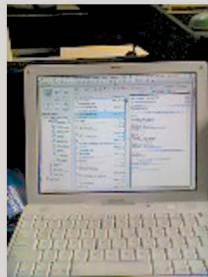
"[Company name]'s 1100th subscription came through late last night! My reward for working til the small hours."

**Audio+Image**

"We didn't have enough stock here to still sell it so we had to go to the warehouse… it's a garage in [Suburb] and that is where we… the royal we… that is where I store all the back issues and boxes of the current issues."

**Figure 22. Reports in response to events during the day**
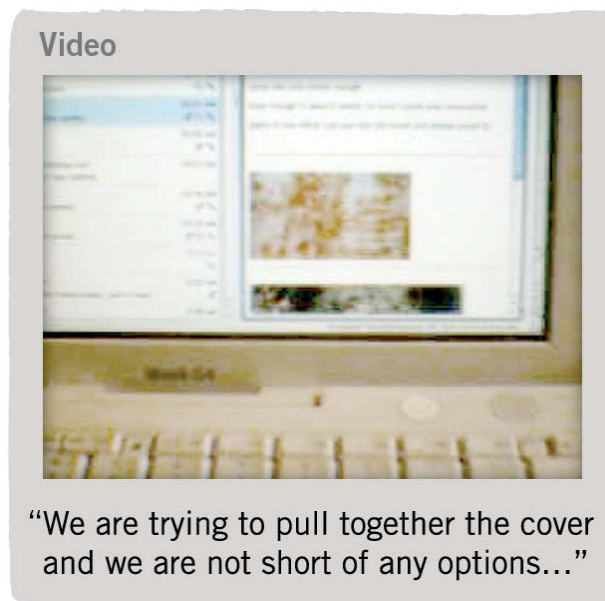
**Figure 23. How decisions get made**

It was also clear that the method allowed access to kinds of data, nuances and behaviours not easily accessible in other ways. For example in Figure 23 the client has used the KCam video to describe the process of selecting different cover artwork. This 1 minute 51 second video revealed the in-depth nature and key considerations of the decision-making process. It also conveyed a significant amount of information about brand values and attitudes important to the design of any supporting systems. How a brand comes to life in practice, or innately shapes the decisions and activities of an organisation, is critical information for designers, yet is something that can be hard to describe out of context. The Mobile Diary reports enabled access to detail and to nuances of such decisions difficult to convey in words or style guides, where such instructions are often embedded.

*Inner Thoughts and Feelings*

**Audio + Image:**

"Ah, it's late, 11.15 and I've just finished packing these orders for <company name> ahh I'm shattered...I should have been writing but instead I have been cello-taping. Um, I call this time Magness, a word I coined myself, to describe that everything is about the <name of product range>, and it's all magness."
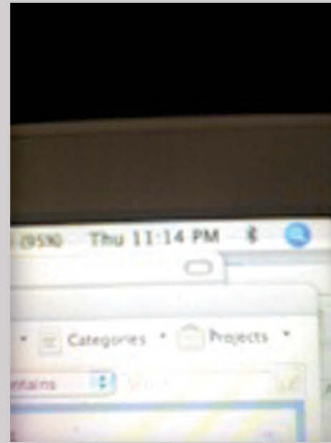
**Audio + Image:**

"Look at all those ticked boxes and the crossed lines, at this point in time it's all about this, trying not to forget anything, the tiniest little thing that I'll mean to get back to but you know if I forget it it's gone, ahhh but yeah, all those boxes are ticked which is very exciting, last night, it's all done, we just have to burn the disk tomorrow morning, well almost all done, pretty close, I keep saying that..."
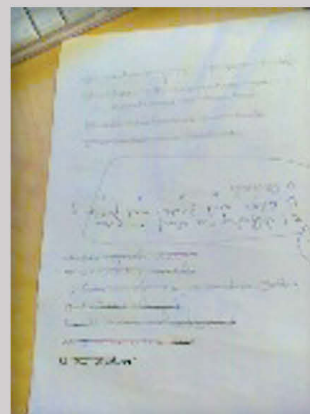
**Figure 24. Sharing personal or reflective moments through the Mobile Diary**

As well as descriptions of external events and activities, Mobile Diary reports also captured more private moments. For example, in the first report in Figure 24 the participant shares a moment of late-night exhaustion. In the second, she shares excitement at a checked-off 'To Do list'. Some reports were more metaphorical, with images of objects being used to symbolise emotional states or feelings. For example, in Figure 25 a water bottle becomes a symbol for being a bottleneck, and an overflowing



**MMS – Audio + Image:**

"This rubbish bin looks like how my head feels, completely overflowing with all sorts of rubbish, buts it's not rubbish, it's all essential and vital, it's all sorts of…"

**MMS – Audio + Image:**

"This is a self-portrait of me as a bottle neck, which is what I generally am at this point in the process…."
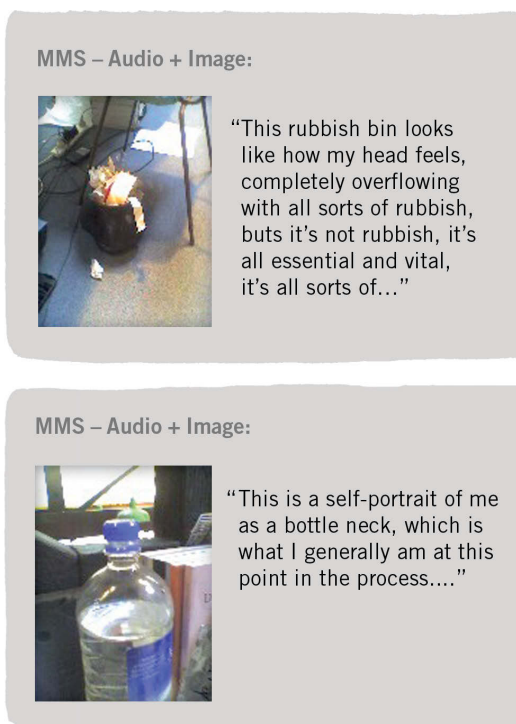
**Figure 25. Metaphors for emotions and feelings**

rubbish bin represents a state of mind. These reports again show the capacity of the method to convey inner thoughts and feelings that might have otherwise remained completely hidden, or been difficult to share or describe.

The above examples underscored the level of empathy and emotional proximity with participants' lives that can be achieved through such self-reporting techniques. In reviewing the reports we were struck both by their openness and honesty, as well as the humour included in their representation. They described experiences or feelings that were easy to relate to, connecting us to the participant as an actual person with experiences common to our own.

## Networks and Social Interactions

The Mobile Diary reports also provided an insight into the social flows and networks that made up the client's world. For example, Figure 26 shows 'portraits' of people important in the production process. The candid images and accompanying descriptions conveyed something of their personality as well as their role and relationship to the client, providing a sense of the client's wider network. A video made collaboratively by the client and her assistant also conveyed a sense of personality, mood and social dynamics as they worked out together what to say. Physical 'traces' of interactions also

provided a sense of the client's interactions and relationship with the community. For example Figure 27, is an image of personal notes and drawings added by people to their subscription forms, which conveyed something of the quality of the relationship currently fostered with the community. From a design perspective this information is subtle but important, particularly when attempting to design tools to support that interaction in the future. Again, these kinds of nuances are difficult to gather through other methods and it was possible here due to the visual, annotated and *in situ* nature of the method.



**Audio+Image**

"This is [Name], he's a magic photographer that likes choc chip rasberry muffins and is exhibiting downstairs… He makes us laugh and keeps us sane."

**Audio+Image**

"This is [Name] packing orders for the [Store name]. Darling [Name] has been helping me today and thank god she did because a couple of hours ago we got an order through for a couple of hundred magazines… and it would have taken me a couple of hours to do if [Name] hadn't been here."

**Audio+Image**

"This is [Name], my wing man, ahh, at this part of the process we have been working on this issue for only a couple of days now but I've given him loads of photos for the profiles… This is the part of the process that I really love as everything starts coming together visually and aesthetically and starts looking like a real magazine."

**Audio+Image**

"This is [Name]. He makes me coffee every morning, ah quite possibly another one of the most important parts of my day… I love this place… most people I know come here for coffee… and [Name] is just divine. He even subscribes to [Name of magazine] which makes it extra special."

**Figure 26. Mobile Diary reports that included people important to the participant's description of her world**
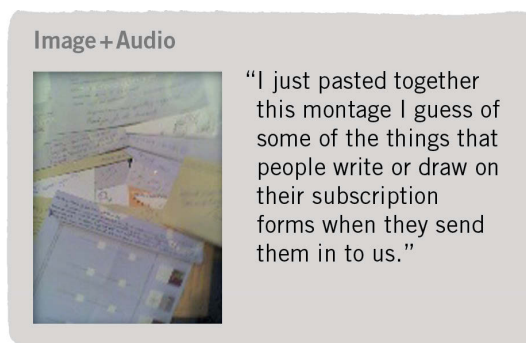
**Figure 27. Letters and notes from community members**

One of the most powerful aspects of the material developed through the Mobile Diary was the 'realness' of it. Rather than lists of stakeholders, bullet points of brand values or diagrams of work flows, we were presented with raw images, audio and personal messages. The representations of the production process came (largely) unfiltered and unsanitised, conveying something of the messy, ongoing and ill-defined nature of everyday life (Ehn, 1988). The material allowed us access to the client's life in tangible ways. Regretfully, the representations and written descriptions of the reports included in this thesis do no justice to the actual feeling of listening to and watching the reports themselves.

*The Role of the Different Tools, Mediums and Delivery Modes*

As anticipated, the different technical and physical attributes of the KCam and Camera Phone encouraged different types of reports. The Camera Phone lent itself to the quick capture of images along with brief text or audio annotations and these became snapshots of moments in time. Despite its low resolution the KCam enabled longer more in-depth accounts of particular activities, experiences or surrounds and conveyed additional contextual information beyond what was specifically shared in the report. This second study also confirmed the particular value of audio for fostering a sense of intimacy and closeness to the participant. The tools also played different social roles. Both enabled the participant to include others in the reports as described above. However while the video camera became a device for collaborative film-making between the participant and her assistant, the participant had deliberately used the Camera Phone to capture the portraits of the other team members on the basis that this was less confrontational (than the video camera). This suggested that mobile phones, as self-reporting tools, might allow access to certain personal spaces and interactions that other tools may not.
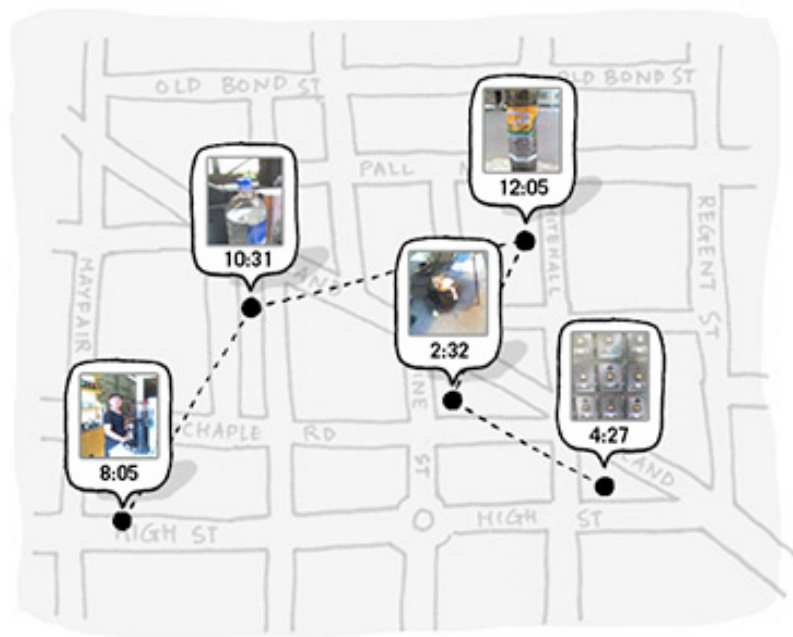
**Figure 28. Mapping the participant across the day**

The portability of the tools was also important in enabling the client to share different aspects and activities of daily life. The Camera Phone in particular allowed the client to report from a range of locations across the day. That the mobile reports were also delivered in (near) real-time via MMS further increased the sense of immersion in the client's daily life. As suggested by Figure 28, in viewing the reports there was a sense of accompanying the client on her journey. A sense of daily rhythm and pace was revealed, allowing habits and patterns to emerge. Over time we could also see various events unfold, making it possible to understand how different activities fitted together.

### 6.2.2  The Participant Experience

This section reflects on the experience and value of *doing* the Mobile Diary from the perspective of the participant. The client described the process of participating in the Mobile Diary as enjoyable, rewarding and sometimes confronting. Factors that made up this experience are explored here. Particular attention is paid to the *impact of self-reporting,* the experience of *using the tools* and further learning on potential *motivations for participation* in Mobile Diaries. Many of the findings from the first study were confirmed and a number of additional issues around building confidence, usability and motivation were identified.

*Doing Self-reporting*

Both the literature and the previous study sensitised us to a number of potential barriers to self-reporting such as workload, remembering to do the reports, and participant uncertainty about what to report. In this study, feedback from the client and the high level of participation (up to eight MMSs in a single day) suggested that the additional workload was not necessarily a barrier to participation. This was reassuring given that the study occurred over a busy production period. Rather, the client described a process of *"getting used to having to remember"*. This feedback confirmed findings from the first study that *doing* self-reporting was a habit that needed to be developed and supported. It also further supported the value of using real-time prompts and reminders (e.g., via SMS) in addition to any static prompts or instructions (e.g., the index cards) which participants were also required to remember.

As noted previously, unstructured studies can cause participants to be unsure about what to report. To avoid this, I had been careful to encourage the participant to feel confident about her own choices. This seemed to have a positive effect, with the client stating that she was "*trying not to think too much about what would be useful and therefore censor too heavily*". However, the web gallery also appeared to play a role in building her confidence; seeing the reports collated and reflected back reassured the client they were being 'used' and of value. This further emphasised the merit of aggregating the reports in some form of shared online platform.

*Using the Tools*

The study allowed us to confirm and identify a number of practical and logistical aspects about the tools, as well as how participants might use them. It appeared that the instructions were not read, or at least little attention was paid to them. Instead the client preferred to experiment with the different tools finding that the Camera Phone was suitable to be carried during the day and faster to use than the KCam, which was left in the office. Combinations of audio and image were found to be easier and faster than adding text, despite the 10-second audio limit. We had been concerned that the complexity of the phone interface might be a barrier, but even with no experience using MMS the client was able to begin sending messages immediately.

The study also highlighted a number of potential practical barriers to participation not encountered in the first study. For example, towards the end of the study the phone ran

out of storage capacity. This forced the client to delete existing messages and contributed to a drop off in reports. On another occasion the client was unable to relocate images taken earlier but not sent. This highlighted a potential usability issue and also demonstrated that not all reports would necessarily be shared in situ. In addition, a small number of images the client thought had been sent had not been received. There is always potential for such error, particularly when using digital technology. However, a reasonable degree of reliability is important for maintaining participant confidence and motivation. The experience further demonstrated the value of a shared online platform which could be viewed by both participant and design team during the study. Such a tool would have allowed the client to check the status of the sent images and flag any problems early.

*Motivations For, and Outcomes Of, Participation*

This study confirmed some of the findings from the first Mobile Diary prototype in relation to participant motivation, in particular the value of self-reflection and the novelty of using new technologies. A central aspect to the success of self-reporting is the potential for participants to begin to reflect more deeply on their own practices and the recording tools used in the Mobile Diary appeared to enhance the process of reflection. Mattelmäki & Battarbee (2002) suggest that the process of verbalising assists participants in the process of reflection. This was illustrated when, for example, the client corrected herself during the recording of the audio and video reports as she came to better understand what she was trying to communicate through the process of attempting to articulate it. Recording the audio was itself a process of 'working it out'. In the first study the process of self-reflection led to a change in behaviour by one of the participants (the introduction of a new recycling system). In this study the value for the client was in gaining a different perspective on her own life. She described it in the following way:

> *Actually forcing me to think in the third person, a little bit about what*
> *I do, get a slightly different perspective…a perspective on the role*
> *that I play, and the number of different roles that I play and that I am*
> *juggling. I can never really explain it to people but trying to capture*
> *it over a period of time...*

The inclusive nature of the Mobile Diary tools also emerged as an important factor. For the client the ability to include others was one of the most rewarding aspects of the Mobile Diary study. In the first study the presence of others in reports raised issues about privacy and ethics. In this study the inclusion of others was intentional, initiated by the client and involved specific people from her surrounding social network. It suggested the client felt a sense of ownership over the process, as she appropriated the reporting method to meet her needs and fit her personal context.

The opportunity to test out new tools and interaction techniques was also a motivating factor for the client. A specific objective for this study had been to explore the potential for tools such as moblogging to offer ways for the online community to share and interact. In reflecting on this aspect the client stated:

> *Also my phone doesn't have a camera or anything on it so that was a*
> *learning process for me... and now I'm like I'm getting one with a*
> *camera on it...cos it is fun and the images do reproduce alright... I*
> *could upload them onto a post...which is the kinda...the point.*

Participating in the Mobile Diary study enabled the client to learn experientially about new social tools and technologies. Even more significantly, she gained an understanding of how they might be applied in future practice, and was motivated to adopt these practices into daily life. This could be interpreted as a process of up-skilling, giving the client the capacity to use and take up new tools, within the context of her existing practices.

Both the ability for Mobile Diaries to facilitate the adoption of new social technology practices and the potential for participants to socialise the research through collaborative reporting practices are further explored in Chapter 9 as potential strategies for seeding the design of community platforms.

### 6.2.3  Connecting with Participants through Mobile Diaries

Self-reporting is known to help strengthen the relationship between participants and researchers. One of the objectives of this study was to evaluate how Mobile Diaries might support such dialogue and relationship building in the context of design projects at the CD Agency. We found that the material produced through the diary became *a shared resource for understanding existing and future practice* after the study. We were

also able to experience how Mobile Diaries enabled *a form of collaborative inquiry* during the study.

### A Shared Resource for Understanding Existing and Future Practice

In self-reporting, participants are externalising aspects of their everyday life. In generative design methods this material can be a source of information, inspiration and empathy for designers. It is also what creates the basis for shared understanding and dialogue. Reviewing the Mobile Diary material collaboratively with the client became a process of co-constructing understandings of practice. At the same time as gathering information about current practice, the images, videos and audio recordings naturally became resources for framing and generating design discussion about future practice. The reports inspired design dialogue, not just questions for further clarification. The visual material became points of reference *through* which we could together explore design concepts and ideas.

For example, one of the goals for the future platform was to bring the community closer to the product, perhaps showing some of the 'behind the scenes' activity. The client expressed it as wanting to strike a balance between *"sharing and fostering intimacy with the community, without losing the mystery"*. This became one of the lenses through which we collaboratively interpreted the Mobile Diary material, exploring future design possibilities. These outcomes demonstrated the value of the Mobile Diary material as a generative design tool.

This study also further demonstrated the value of the Mobile Diary method for enabling the development of seed content, a potential outcome identified in the first study. Many of the stories about the publication, created by the client for the purposes of the Mobile Diary, were the sort of stories that could be shared more publicly with the community. This allowed us as the design team, and the client, to explore how the design could be shaped through this content, prior to the building of any platform. The potential value of using Mobile Diaries to generate content early in the design of social technologies such as community platforms is further explored in Chapter 9.

### Collaborative Inquiry During the Study

The face-to-face dialogue described above took place at the end of the study and was greatly enhanced by the connection and sense of familiarity we had built up with the client *during the study*. At a pragmatic level this was possible thanks to the (near) real-

time delivery of the mobile reports. Rather than processing the material all at once at the end, our sense of familiarity and awareness of the client's life was built up over time. We experienced the daily activities, thoughts and emotions in the same time-frame as the participant, in parallel to our own ongoing lives. Also important was the sense of reciprocity, interaction and collaborative inquiry that this connection enabled. As the participant sent in MMSs, we responded with emails and phone calls of reassurance and encouragement. The conversational nature of the process was demonstrated in a playful way when the chocolates we sent to the participant halfway through the study by way of thank you appeared later that day in a report. Both Jönsson et al. (2002) and Palen and Salzman (2002) found that a persistent connection with participants significantly contributed to the relationship-building between participants and researchers. While this was significant, it was also about a shared experience. As a result of using social technologies, the shape of the study was less like a personal diary and more like a process of co-discovery that, over time, revealed to both of us different aspects of daily life. This process of the Mobile Diary strengthened our relationship and created more common space and common reference points between us to support further face-to-face design dialogue.

## 6.2.4  Evaluation and Iteration of Tools

In addition to evaluating the method and tools in terms of the design outcomes and experiences it could enable, this study was also an opportunity to further refine the Mobile Diary tools and technique in preparation for commercial use. As a result of the study we were able to confirm the following aspects about the toolkit.

- The choice and combination of recording tools

   The different way in which the tools were used and the reporting styles they supported confirmed the value of combining both the KCam and Camera Phone in the Mobile Diaries. The combination of brief glimpses and longer descriptions built up a rich picture of the existing ecology in which any future design would take residence.

- The value of encouraging particular kinds of reports with the different tools

   The video naturally lent itself to longer more in-depth descriptions or interview-style interactions. In future studies participants could be asked to take the phone with them during the day, but use the video to capture particular things, places or

aspects of their life that would benefit from the opportunity of more in-depth reports.

- The usability of the tools

Importantly, neither device usability nor workload was shown to be a significant challenge to the adoption of Mobile Diaries within a commercial context. This gave us confidence that most participants, even without experience of MMS, would find it relatively easy to participate. However, issues with storage capacity indicated a need for phones with a larger internal capacity. Instructions for deleting existing images were also required.

- The value of the shared platform.

The trial of the static HTML web gallery, to collate and reflect back the diary reports, re-enforced the value of an online aggregation platform, particularly from the perspective of motivating participation. The very manual nature of preparing the web gallery used here meant this was not a long-term solution, however the prototype helped to further demonstrate the value of a more interactive tool and informed the requirements for the customised platform developed for the commercial Mobile Diaries documented in the following chapter.

## 6.3   Summary

Evaluating the Mobile Diary prototype within a specific design context enabled us to further develop our understanding of what it meant to deploy and to participate in such a study as design researchers and as participants. It was possible to further evaluate how Mobile Diaries could enable particular design outcomes and experiences important to early design and the role the different tools played in enabling those experiences. In particular we were able to confirm the potential of the Mobile Diary toolkit and technique to:

- Support participants to share a diverse, personal, rich and multi-dimensional picture of their lives, from their own perspective and in their own words and pictures
- Support the experience of immersion for designers, bringing the design context alive from a range of perspectives difficult, if not impossible, to achieve through other means

- Enable a tactile experience of the design context through audio, text, image and video, that could be worked with directly and collaboratively
- Support sharing and connecting throughout the project, shifting the emphasis from individual self-reporting and towards a shared conversation and process of co-discovery situated in the context of the participant's life.

These findings confirmed the value of Mobile Diaries as an early design method for the CD Agency from a practical, methodological and financial perspective, as well as the shape that the Diary method would take. As a result the Mobile Diary method and toolkit were refined and implemented in commercial practice. The final format of the method and the deployment of Mobile Diaries into two further client projects are described in Chapter 7 along with practical and technical considerations for the use of such methods.

The findings also indicated how the expectations about, and capabilities for, sharing and communication constituted by social technologies are extending and enhancing self-reporting, impacting on how we as designers might approach and manage participation. Further analysis of the capabilities social technologies bring to self-reporting as design tools, and their impact on participation from this perspective, is provided in Chapter 8.

A number of findings from this second study also demonstrated how, in some contexts, the appropriation of social technologies as design tools creates opportunities for design outcomes that move beyond informing and inspiring design. Specifically the capacity for Mobile Diaries to:

- Facilitate and encourage informal co-experience and sharing between participants and their peers/family/friends
- Support the development of potential early content
- Support experimentation with social technologies that create pathways for the participant to appropriate such practices into the everyday.

These outcomes become particularly valuable when social technologies are themselves the subject of design. They suggest potential new forms of participation early in design that respond to the social and participatory nature of social technologies. The implications and opportunities suggested by these findings are further explored in Chapter 9.

# 7

# Mobile Diaries: A Self-reporting Method

This chapter summarises the practical outcomes of the fieldwork including the final Mobile Diary method implemented at the CD Agency. It documents the development of the online platform that occurred to ready the method for real-world commercial deployment. It provides a description of how the method was used in two different client projects and the experiences gained from that process. Practical and technical guidelines and considerations related to the use of such self-reporting methods in commercial practice are also given.

This chapter documents methodological, practical and technical aspects of Mobile Diaries as a specific method used in practice. It begins with a rationale and description of the final online Mobile Diary platform that was built by the CD Agency and deployed in subsequent client projects. A description of the Mobile Diary method as applied in two different commercial design research projects is then given and relevant key methodological outcomes from these projects documented. The practical and technical considerations for using methods such as Mobile Diaries are then presented. These considerations serve to provide a description of the mechanics of the technique useful to others considering similar methods, whilst also accounting for the specific decisions that were made about the design of the method in this particular context. They point to aspects, largely introduced by the use of networked technologies that have the potential to impact on the experiences of designers and participants.

## 7.1   The Mobile Diary Platform

From the outset Mobile Diaries had been envisioned with some kind of online platform similar to that used in the Mobile Probes by Hulkko et al. (2004). It had proved difficult during the field studies to locate a secure and affordable platform with the required features. However the evaluation of the Mobile Diary prototypes had further emphasised the value of an online platform for both designers and participants in any commercial deployment. Based on this, the CD Agency agreed to release funds for researching and identifying a suitable platform or customising an existing one. The actual financial investment made would be considered minor in comparison to most large companies' Research and Development (R&D) budgets. However in smaller companies such as the CD Agency the investment of any money into R&D or infrastructure that is not directly 'billable' is less common. The choice to invest resources in this way signalled a recognition by the company of the value of the method and of supporting its development. This is also demonstrative of the kinds of beneficial outcomes that can come from Design Research within a practice-based context.

In researching possible existing platforms we were guided by a number of factors including: the different kinds of material generated in the previous field studies, earlier reviews of existing 'free' platforms and the format of the substitute static HTML diary developed as part of the second prototype. The emphasis was on the automatic collation of data from mobile phones, although support for participants to email reports from

their desktop was also included as an alternative. The following list of requirements summarised the minimum functionality we wanted to support:

- A dedicated online space for each participant that could be password protected and data secured
- Support for automatic posting of messages sent via MMS including audio, text, and image
- Support for posts sent via email including audio, text and image
- Near real-time posting of entries (network permitting)
- Audio and text displayed inline with the associated image (rather than as a separate entry)
- Support for the diverse mobile phone audio formats used for MMS, e.g., 3PG, AMR, MP3
- Visible time-stamp display for each post (to track the arrival of posts)
- Display subject line of email or MMS as title of entry
- Easy annotation of existing posts via online interface
- Easy navigation of posted entries
- Low barrier for entry for participants to access, view or annotate.

These requirements were the criteria against which existing platforms were again evaluated. As discovered in the earlier field studies, the two main challenges to selecting a platform from existing media tools was their lack of ability to handle all the media types gracefully and the desire to protect privacy and ownership of data. Having failed to find an appropriate existing platform we decided to customise *Wordpress*, a free open source blogging platform, for the purposes of supporting the Mobile Diaries[5]. Using *Wordpress* had the following advantages:

- It was possible to support all the required data types
- The diaries could be installed on the CD Agency servers allowing us to retain more control over the data
- Existing plug-ins and scripts could be utilised to automatically post email and mobile messages

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5 Since this time other free tools have emerged such as *Tumblr* and *Evernote*. The basic requirements for the Mobile Diaries outlined here have continued to be a guide for assessing and evaluating these new tools as potential platforms for use in Mobile Diaries.

- It was possible to customise and brand the front end differently for each client project.

Customising our own system did also mean tackling a range of issues related to working with mobile technology and closed telecommunication networks including: how to handle different media codecs; embedded network metadata and; MMS size limits (further documented in Hagen, Robertson and Gravina (2007)). The difficulty of working across different telecommunications networks had been raised by the team developing the Aware platform (Aware, 2005), used by Hulkko et al. (2004) in their Mobile Probes and may partly account for why other online qualitative research platforms did not, and largely still do not, support mobile reporting.

The increase in the availability of camera phones also opened up the possibility that participants could use their own phones. However, giving participants identical handsets significantly reduced the variables we had needed to consider in the customisation and programming process, and allowed us to be confident that all messages would be successfully sent and displayed online. As previously noted, it also removed the need to reimburse participants for message costs, a possible deterrent to participation. It also meant all the phones could be set up with shortcuts making it easier for participants to send reports, and consistent instructions on use could be provided.
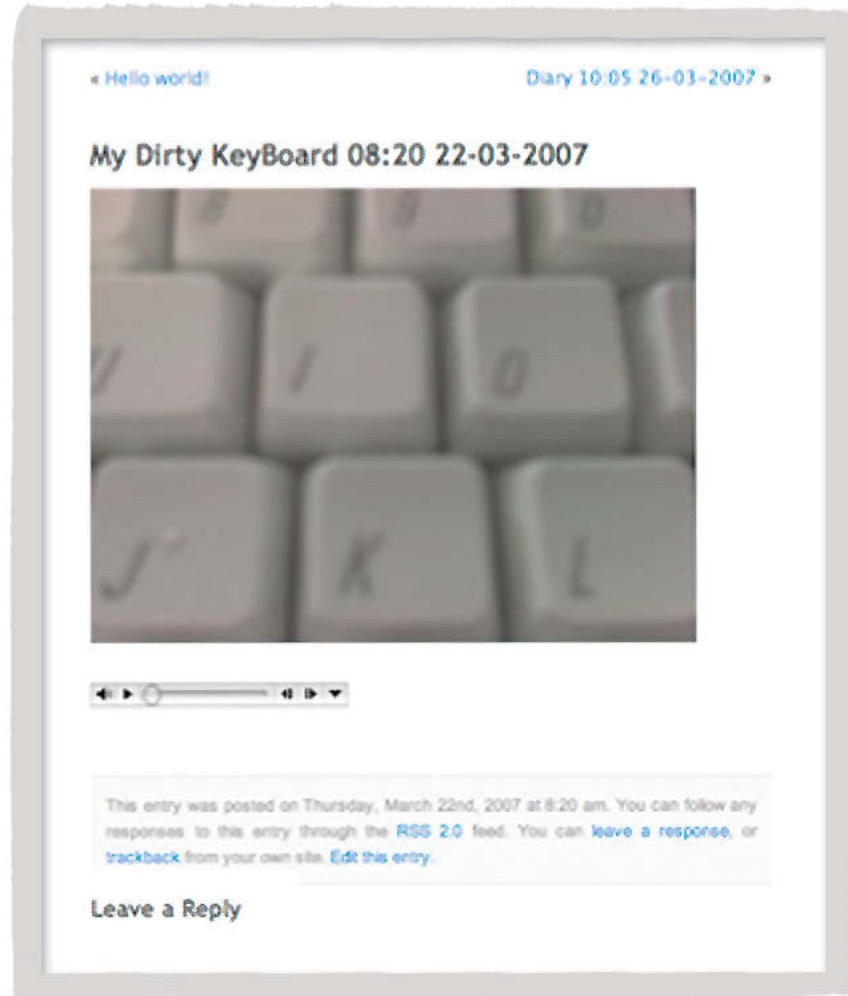
**Figure 29. Example of a test diary entry on the Mobile Diary blog.**

The final platform supported the sending of phone messages to a private blog (mo-blogging) where they were automatically aggregated and displayed. The message was sent from a phone via MMS. Any audio or text was automatically combined in the display with the associated image with an area for comments below. An example post is shown in Figure 29. These could be viewed, read, listened to and commented on by those with password access. The platform completed the technical toolkit needed to deploy Mobile Diaries on a commercial project. It also fulfilled the ambitions of Hulkko et al. (2004) when they imagined an *"interactive dynamically changing system where user replies would direct the research focus"* (p.50).

## 7.2   Implementing and Evaluating Mobile Diaries in Practice

This section describes how Mobile Diaries were implemented in two subsequent commercial studies and summarises key methodological findings that were confirmed

about the method. A brief background to the two commercial studies is provided first. This is followed by a description of the form the Mobile Diaries took, demonstrating both the final method as well as how it built on the field study prototypes.

### 7.2.1  Project Descriptions

*Commercial Study 1*

The client organisation was considering developing an online community tool focused on local sustainability issues. The goal of the Mobile Diary study was to explore how sustainability attitudes and practices manifest in the day-to-day life of potential contributors, and the potential role an online platform might play. Six participants were recruited to take part in the diary studies over a two-week period. The stakeholder groups we recruited from were not part of the client's traditional community, but represented groups with whom they hoped to build a stronger connection or relationship. The Mobile Diaries were intended to provide a window into the lives of participants and provide means through which they could share current activities, thoughts, attitudes and aspirations relating to sustainability in their own lives, from their own perspective.

*Commercial Study 2*

In this study the client organisation, an NGO, wanted to explore ways to enhance their relationship with their existing, younger supporters. The Mobile Diary study was undertaken as part of a broader research and engagement project. Five young participants were recruited from an existing community of youth supporters and the diary studies ran for ten days. The study aimed to provide insight into the lives and attitudes of young people, identify opportunities for collaboration with them, and the role of suitable social media tools in that partnership.

### 7.2.2  Study Set-up and Structure

Figure 30 shows the typical toolkit used in the Mobile Diary studies. Participants were sent a physical Mobile Diary pack that included a Camera Phone and KCam video recorder. A physical notebook, customised for each project, contained all the information about the study such as prompts for data collection and instructions for accessing the personal online Mobile Diary.

As in the field studies, the structure of the diaries was open-ended. Questions and prompts were broad, designed to encourage participants to interpret what they felt was important and to allow for playful and creative responses. Based on the results of the field studies, we assumed the KCam would be kept at the home or office and participants were encouraged to use this tool for more in-depth narratives like a tour of the home, or a reflective account of their experiences doing the diary. The Camera Phone was intended as a constant companion to be used for snapshots and fleeting reflections throughout the day.

While these were the primary reporting tools, the Mobile Diary packs also incorporated generative activities such as collages and maps typical of Cultural Probes (Gaver et al., 1999) and Context Mapping (Sleeswijk Visser et al., 2005). In comparison to the mobile reporting these were 'static' activities where participants were asked to visualise and map aspects of their feelings or daily practices, likely to be completed at home, yet potentially generating complementary material to the mobile reporting tools.

**Mobile**

Voice recordings, picture messages and audio annotations created throughout the day are sent near 'real-time' from the mobile to the blog.

All mobile data are aggregated on a private blog. (e.g.: *Tumblr* or *WordPress*)

**Notebook**

Info about the project, plus prompts for video reports. Participants less comfortable with the technologies can also use the notebook.

**Collage & Maps**

Visualisation activities like maps and collage help to reveal connections and attitudes.

**Video Camera**

Video enables longer, more descriptive reports & can be used collaboratively with others in the household. Video material is collected at the end.

**Figure 30. Description of typical Mobile Diary toolkit**

During the study participants received SMS prompts, reminders and communications from the design researchers. At times participants also responded via SMS to the design researchers with questions, queries or to provide updates. Each of the mobile reports sent by participants appeared on their blogs, in the form of a visual timeline. As design researchers it was possible to view these reports as they appeared, and respond to them with comments and new questions. We dug deeper into particular areas and, where appropriate, redirected the focus of the study. Participants were able to log on to the online diary and view and annotate reports, or provide longer reflective, textual narratives about particular aspects. At the end of the Mobile Diary study all material for

each participant was collated and then reviewed with the participant during an in-depth interview.

In the Mobile Diary prototypes (documented in Chapters 5 and 6) the treatment of the material as a design resource was informal. However the commercial nature of these studies required us to formalise the output of the diaries considerably. There was an expectation of a research 'deliverable' by the client at the end of the project, and that deliverable needed to be accessible to clients as well as other members of the design team, in an ongoing way. Our response was to create a visual report that could support video, audio and images allowing us highlight insights from the research, but also to retain the immersive, personal and subjective nature of the material. Participants were represented through their own words and images, and key themes and future possibilities illuminated. The approach was similar to that described by Sleeswijk Visser (2009) in her framework for communicating rich context information, but customised to support the range of media generated by Mobile Diaries.

### 7.2.3   Reflections on Mobile Diaries in Practice

The success of these two studies confirmed the value of the early design research method in different public and community project contexts. It also provided the opportunity to further reflect on the findings from the field studies about the impact and role of social technologies in self-reporting, in particular how the tools and practices of social technologies *supported immersion,* enabled *ongoing connection* and created the conditions for enabling particular kinds of participation valuable to the *early design of social technologies themselves*. The reflections presented are based on my experience as the project lead and feedback from client and design team representatives.

*Tools for Supporting Immersion*

The studies confirmed the potential for the tools to support a range of different participants to share personal, diverse, rich and multi-dimensional pictures of their lives in their own words and images. It also further demonstrated the value of these materials for creating a sense of immersion for the design team. This is reflected in the following feedback from one of the design researchers on the value of the approach.

> *[The Mobile Diary] method works well when seeking real life*
> *examples of activities and when wanting to understand or see the*
> *lives of a range of people, especially people with lives quite different*

*to your own. It builds greater empathy due to the proximity to their*

*lives, values and priorities…the data is rich in terms of being*

*grounded in people's lives.*

The value of gaining access to the personal and subjective viewpoint of participants is also indicated in the following feedback from a client:

*[It enabled us to] understand sustainability from our audience's*

*perspective in the context of their day-to-day lives.*

*The entire [project] is about "meeting people where they're at" - not*

*only in terms of online location, but also emotionally and in terms of*

*perspective/headspace.  The method was completely in tune with that.*

The feedback suggested that the Mobile Diary method could assist the client in understanding the worldview of the participants, both in relation to the topic being explored as well as how it might influence potential future design efforts.

## Tools for Ongoing Connection

Continual interaction with participants was enabled through the real-time MMS reports being sent in, and the use of SMS to communicate with and encourage participants during the studies. The online diary platform was also a site of ongoing communication and exchange between the participants and design researchers. Originally designed for participants to comment on reports, the interactive and persistent nature of the platform meant that dialogue began to evolve around the individual images and reports. Importantly the online platform gave the Mobile Diaries a 'home'; it was a fixed location or 'touchpoint' for the study that was shared between participants and the design team. The ongoing interaction enabled by the various tools played a key role in fostering a sense of momentum and energy in the commercial studies. It also created a strong feeling of personal connection and proximity to the participants, as conveyed in the following statement by one of the design researchers:

*Generally speaking it is quite novel and exciting from the point of*

*view of using a new media to obtain data. It is certainly different to*

*traditional research where often your first face-to-face meeting is*

*quite neutral in that you and they know very little about the topic or*

*each other. As a researcher I was confronted by the level of intimacy*

*you develop towards the participant i.e., you know so much about*

*their lives and you are communicating with them over a 2-week*

*period - you see their world, life, how they look and yet they know*

*very little about you.*

*Tools for the Design of Social Technologies*

Both studies were undertaken as early design research into possible future community platforms or 'social technologies'. As such they provided an opportunity to further reflect on the opportunities, identified in the field studies, for using social technologies as tools for the design of social technologies themselves. In particular they highlighted: the significance of Mobile Diaries as a way to initiate participants into new technology practices, the inclusive and sharable nature of the tools, and the overlap between self-reporting and user-generated content.

We again found that, for most participants, doing the Mobile Diary was an opportunity to experiment with new tools and new forms of interaction. As had been the case in the field studies, many participants were using MMS and moblogging for the first time and this became a motivation to participate. The experiences of using MMS and blogging in the Mobile Diaries also provided participants with what Trogemann (2006) would describe as a 'thick trigger'. For example, the experiential use of social technologies as tools to explore the current and potential future use of social technologies better resourced participants to explore and articulate their experiences and boundaries around personal publication and mediated participation. These experiences became resources through which understandings of practice could be co-constructed (Kensing & Blomberg, 1998). As had been suggested in the field studies, the *doing* of Mobile Diaries was also an opportunity to experiment with, and initiate into daily life, new forms of interaction potentially relevant to the future community platforms being considered for design.

The sharable and inclusive nature of the Mobile Diary tools also made the research activity of self-reporting more sociable. As with the second field study, several participants chose to include others in reports or collaborated in the making of reports with friends and family. The personal blog site became a place for shared interaction and, in some cases, uploading and viewing posts become a fun activity for participants to do together with family or friends. Some participants blogged about their

involvement, while another hoped to send the Mobile Diary material to a *MySpace* page to share with their existing online network.

The studies also further confirmed the blurring of distinctions between Mobile Diary content as 'self-reporting data' and 'user-generated content' which could be used to populate or seed the future platform. Many of the reports represented the type of material we hoped community members would contribute in any actual platform that might be designed, for example, home cooking tricks or recycling practices. As a way of trying to accommodate this, the consent forms were changed to include potential future use in the second study.

Another important aspect observed in these studies was the role the Mobile Diaries played in building up momentum and interest for the project. Throughout the study participants became engaged in the project and the topic. Participants enjoyed the opportunity to reflect on their own practices and attitudes and expressed interest in what other participants were doing and saying. There were clear opportunities to leverage this energy in an ongoing sense. For example it was possible to identify particular participants who could, due to their personality, knowledge or interest in the topic, be central nodes in any future community, such as subject matter experts. However, it was not possible to take full advantage of these additional outcomes during the projects. Some of the obstacles to doing so are further explored in Chapter 9.

## 7.3   Practical Considerations for Using Mobile Diaries

The field studies and the subsequent commercial Mobile Diary deployments drew attention to a number of methodological, practical and technical aspects important to consider in designing, planning and managing such studies in practice. Here they are summarised in relation to the *suitability and limitations* of Mobile Diaries, and *reliability and technical constraints*. There is a particular focus on concerns for commercial contexts.

### 7.3.1  Suitability and Limitations

When contemplating using methods like Mobile Diaries it is important to consider the suitability of the approach for the context, the need for adequate resourcing and the potential scalability of the systems. These are discussed as key questions and considerations below.

*Is the Approach Appropriate?*

As with all methods, the suitability of this approach should be considered in relation to the specific design situation and the goals of the research. Designers might also consider:

- The degree of organisational willingness to experiment and be open to the process on the behalf of the design agency and the client
- The theme of the study and how this might shape or constrain what is explored, e.g., is it a personal project or focused on the workplace?
- The profile of the participants and the specific ethical or practical considerations this might introduce, e.g., teenagers, adults or whole families
- The current technology knowledge/competence of participants, e.g., how they might respond to the technology involved and how open they are to using new technologies.

Some clients may find these kinds of methods harder to integrate than others depending on their normal day-to-day practice, their internal organisational and political structure and their degree of openness. The physical material produced as a result of the studies is quite different to that of methods like interviews that tend to be written up in textual accounts. Some clients may be less familiar or comfortable with such outputs. When recruiting from within a client organisation, suitable attention also needs to be paid to the ethics and potential power relations between 'management', who may give approval for the project, and the actual participants involved. If political agencies or young people are involved, then stricter recording guidelines and permissions may be required alongside parental consent. Also, when deciding if this is an appropriate method, it is important to consider that some workplace environments and social cultures may not be open to mobile recording devices and some stakeholder groups may be less familiar with the mobile technologies. Finally, different participants will always approach the study differently, with differing levels of enthusiasm and confidence. As with all forms of self-reporting, participants need to be able to dedicate time to the project and be willing to engage.

*Are There Adequate Resources?*

From a resource point of view designers also need to consider:

- What kinds of technology resources are available to the design team, the clients and the participants?

- How many people can we afford to recruit and what kind of incentives might be required?

- Is there adequate technical and research support, given the ongoing and involved nature of the approach?

From a financial point of view, Mobile Diaries are relatively cost-effective and easy to deploy given the breadth of material being collected, the distributed nature of the research and the time-frame over which they are run. There is a variation in costs of planning and creating the Mobile Diaries dependent on recruitment strategies, the physical diary pack and the degree to which the online platform is branded. Miscellaneous costs such as phone credit, batteries and return postage for recording devices are minimal. The technology costs remain relatively consistent as the blogs are easily replicated, mobile recording devices are reused and replacement cost for tools continues to decrease.

The main expense however is in human resources and the actual time required to manage and liaise with participants. The capacity for continuous reporting, or sharing, by the participant throughout the study enabled by social technologies significantly increases the workload for the design researcher. Prompts and instructions are developed and delivered on the fly, dependent on how the participants are going, and in response to participant reports. Adequate time and resources need to be put into monitoring incoming material, reading and responding to posts, and supporting participants. As projects run over weeks and participants are tracking aspects of their lives as it happens, participation occurs across evenings and weekends. The design researcher needs to be able to respond to queries at all times to ensure participants maintain momentum. Technical issues also need to be promptly resolved so as to retain confidence, interest and goodwill by the participants.

*What Scale is Suitable?*

Both August (2006a) and Masten and Plowman (2003) suggest one of the advantages of digital remote research is its scalability, that is, the potential to run multiple, geographically distributed studies at the same time. This might be possible in more automated studies, or where material is going to be systematically analysed for the purposes of market research. The Mobile Diary studies we have run to date have had a maximum number of seven participants. It seems unrealistic in terms of the workload

for the design researcher to significantly increase the scale of the studies. Reflecting on Empathy Probes, Mattelmäki (2002) noted that the material of even ten participants is difficult to manage. Also, increasing the number of participants would decrease the capacity to engage individually with each participant, reducing the value of the relationship-building that is possible as a result of this approach. The use of rich media also increases the amount of material researchers need to handle; the video in particular is time-consuming to watch and edit. While the potential for geographical distribution is a major advantage of these mediated methods, the desirability of significant upward scaling depends on the goals of the research.

### 7.3.2  Reliability and Technical Constraints

The inclusion of digital devices, technology platforms and networks as part of self-reporting inevitably creates opportunities for technical breakdown and raises issues around management of accounts, reliability and security of data. Some examples of issues we have encountered are outlined below:

- Loss of data, e.g., images do not arrive or files are corrupt
- Network failures, e.g., timelag in delivery, failure to deliver or random changes in network protocols
- Platform/server failures, e.g., server maintenance, changes in service, changes to API protocols
- Battery lifespan on devices and the need for frequent recharging
- Storage capacity of devices.

Rather than preventing the use of such methods, these issues are risks to be managed in the planning of the studies, and to be prepared for in terms of their potential to put strain on time and resources. Failures in these areas, for example, loss of images or things not working as stated or expected, can be de-motivating for participants. At the same time, such breakdowns can create opportunities for interaction that ultimately lead to a stronger relationship.

Other technical and administrative issues that need to be planned for include:

- Management of user accounts and passwords, e.g., Are they easy for participants to use or lose? Are accounts set up on behalf of participants or by participants themselves? Do they link into existing user accounts?

- Security of data, e.g., Is it getting backed up? How will be it be stored after the completion of the study, particularly when the images are of individuals, families and children?

- Extracting the data afterwards, e.g., combinations of screen shots, tables and raw data exports might be required

- Compatibility issues between phones and online aggregation platforms for moblogging, especially if using participants' phones.

Lastly, as with all instances where participants are given tools, there is also the possibility of theft, damage or loss of devices. Although this did not happen in any of our studies, it should be planned for in costing, and the responsibility for replacement costs flagged with clients.

### 7.3.3  A Note on Technology

Of course, as the tools, infrastructure and expectations of participants change so do the various issues that need to be considered. In 2003, Masten and Plowman wrote, "*As the price of remote sensing devices has fallen, so too will the barriers to getting at content-rich data*" (p.78). Their expectation was that remote research and the sharing of rich media files by participants would become much easier as network capacity increased. This has been true to some extent. The introduction of 3G networks for example has significantly increased the speed of mobile data transfer and, in theory, the costs of sending mobile data has reduced. However, the image quality of digital cameras has also increased with the net effect of larger data files to send. There continues to be a trade-off between image quality and speed.

Our experience has been that each new technology introduces both advantages and disadvantages that need to be understood and considered, rather than solving any one problem completely. For example, the iPhone introduces a lot of easy to use functionality through its applications, however these tend to be custom designed for particular purposes making them less suitable to appropriate as research tools. In addition, some functionality such as email and GPS has become greatly more accessible with the iPhone, while support for others such as MMS is more limited. It is difficult to support the simultaneous sending of audio and image from the iPhone for example, something easy to achieve on most other contemporary handsets. As different tools and technologies emerge, it will remain necessary to continue to test out their various

technical capabilities and to evaluate how these may shape their capacity to support or impact on the experience of participants doing self-reporting. The practical and technical guidelines provided here and the analysis of experiential capabilities enhanced by social technologies for self-reporting presented in the next chapter can both be used as tools to assist in this process.

## 7.4    Summary

This chapter described the subsequent work required to move from the Mobile Diary prototype developed in the field studies to using the method in practice, along with the experiences gained from that process. Details of the platform developed to support the method and the final format of the Mobile Diaries were provided. A description of two subsequent commercial Mobile Diary studies was also presented. These two studies confirmed patterns and practices identified in the previous field studies and contribute to the reflections and conclusions drawn in the following two chapters. These two subsequent commercial studies also represent the successful implementation of the method in practice and demonstrate the suitability and value of the approach as an early design research method at the CD Agency. A number of practical and technical considerations for using such approaches were also provided in this chapter as a resource for other practitioners.

This chapter marks an end to the documentation of the field studies that has taken place across Chapters 5, 6 and 7. It also concludes the first phase of analysis devoted to documenting the development, evaluation and implementation into practice of a specific self-reporting method. The findings from this empirical research, combined with related literature, become the basis for the analysis presented in the following two chapters. The remainder of the thesis develops concepts important to understanding the impact of using social technologies as design tools, and on how participation in design is enabled, conceived and managed. Chapter 8 looks specifically at the impact of designing *with* social technologies on how participation in self-reporting is being enabled and the boundaries of participation renegotiated. Chapter 9 looks at the opportunities enabled by designing both *with* and *for* social technologies, and the implications this has for how we support participation in the early design of social technologies themselves.

# 8

# Designing *With* Social Technologies

This chapter investigates the implications of using social technologies as design tools for how we enable, conceive and manage participation in self-reporting. It presents an analysis of the capabilities enhanced by, or brought to, self-reporting by social technologies as an early design research method. It also draws attention to some of the resulting ethical and methodological implications and questions raised by appropriating social technologies as design research tools. The findings are presented as a set of conceptual tools that can be used by other designers evaluating self-reporting tools or designing self-reporting studies and a discussion of ethical and methodological considerations relevant to managing design research in this context.

Chapter 8 presents a reflection on how the use of social technologies as *design tools* is impacting on the nature of participation in self-reporting. It does so through an analysis of how social technologies are influencing the experiences of participants and designers in self-reporting. The findings presented in this chapter are based on the results of the empirical research reported in the previous three chapters and the concurrent analysis of these results in relation to other self-reporting studies in literature. References to literature are used in this chapter to show how the findings presented here build on previous and emerging studies of self-reporting and to locate the findings of this practice-based research in relation to broader and ongoing research dialogue about design research and methods.

The analysis found that social technologies enhance and extend the capabilities of self-reporting as an *in situ* method. Using social technologies as self-reporting tools for explorative, early design research brings us *closer to users* by further integrating research activities into the context of everyday life. However, this greater integration also challenges some of our traditional expectations and assumptions about how we conceptualise and manage the boundaries of participation. During the research it became clear that traditional conventions, protocols and assumptions about participation in research are being, or may need to be, renegotiated, often prompted by the actions of the participants themselves.

These findings are presented here in two parts. Part One is presented in the form of seven experiential qualities of self-reporting brought to, or enhanced by, social technologies. The qualities name experiences important to self-reporting studies that seek to privilege experiences and outcomes beneficial to generative design research and draw attention to the roles that the technical, social and physical characteristics of social technologies play in enabling and supporting such experiences. Part Two, which forms the second half of the chapter, presents a discussion of ethical and methodological considerations and questions raised by appropriating social technologies as design tools, which emerged during the process of the research. We found that the sharable and social nature of social technologies posed challenges to traditional notions and expectations about how participation is managed, not necessarily accounted for in our existing research protocols. The discussion identifies salient issues to consider when using, or seeking to use, such self-reporting methods. Combined, the two parts of this chapter demonstrate something of how the broader practices of sharing, capturing, producing,

publishing and distribution, constituted by social technologies, are impacting how we enable, conceive of and manage participation in self-reporting.

## 8.1    Social Technologies as *Design Tools*
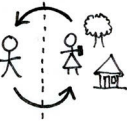
It is a premise of this thesis that choices and assumptions about participation are embedded in our design tools, methods and protocols and that different tools will enable people to participate in design in different ways. As suggested in the introduction chapter of this thesis, the shift from the use of pencil and paper and analogue tools in self-reporting, to digital, personal and networked technologies is significant. The seven experiential qualities presented in this section show how social technologies are extending and enhancing self-reporting as an early design research method and impacting on how participation is being enabled. Summarised in Table 3, *layered representations, co-experience, life on the move, in the moment, continual interaction, shared windows,* and *experimentation* describe experiential qualities of self-reporting brought to, or enhanced by, social technologies. The qualities are described in more detail in the following sections in terms of the role of social technologies in enabling these experiences and the value or impact of such experiences on participants and designer researchers. These qualities were identified through an analysis of the field studies and seek to make visible how some of the social, technical and physical attributes of social technologies are impacting on conditions for participation. Where findings from the field research correlate to those documented in other self-reporting studies in literature, relevant references have been provided.

While these qualities may seem intuitive or obvious, naming them in this way frames the discussion from the perspective of experiences we want to support and privilege. It also helps to put emphasis on the role of different tools in enabling different kinds of experiences and outcomes for participants and designers. The intention of presenting them in this way is to make *more* visible the implications of choices between different kinds of tools on how conditions for participation are enabled. They are offered as conceptual tools that can be used by designers and researchers choosing between, or evaluating, different self-reporting tools. For example, designers might ask themselves: Are all these experiences important in this particular study? Which qualities or experiences should be privileged or not? Which tools will best help us achieve these outcomes? Since the first use of Mobile Diaries, we have used these seven

characteristics (explicitly and implicitly) to evaluate the capacity of emerging tools and platforms for use in Mobile Diaries. An understanding of the value of these qualities has enabled us to easily and quickly grasp what some of the implications might be when choosing between or introducing new tools. As the tools themselves evolve, e.g., from phones to camera phones to smart phones, or from KCams to Flipcams, we have retained these principles to sensitise us to what is potentially gained or lost in the introduction of new tools.

It is important to note that the seven qualities do not represent exhaustive categories. In some cases they are mutually constitutive and different kinds of social technologies or self-reporting tools overlap across them. Mobile phones, for example, which hold a special place in our technical ecology as our most dedicated personal devices, are key enablers of all these qualities.

Table 3. Summary of 7 experiential characteristics of self-reporting brought to, or enhanced by, social technologies

| Quality | Description and role of tools | Related Examples |
|---|---|---|
| Layered representations | Visual, expressive, personalised and sensorial reports that reflect context and preferences, and produce media rich, tangible, immersive artefacts. Enabled through multi-modal tools such as phones and video. | (Brandt et al., 2007; Carter & Mankoff, 2005; Iversen & Nielsen, 2003; Raijmakers et al., 2009) |
| Life on the move | Different ongoing, mobile, social, private and personal contexts are reported. Enabled through portable, personal tools. | (Hulkko et al., 2004; Palen & Salzman, 2002) |
| In the moment | More immediate sharing of in situ activities, increased spontaneity of reports, and sense of proximity and reciprocity. Enabled through portable networked devices. | (Brandt et al., 2007; Cereijo-Roibás et al., 2009; Hulkko et al., 2004; Palen & Salzman, 2002) |
| Shared windows | A persistent 'location' for reflection and exchange about daily life during the study. Enabled by automated aggregation and display of self-reports to a shared online space. | (August, 2006b; Cereijo-Roibás et al., 2009; Khalil, 2009; zilverinnovation, 2009) |
| Continual interactions | Enhanced connection and process of co-discovery between participants and design researchers that supports project momentum. Enabled by the social, interactive nature of the tools. | (August, 2006b; Jönsson et al., 2002; Masten & Plowman, 2003; Pering, 2006) |
| Co-experience | Enhanced potential for informal and formal inclusion, co-experience and collaboration in the creation of reports. Enabled by the social and sharable nature of the tools. | (Cereijo-Roibás et al., 2009; Isomursu et al., 2004; March & Fleuriot, 2006) |
| Experimentation | Increased sense of intervention, play, motivation and opportunities for learning. Enabled by novelty of the tools and their potential for interaction and sharing. | (Hutton, 2006; Masten & Plowman, 2003; Näkki & Virtanen, 2007) |

### 8.1.1  Layered Representations
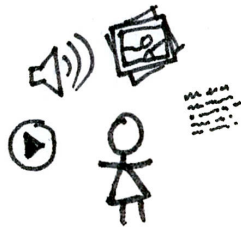


Social technologies enhance the immersive nature of self-reporting by enabling rich, personal, layered representations of daily life. Self-reporting studies such as Mobile Diaries leverage the ever-increasing availability of multi-modal and multimedia personal production tools, providing participants phones that support image, text and audio, or video cameras that support audio and video representations. The multi-modal nature of these devices is important as it enables participants to choose different mediums for different reports (Carter & Mankoff, 2005), but also because they support different layers of information within the reports e.g., image and audio, or image and text. Through such tools participants are supported to:

- Express themselves in immediate, accessible and personal forms
- Make use of images, objects, stories, metaphors, and traces to create snapshots that represent and share emotions, attitudes, experiences and activities
- Choose between snapshots, and longer in-depth accounts, narratives or descriptions
- Choose between mediums or tools as appropriate for the context (Carter & Mankoff, 2005) and depending on personal preferences (Brandt et al., 2007)
- Share and represent their lives in their own words and images and from their personal perspective
- Reflect through verbalisation, visualisation and annotation.

Having participants share through such rich formats is valuable to design researchers for a number of reasons:

- Annotated visual reports can provide further contextual information while video and audio reports can contain information about surroundings and emotions
- Unique moments of participants' lives as they lived them can be captured and shared like 'undigested reality' (Raijmakers et al., 2009)

- Reports are diverse and range from snapshots to in-depth accounts, literal descriptions of activities, objects and locations to metaphorical and conceptual representations of feelings and emotions

- The material lends itself to being used as a shared designerly resource around which participants and designers can co-construct meanings of practice and springboard design ideas (Iversen & Nielsen, 2003)

- The participants' world is accessed through visual, tangible, sensorial artefacts that are highly emotive, immersive and experiential and that can be used to support ongoing empathy and engagement by other team members not involved in the research (e.g., Sleeswijk Visser, 2009)

- In the context of designing for social technologies themselves, the material can be 'read' as potential user-generated content.

### 8.1.2  Life On the Move



The portable nature of the tools we are co-opting is equally significant and important in supporting the diversity of what participants can share. Personal, portable digital devices that can be taken with participants throughout the day enable participants to more easily capture 'life on the move'. This includes different geographical locations, but also more personal and private ones. Portable devices change where, when and how participants are able to report, and therefore what kinds of insights about daily life become accessible through self-reporting, to both participants and design researchers. Social technologies can enhance the *in situ* nature of self-reporting by increasing the ways in which personal, private and mobile aspects of life can more easily be shared.

For participants, the benefits of portable digital recording devices are that they:

- Provide greater flexibility in capturing life as it happens
- Make it easier to report and share experiences, thoughts and feelings *in situ* throughout the day, as part of their day (Brandt et al., 2007; Carter & Mankoff, 2005)

- Reduce the workload for participants compared to when using traditional paper diaries (Palen & Salzman, 2002)

- Increase what they are able to capture and share, and enable the inclusion of things that might not otherwise have been reported or remembered.

For designer researchers the benefits include:

- Effectively travelling with participants to more locations

- Developing a greater awareness of the patterns of movement that make up people's daily lives

- Collecting more in situ material.

Technically, portability or mobility is not a fixed attribute. We discovered in Mobile Diaries that the KCam was portable, but not *as* portable as the mobile phone. Since the initial Mobile Diary studies, the much smaller Flip camera has been released, making it much more realistic to ask people to carry the video camera throughout the day as a recording device (e.g., Raijmakers et al., 2009). As devices such as iPhones start to blur the boundaries between mobile phones and video cameras, using separate devices for both tools may become unnecessary in the future (e.g., Arrington, 2009).

### 8.1.3  In the Moment



Tools that are both portable and networked allow participants to send *in situ* reports *in the moment,* as they are created, or at least very close to it. The ability of participants to be able to share reports *in situ* as they happen throughout the study has a significant impact for both participants and design researchers.

The impact for participants is that:

- Reports created and sent real-time are more immediate and spontaneous (Iversen & Nielsen, 2003)

- A sense of connection and reciprocity is created as participants see themselves sending and sharing with the design researcher

- Participants can receive prompts and replies regardless of where they are and can respond immediately (Jönsson et al., 2002)
- Reports are more convenient to send and additional time does not have to be set aside to later upload via a desktop application where there is greater chance of error (Brandt et al., 2007; Cereijo-Roibás et al., 2009; Perkel, 2007; Vanattenhoven, 2008).

From the perspective of designer researchers, the continual reporting enabled by networked devices has a significant impact on how we experience the material shared by the participants. It also changes the structure of the study. For example:

- The temporal aspect enhances the feeling of proximity to the participants as 'real people' living 'actual lives', important to supporting empathy and immersion
- Designers have continual access to participant reports making it possible to gain a sense of habits, patterns, movement and rhythms across days and weeks (Masten & Plowman, 2003)
- It builds a sense of curiosity. What will happen next…?
- We experience key moments of emotion as they occur for participants
- It is possible to monitor participation and engagement and detect issues early (Hulkko et al., 2004; Palen & Salzman, 2002).

Real-time reports that are shared between participants and design researchers *in the moment* transform *in situ* reporting from being an activity primarily located in the individual participant's daily life to something that is shared between the participant and the design team over the period of the study.

The potential for real-time reporting has significantly increased as the tools have evolved. In 2003 Masten and Plowman were relying on email, IM and random phone interviews for participants to send in their reports. Mobile Diaries made use of MMS and SMS. Recently popularised communication tools such as iPhone applications represent other ways in which real-time data could be shared. The now widely popular notion of 'status updates' utilised by social networking sites such as *Facebook* and *Twitter* could also be appropriated into a research context.

There is also the potential to use a growing number of location-based services, such as *Foursquare* or *Evernote* which can automatically map the geolocation of images via GPS. However this begins to shift the emphasis from active self-reporting to automated

logging of data. While this information is potentially rich in terms of tracking specific habits and travel patterns, in Mobile Diaries the emphasis was on creating an intervention that enabled participants to actively reflect on and share aspects of their own lives. The automated tracking of locations and movements or communications was not a priority.

### 8.1.4 Shared Windows
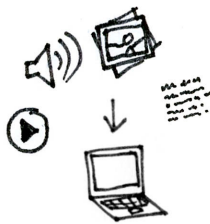
Social technologies enhance the relationship between participants and researchers in self-reporting through the provision of shared spaces for reflection and connection during the study. Online platforms can automatically aggregate digital data which is then browsable by both participants and design researchers (Hulkko et al., 2004). These are not just windows into the life of the participants for the members of the design team, but also windows through which the participants are able to reflect on their own lives from a new perspective. The material shared there becomes like any social object around which remote and mediated interaction occurs (Engeström, 2005). The platform becomes a point of shared reflection and dialogue between researchers and participants, a persistent touchpoint and point of contact across the study. For participants, having this persistent online space:

- Is a second opportunity for reflection as they review previous reports
- Enables them to confirm that the reports are being received and have value
- Makes it possible to annotate existing reports
- Allows for *ex situ*, written and more reflective reports that complement the mobile and video data.

For design researchers it allows us to gain access to:

- A visual timeline of all the material collected (Hulkko et al., 2004)
- Easy tracking of reports and levels of participation (Hulkko et al., 2004; Palen & Salzman, 2002)

- Access to the diary for multiple members of the design team, including clients (August, 2006b)
- The ability to respond to participants' reports e.g., by commenting on them or asking follow-up questions
- A place where new questions can be initiated that benefit from more reflective or text-based responses.

Online platforms can also support interaction between participants, (e.g., March & Fleuriot, 2006 and Revelation™). It is possible to aggregate other life streams in combination with the mobile data such as existing feeds from *Twitter* and *Flickr* – creating windows into other aspects and dimensions of participants' lives (e.g., Khalil, 2009). The digital nature of the material also makes it possible for participants to tag individual reports with keywords, or create categories and clusters of related information, thus adding a layer of personal interpretation to the material (Graham et al., 2007b).

### 8.1.5 Continual Interaction
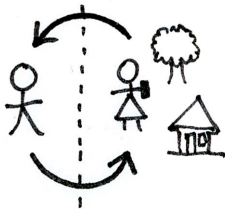


In most traditional self-reporting studies the interaction and relationship-building between participants and researchers has taken place at set points before, sometimes during, and after the study. Social technologies enable *continual interaction* throughout the study. This significantly changes the way we structure and design the studies and impacts on the experiences and expectations of both participants and designers.

For participants:

- The sense of familiarity with, and connection to, the design researchers increases
- Self-reporting is a two-way, rather than one-way, exchange
- The process becomes one of co-discovery
- It is easy and possible for participants to ask questions of the design team
- It encourages more informal dialogue outside the formal 'data collection' process

- It supports a sense of momentum and energy around the project
- The level of involvement and engagement is increased (Masten & Plowman, 2003).

For designer researchers:

- It is possible to evolve the research questions and focus depending on participants' responses, rather than planning all the activities in advance (August, 2006b)
- It is possible to probe deeper into aspects of participants reports as they are shared
- A greater sense of personal connection is developed with participants through more sustained contact (Jönsson et al., 2002; Masten & Plowman, 2003; Palen & Salzman, 2002).

Social technologies bring an interactive and evolving quality to self-reporting as a method. This helps to resolve some of the issues with open-ended studies of how much structure and direction to provide participants around reporting as this can now be negotiated on an individual level and in response to actual participation. At the same time, the method moves away from being an internal, linear, diary-like activity towards more of a conversational, interactive, evolving one. In Mobile Diaries we utilised SMS, phone calls and the blog as interaction channels, but applications such as *Twitter* present other simple channels for checking in and communicating with participants.

## 8.1.6  Co-experience



Social technologies naturally support co-experience. The use of the term co-experience here is a somewhat simplistic interpretation of Battarbee's (2003) original intention when coining the term, but the goal is to draw attention to similar qualities around shared interaction by participants. Tools such as mobile phones, video cameras and

blogs lend themselves to being shared and becoming objects around which participation occurs. For participants this makes possible:

- The inclusion of others in creating, viewing, uploading and reviewing reports

- The playful co-construction of video sequences (Isomursu et al., 2004)

- Sharing or socialising the research with their peers and networks (Cereijo-Roibás et al., 2009).

The capacity for sharing, inclusion and co-experience enabled through the tools can also be a motivation for participants. From a designer's perspective the sharability and inclusive nature of the tools:

- Broadens what we see of people's lives
- Allows us further insight into participants' relationships, networks and personal interactions
- Extends the reach of the design project beyond the individual.

The capacity and tendency to involve others in the creation of reports emerged as a theme in the Mobile Diary evaluations and later commercial studies. In Chapter 9 the significance of the inclusiveness and sociability of the tools to the design of community platforms in particular is further explored.

### 8.1.7 Experimentation



As noted in Chapter 3, one of the known barriers to participation in self-reporting is the burden to participants of data collection. Probes in particular have relied on play and a sense of experimentation as a motivation for participation (Gaver et al., 2004; Graham et al., 2007a; Lucero & Mattelmäki, 2007). Methods that make use of emerging technologies extend this by introducing participants to forms of interaction that are potentially relevant to participants, but are also novel. *Doing* self-reporting becomes an experimentation with new tools and practices, and this can be a motivation for participation.

For participants:

- It is an opportunity to play and learn new skills, making it less like 'homework'
- It can lead to a change of existing technology practices (e.g., Khalil, 2009)
- It is possible to experiment with interaction and sharing in ways similar to the future platforms that we may be designing.

For design researchers:

- It exposes something of participants' existing technology knowledge and practices (Perkel, 2007)
- It is an opportunity to 'skill up' participants in different forms of interaction and create a bridge between existing and future practices of interaction.

The degree of 'experimentation' needs to be balanced with questions about usability, the potential learning curve, and the barrier to entry such technology can introduce. However, the results of the Mobile Diary studies also suggested that participants' level of technical knowledge is not as important as a willingness to experiment.

The concept of experimentation raises two other important aspects for consideration. The first is that the experimental nature of tools necessarily recedes as they become more common and more widely used. For example, the likelihood that people do not have a camera-enabled mobile phone now is low, though many of those people, in Australia at least, will still not have ever used picture messages or moblogging. But even as people become more familiar with the tools and techniques documented here, the continued appropriation by researchers of emerging tools ensures the experimental aspect is retained. For example, when the initial Mobile Diaries were completed *Tumblr* did not exist and neither did the iPhone. In the most recent commercial Mobile Diaries both these tools were incorporated and used in ways not yet familiar to participants. Of course, as new tools are released we duly need to consider how they frame the potential for participation. As noted above, location tagging, for example, puts a particularly strong emphasis on visualising physical movement that may, or may not, be relevant to the goals of the study.

The second aspect is the interesting tension proposed by describing social technologies as both 'experimental' and 'everyday' kinds of tools. On the one hand, the novelty is important to their interventionist nature, helping motivate and enable participants to gain the space to reflect on their own lives. Yet it is also the everyday ubiquitousness of

devices such as mobile phones that allows them to be so easily incorporated as self-reporting tools (Palen & Salzman, 2002). One of the areas in which this tension is reflected is in our ongoing considerations about whether to give people mobile phones for doing Mobile Diaries, or have them use their own. The former seems likely to ensure a greater sense of intervention and experimentation, the latter seems less of a burden for participants and leverages the technologies they have to hand. As noted in the field studies, self-reporting requires participants to develop new habits of self-reflection and 'remembering' to report. The act of handing participants a phone as a mobile documentation tool is a physical intervention that can prompt them to take on the role of self-reporter. Is it possible to create the same sense of experimentation with a device people already own, and around which habits of use have already been formed? It seems likely that if we directly co-opt tools owned by participants it may be necessary to motivate a sense of intervention and experimentation in different ways.

### 8.1.8  Moving Us 'Even' Closer to Users

Exploratory and generative design research can be conceptualised as enabling researchers to *move closer to users*.  The seven experiential qualities presented here demonstrate some of the ways in which social technologies, as a set of tools and practices, are augmenting and extending the capacity of self-reporting to *move us even closer*. To summarise the above qualities in relation to the goals of early design research: the multi-modal, mobile and sharable tools allow participants flexibility and creativity in how they represent their lives, experiences and emotions. This leads to *layered representations* that become immediately accessible and sensorial windows into people's lives. The material is a rich resource for design inspiration and/or the basis of a shared language between the design team and participants after the study. It also becomes available throughout the study through *shared windows,* with online tools creating a 'home' for the study. The materials shared there become objects around which further co-discovery of daily practice, dialogue and relationship-building occurs. The ability to capture *life on the move* supports the generation of diverse and intimate material across different places, times and contexts; participants are able to take us further into their everyday lives.  Access to these experiences *in the moment,* through (near) real-time delivery throughout the study further increases the sense of intimacy, proximity and empathy for the lives of participants as we gain a sense of their life unfolding.  *Continual interaction* and dialogue between design researchers and

participants during the study deepens the sense of connection and allows the structure of the study to evolve over time. The introduction of social technologies as reporting tools also enhances the *experimental* aspect of the approach, allowing participants to play and learn new kinds of interactions potentially applicable to their day-to-day communications. The tools also lend themselves to *co-experience* in the creation and viewing of reports and sharing of the research in other ways with peers and networks. The technical, physical and social nature of social technologies extends the capacity for people to participate in research from within the context of their daily lives, providing us with greater access to their world as they live it.

While on the one hand this creates a greater sense of immersion and connection with participants, the ability to move closer, or perhaps 'reach deeper' into people's lives raises ethical and methodological questions not necessarily accounted for in traditional research protocols. As the tools we use for research merge more closely with people's everyday tools and practices, the boundaries and lines we might draw around our research activities also begin to blur. The remainder of this chapter addresses some of the potential questions about privacy, anonymity and ownership raised by the co-opting of social technologies as tools for design research.

## 8.2  Ethical and Methodological Considerations and Implications

In co-opting social technologies as tools for design we cannot separate our use of them for research from the emerging social practices they constitute or the broader questions they raise about participation. One of the most significant issues raised by social technologies generally has been the renegotiation of the boundaries of public and private (boyd, 2009). Speaking broadly about internet-based research, Bos et al. (2009) argue that ethical standards for research involving people have not kept up with new research paradigms, also pointing to the blurring of boundaries between private and public as a particular site of interest. They suggest that online social research is pushing the boundaries of public observation, third-party disclosure and anonymisation methods. As an example of the lack of standard protocols, in her 2009 thesis boyd (2009) dedicated over ten pages to describing the personal decisions made about approaching and addressing issues of ethics and privacy in her online research with teenagers, at times in direct contrast to the practices of other research contemporaries.

From the perspective of self-reporting, Masten and Plowman (2003) suggested that *Digital Ethno*™ raised a number of unresolved issues in relation to privacy, ethics and ownership. Since then the uptake of similar methods and the proliferation of potential tools for self-reporting has grown significantly, but a corresponding attention to ethics has been largely absent. Most discussion around such issues appears to be informal, taking place, for example, on industry and academic discussion lists, with individual researchers making their own decisions on a case-by-case basis, with some yet to consider it at all. As an illustration of this point, several of the examples given in this section are cited as personal communications and are from sources such as the private Anthrodesign discussion list, included with permission of the individual authors and the list owner.

Three areas that emerged out of the research and that point to ongoing ethical and methodological questions are outlined below.

## 8.2.1 Boundaries and Norms Around 'Public' Participation

Many of our traditional frameworks and protocols for managing participation are modelled around the assumption that activities of research are somewhat private or discrete. This is challenged by social technologies that suggest more public forms of participation are also becoming the norm. For example, in self-reporting studies we are asking people to become observers of their own lives. But the adoption of digital, personal and portable recording tools broadens the places, and the ease, through which this can happen, and makes it more likely that, in documenting their own lives, participants also, intentionally or otherwise, document the lives of others. The quality of *co-experience* outlined above demonstrates the inherently social and sharable nature of these recording tools. For example, in the first study, participants caught the attention of others in preparing and recording their reports in public places. In the second field study the participant focused on capturing images of people she knew and included them in reports. From a 'data collection' perspective, this allows for richer reports, yet it also raises questions around consent and privacy, particularly in public spaces. The safety of participants must also be considered if there is risk of them documenting in places where such activity might be regarded with suspicion, considered inappropriate or illegal, or potentially lead to confrontation with other members of the public. Different dimensions of this issue also arise when working with younger participants where it may be necessary, for example, to consider parental and school policies with regards to

mobile phone use. At times, in the CD Agency, we ruled out proposing the use of Mobile Diaries altogether in political workplaces which depended on activists being able to secretly and confidentially organise meetings or convey material to each other without leaving any kind of documented trail.

At the same time, it is not realistic to ask informal participants to sign consent forms, and participants themselves must be able to apply commonsense to how and what they capture. As Carter and Mankoff (2005) showed, participants are quite capable of making decisions about when, what and how to record, and applying levels of 'discretion' where needed. As designers, we might consider what the appropriate level of guidance and support is for our participants around these issues. Wang and Burris (1997), for example, provided participants with guidelines around documentation when deploying their Photovoice method into new communities. However, in providing guidelines it is also important to remember that norms are in flux and in some cases changing quite rapidly. In discussing the changing nature of and expectations around privacy in the context of social technologies, boyd (2009) argues:

> *Privacy is simply in a state of transition as people try to make sense of how to negotiate the structural transformations resulting from networked media.* (p.39)

Similarly, what people consider acceptable in relation to public recording is not set and will continue to change. For example, it is now fairly standard practice in many places to take and distribute images of slides or presenters, via phones, during a private lecture. However, it would be considered unacceptable (and perhaps be prohibited) to take photos at a beach where young children were present.

### 8.2.2  Aspects of Anonymity

Social technologies also challenge assumptions about anonymity embedded in many traditional research protocols. For example, it is relatively standard practice to protect the identity of participants when the outputs are published or shared beyond the immediate design team. This was the protocol followed in our studies at the CD Agency. However, we found that there was potential for participants to perceive and manage their role and identities quite differently.

Many participants shared and spoke of the research with others and some happily blogged about their research experience. Similar examples of contrasting expectations

and blurring boundaries have been noted by boyd (2007, personal communication), who also had participants publicise their participation in her research, and McCollom (2007, personal communication), who discussed the incongruence of having participants 'friend' her on *Facebook*. While as researchers we might attempt to follow protocol and ensure the identity and data of participants is protected, participants may choose to do otherwise.

Similarly, the anonymity of data is also no longer a given. It is standard convention for research consent forms to assume data should be anonymised and use is often restricted to the purposes of research. But the material created by participants through generative and visual self-reporting methods is quite different to that of log files, survey data, or even interview transcripts. The need to reconsider the appropriateness of such protocols is reflected in the following anecdote by a researcher on the Anthrodesign list (shared as part of a discussion on the industry list about consent and sharing of research data):

> *The strange situation arose where some people wanted to sign over*
> *and anonymise the audio data from interviews, but for the photos to*
> *be widely disseminated and fully identifiable. As a form of property,*
> *the research product can vary according to physical type; and when*
> *it comes to more engaged studies, sometimes informants' own*
> *'creations' can be treated differently.* (Drazin, 2007, personal
> communication)

The sense of ownership and connection to the material suggested here goes well beyond that of 'research data'. When working with such subjective and personal material, the line between personal content and private research is hard to distinguish and the outputs of Mobile Diaries are similarly personal. This reminds us that while the visually rich and subjective material can have important informational, inspirational and empathetic value to designers, it can also have deep value to participants. It is, after all, their life that is being documented. Predicating participant engagement around anonymity assumes particular roles for participants and the materials that they collect in the design process. It also limits the capacity of designers and clients to develop authentic relationships with individual participants.

In discussing some of the implications of *Digital Ethno*™, Masten and Plowman (2003) made the following statement in relation to ownership of data:

*It is clear that the respondents have the rights to data outside our*

*very limited uses. Their lives are their own; we are only visiting with*

*their permission.* (p.77)

However, how this translates into practice needs further consideration. The distributable nature of the material in particular raises further questions. In appropriating social technologies as design tools we are also appropriating the practices of sharing and communication they make possible. Tools such as SMS and blogs are made for communication and sharing and optimised to allow people to distribute information across various networks. That is in part what makes them so useful as research tools. In discussing the use of moblogging for a *quit smoking* campaign, Graham et al. (2007b) point to the changing nature of research in this context in the following quote:

*Unlike traditional research where the data is hidden in a drawer, the*

*detail of participants' lives can be broadcast live to the Internet,*

*should s/he wish. This may have consequences.* (p.3)

This potential for distribution changes how the tools and the data can and might be used by both participants and researchers. One implication is that data shared during the studies cannot necessarily be expected to remain private. Participants may leverage the capacity to send and share material beyond the study. On the other hand, as Macer (2010) notes, any material shared with participants by clients can easily be copied and distributed to whomever and wherever participants choose.

Given the emphasis on sharing built into these platforms and practices, traditional research conventions and consent protocols built around anonymity and protecting participants' privacy may no longer be sufficient, or relevant. It is possible that some traditional protocols may assume a division between the private practices of research and the public spaces in which we live that do not necessarily exist, or that may no longer make sense in the context of social technologies.

### 8.2.3  The Responsibility of Researchers

The issues and questions raised above suggest some of the dynamics of social technologies are impacting on our understanding of, and approaches to, how participation is framed and enabled. At the same time, they prompt us to reconsider our obligations to participants. While it is still the responsibility of researchers and designers to follow the ethical premise of protecting our participants, we might ask:

What exactly we are protecting them from and what and where do our responsibilities extend to? As research activities blur into daily life, how much control do we actually have over participants' safety and, in particular, that of their 'data'? What right do participants have to the data generated through research projects or to accounts set up as part of research? And to what extent can we guarantee those rights?

In practice these are complex questions. For example, as previously noted, free platforms that might be used for aggregating material (such as *Wordpress.com, Tumblr* or *Facebook*) retain significant usage rights to content in return for their free service. It is not clear, for example, if we can control usage of data stored there or what the visibility of research data may be in future searches. Recent events with *Facebook* (Grubb, 2010; Opsahl, 2010; Spool, 2007), *Twitter* (Parrack, 2009) and *Ning* (Rosenthal, 2010) have shown the possibility that such services can change their terms and conditions at any time. These are complex issues to communicate to participants and create new considerations around consent and data management, as well as implications about whether we use open source tools, free tools and proprietary supported systems. As previously mentioned, in the design of Mobile Diaries these issues influenced the CD Agency's decision to use *Wordpress* (different to *Wordpress.com* named above), a free open source CMS that is installed on the company's own servers and over which we have control.

## 8.3   Summary

The first section of the chapter explored how social technologies *as design tools* are extending and augmenting self-reporting in ways valuable for early design research. The seven experiential qualities of *layered representations, life on the move, in the moment, shared windows, continual interaction, co-experience* and *experimentation* were presented as ways in which social technologies are enhancing the capacity of self-reporting to move us closer to users, whilst at the same time broadening the ways in which people can participate in design from within the context of their daily lives.

These attributes draw attention to the ways in which our tools, and social technologies in particular, impact on the potential for participation and can be used as a resource for design researchers evaluating or choosing between different self-reporting tools and techniques. They also indicate ways in which the capabilities and expectations

constituted by social technologies are reshaping how participants can, and indeed expect to, participate in design research.

The second half of the chapter documents several ethical and methodological questions raised by the appropriation of social technologies, not necessarily accounted for in traditional conventions and protocols around self-reporting. It is important to note that the questions about ethics and privacy posed here do not have simple answers. However, such questions and concerns are becoming increasingly relevant and urgent as more design practitioners and researchers take up such approaches to contextual research. Part of the work of this chapter has been to identify where traditional conventions and protocols around managing participation in self-reporting may be limited or inappropriate. Doing so helps to highlight how the nature of, and potential for, participation is changing and how the broader practices of sharing, capturing, producing, publishing and distributing constituted by social technologies are prompting changes in the ways we conceive and manage participation in design research. The conclusion of this chapter marks the end to the second phase of analysis into how social technologies as design tools are impacting on self-reporting as a design research method. The following chapter builds on several of the findings documented here, but does so with a focus on the particular opportunities and implications social technologies as design tools create for supporting participation in the design of social technologies themselves.

# 9

# Designing *With* and *For* Social Technologies

Particular considerations about participation are foregrounded when social technologies themselves are the subject of design. This chapter focuses on potential forms of participation enabled by social technologies as design tools, appropriate to the design of social technologies themselves. Mobile Diaries and the experiences they enable are explored for their potential to support, and be reconceptualised as, strategies for seeding design *through use*. Barriers to leveraging these opportunities that exist within design research protocols, conventions and project infrastructures and that frame, and potentially limit, participation are also examined.

This chapter draws together findings from the empirical research that address the question of how participation can be supported by the use of social technologies as design tools when social technologies themselves are the subject of design.

Findings laid out in Chapter 8 are extended through a focus on potential forms of participation enabled by social technologies and suited to the design of social technologies themselves. These are related back to relevant themes in literature around designing for community contexts, seeding, and the examples of 'prototyping in the wild' identified in existing Participatory Design literature in Chapter 3.

As outlined earlier in the thesis, the concept of seeding puts focus on how new designs come to be taken up in the world and places value on opportunities to connect design with the concrete places in which it will live. In this chapter, experiences enabled through methods like Mobile Diaries, not accounted for in traditional models of self-reporting, are explored for their potential to support, and be reconceptualised as, strategies for seeding design *through use*. Specifically, the tendency for participants to *socialise the research*, the ability for participants to *bridge existing and future practices* of design and use, and the capacity for participants to *develop content early* in the design process are introduced and explored as opportunities for seeding made possible by social technologies. They are put forward as examples of participation in design that respond to, and are enabled by, the close coupling of design and use inherent in social technologies and suitable in particular to the design of community platforms. Potential methodological and project-based barriers to embracing these opportunities, often the result of assumptions embedded in our existing design methods and project infrastructure about how participation is conceived and managed, were also encountered during the process of the research. These are described in this chapter as potential challenges to supporting such forms of participation in practice.

The discussion and critique of both the opportunities and barriers for participation is intended to further develop understanding of the nature of participation in the context of social technologies in a particular context and to provide conceptual tools for designers around how such participation might be supported.

The chapter begins by revisiting key points from the Participatory Design literature and the notion of seeding, which help to frame the discussion presented in the remainder of the chapter. The three 'strategies for seeding', *socialising the research*, *bridging existing and future practices* and *developing early content* identified as a result of the

empirical research, are introduced and examined for their potential to support participation in design *through use.* The implications for how we conceive of self-reporting as an early design research method, and its potential to support 'design in the wild' is then outlined. The final section of the chapter reflects on the barriers encountered or identified in attempting to implement such approaches to participation in design within a commercial context.

## 9.1    Designing Social Technologies

In Chapter 3 (Section 3.3) recent Participatory Design literature focusing on social technologies in community settings was reviewed. The review pointed to how the emergent and participatory nature of social technologies puts emphasis on the dynamic relations of design and use. It highlighted the changing responsibilities of designers in this context, in particular the ways in which our role is extending beyond researching, defining, creating and releasing a product (Brereton & Buur, 2008; Merkel, Farooq, Xiao, Ganoe, Rosson & Carroll, 2007). Important tasks now include helping to ingratiate the project with potential users or even 'bringing into being' the future community (DiSalvo et al., 2007). This is particularly so in community and social settings where uptake and use of systems by individuals is voluntary. Other responsibilities foregrounded by the emergent and participatory nature of social technologies included transferring project ownership from designers to the user community (Merkel et al., 2004); identifying existing communities of interest with whom we might work (Botero, Kommonen, Oilinki & Koskijoki, 2003) and allowing design to change and grow through user participation (Dittrich et al., 2002). The emphasis on reconfiguration over bespoke solutions as noted by both Twidale and Floyd (2008) and Lievrouw (2006) also places value on the skills required to bring people and technologies together around a particular concept, rather than on designing from scratch.

The notion of seeding can be used to capture, emphasise and communicate the responsibilities and issues foregrounded by social technologies (see Section 3.4). Seeding is a metaphor already in use within the design community to describe activities that connect design and use. The concept of seeding sensitises us to factors to consider in the design of social technologies and is used explicitly in this thesis to name an early design goal in the design of social technologies. The notion of seeding design places

value on making connections between the design project and people's daily lives and on building energy, interest and momentum around a project early in the design phase. It also emphasises the need to create spaces in which design can be adopted and evolved by the community in which it is situated. The living prototypes deployed in situ (Botero & Saad-Sulonen, 2008; Jones et al., 2007; Redhead & Brereton, 2008) are examples of this. The experiential method of prototyping was moved 'into the wild' as a response to the participatory and emergent nature of social technologies. 'Prototyping in the wild' allows community members to participate in the evolution of design *through use* and in context.

The above concepts and examples help to frame and motivate the following analysis of how Mobile Diaries enabled a connection between design and use and the potential this presents for seeding early design.

## 9.2   Seeding Social Technologies

As outlined above, the concept of seeding puts focus on how new designs come to be taken up in the world and places value on opportunities to connect design with the concrete places in which it will live. In this section, experiences that were observed in the field studies and analysed further in Chapter 8 as being enabled by social technologies are examined from the perspective of how they offer opportunities for *seeding* – made possible by, and valuable to, social technologies. Three experiences in particular, identified in the research as enabled by the use of social technologies, are examined from this perspective. These are: i) the capacity and propensity for participants to share the research activities or Mobile Diary with others, ii) the opportunity for participants to experiment with social technologies, and iii) the ability for participants to create potential user-generated content prior to the platform existing. These three experiences are presented here as opportunities to *socialise the research*, *bridge existing and future practices* and *develop early content,* becoming strategies for seeding enabled when social technologies are both tools for design and the subject of design. While not traditionally valued as outcomes of self-reporting, it is proposed that these three phenomena represent potential new patterns of participation enabled and made valuable by the participatory and emergent nature of social technologies. They are opportunities for supporting participation in the early design of community platforms that go beyond inspiring and informing design, to seeding design through use.

In the following sections each phenomenon is introduced and an argument is put forward for why these can be considered strategies for seeding design valuable in the context of developing social technologies in community settings. The discussion addresses the role of social technologies in enabling these experiences and how embracing such opportunities reconfigure self-reporting as a potential hybrid prototyping method in itself.

### 9.2.1 Socialising the Research
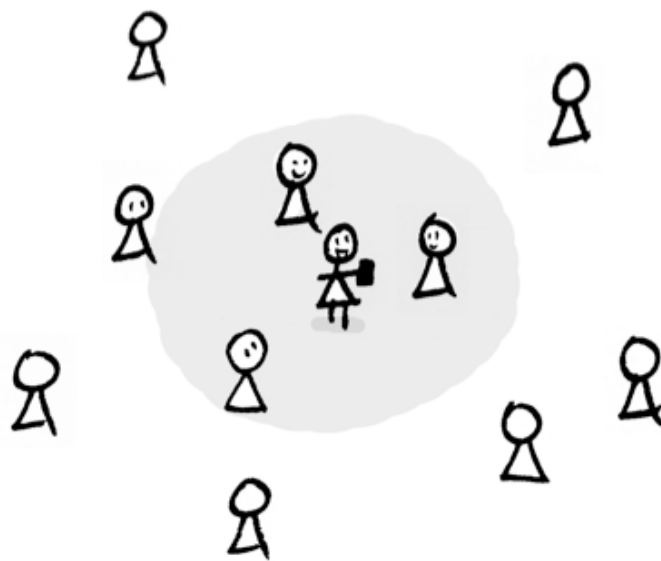


**Illustration 7. Socialising the research**

Participating in the Mobile Diary study has the potential to become a shared and social activity for participants.

The focus on self-reporting as a research method is most often as a personal activity where individual participants record, reflect and share aspects of their lives with researchers, as a precursor to design. While there are studies that document self-reporting as a shared activity, for example studies have been conducted with households (Gaver et al., 1999), 'friendship groups' (March & Fleuriot, 2006) and pairs (Isomursu et al., 2004; Sundstrom, Stahl & Hook, 2007), these collaborations include recruited participants and are orchestrated as formal parts of the research design. As suggested by Illustration 7, in the Mobile Diary studies participants *socialised the research* in more ad hoc and informal ways that they themselves initiated. For example, the creation of images and video and/or the review of uploaded materials on the 'private' Mobile Diary blog became a shared process of reflection and play, in which other family members, friends and co-workers were invited to participate. People blogged about their

participation, hoped to distribute their Mobile Diary material across their other public forums or social networking profiles and discussed with others their experience of doing the Mobile Diaries.

The potential for *socialising the research* as demonstrated here is made possible by the capacity and expectations of sociability, distribution and sharing inherent in social technologies. While it raises some ethical questions about confidentiality for the client organisation and consent from 'informal participants' which deserve consideration, it also has important implications from a participatory perspective. For example, as previously noted, Merkel et al. (2004) suggest that in the context of community technologies the role of designers goes beyond that of eliciting project requirements to include finding ways to seed ownership. The spontaneous inclusion of others in the process of self-reporting can be interpreted as reflecting a sense of control and ownership by participants over the research process. Participants determined not just when and how documentation took place, but also with whom. In *socialising the research* participants are exercising a form of ownership over the design project and the topic being investigated. They are giving meaning to the project well beyond the formal research boundaries and the contractual relationship of a research participant. It is possible to conceptualise this as a process of appropriation, prior to the creation of any code or system. Even without a finished artefact, the project is becoming "*a public thing open for controversies*" (Ehn, 2008 p.96). From the perspective of designing social technologies themselves, facilitating and encouraging participants to *socialise the research* can be understood as a strategy for seeding design 'in the wild'.

### 9.2.2  Bridging Existing and Future Practices
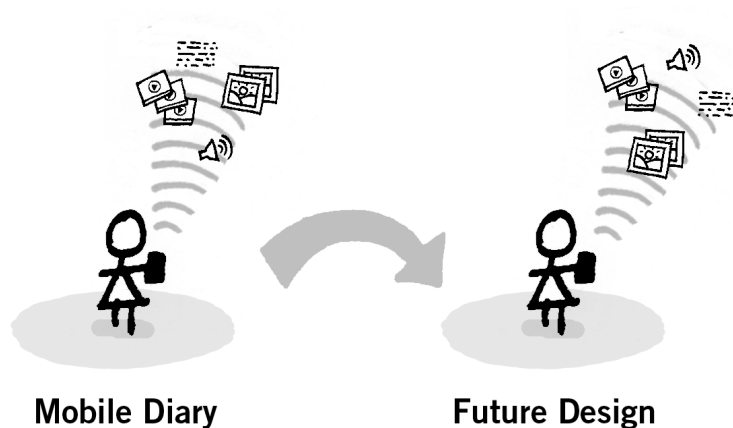


**Illustration 8. Bridging existing and future practices**

Activities and skills required for the research are the same, or similar, to that of using the future platform.

**Mobile Diary**          **Future Design**

For participants, accommodating the activities of self-documentation has always meant altering their daily practices to some extent, and the capacity for self-reporting to trigger behaviour change is known (e.g., Graham et al., 2007a; Grinter & Eldridge, 2001). The experiential quality of *experimentation* is described in Chapter 8 as important to the interventionist and reflective nature of self-reporting. It has additional value to the design of social technologies themselves because it can help to *bridge between existing and future practices.* Participants made videos, sent picture messages, created mobile blog posts (mo-blogs) and commented on blog messages all actions common to participation in social technologies. In many cases participants were using these technologies for the first time, learning experientially about the technologies and various forms of interaction as they produced 'self- reports'. For some, *doing* Mobile Diaries was the trigger point for considering the adoption of the technologies and practices into their lives such as the purchase of a new camera phone or use of mobile blogging. Khalil also noted a similar outcome from his Digital Cultural probes where several participants started their own *Tumblr* blogs based on that research experience (personal communication 2009). For other participants the Mobile Diary experience enabled them to articulate the things that currently held them back from participating in online forums, such as concerns with privacy or negative interactions with others online.

The potential to connect 'existing and future practices' has a number of implications from a participatory perspective. Dearden and Light (2008) note that one of the emerging roles for designers working with community platforms is the up-skilling of community members. Mobile Diaries became a playful and safe environment for participants to explore new technologies. By participating in the studies, participants had the opportunity to experiment and develop skills and knowledge relevant to participation in social technologies. Even for the participants for whom the technology was less novel, Mobile Diaries were still an opportunity to initiate patterns of practice around the discussion and documentation of the particular topic being studied such as issues of local sustainability. It was an opportunity to understand how people might appropriate such technologies and practices in relation to this topic into their lives. Botero and Saad-Sulonen (2008) discuss how the use of 'living prototypes' used during the Urban Mediator project created conditions not only for the development of the system but also the practices that would make them viable. We found that Mobile

Diaries created a similar 'pathway'. Self-reporting allowed participants to develop the skills necessary to participate in future designs, making them more viable by *bridging existing and future practices*. Illustration 8 highlights this connection between using the Mobile Diary and using the future design.

Of course there could be unintended consequences that come from introducing people to new tools and practices. In their analysis of the potential of mobile blogging, Graham et al. (2007b) raise concerns about the potential of participants taking on a 'celebrity status' and point to questions about shifting digital identities and hyper-real accounts that might result from such participation. These considerations are legitimate and care should be taken as with any research situation. From the perspective of empowering participants however, these interventions can also be interpreted as valuable opportunities for seeding participation, providing ways through which participants can gain access to, learn and develop skills around negotiating participation in social technologies.

### 9.2.3  Developing Early Content



**Illustration 9. Developing early content**

Mobile Diaries potentially enable the generation of seed content for future community platforms

**Mobile Diary**                    **Future Design**
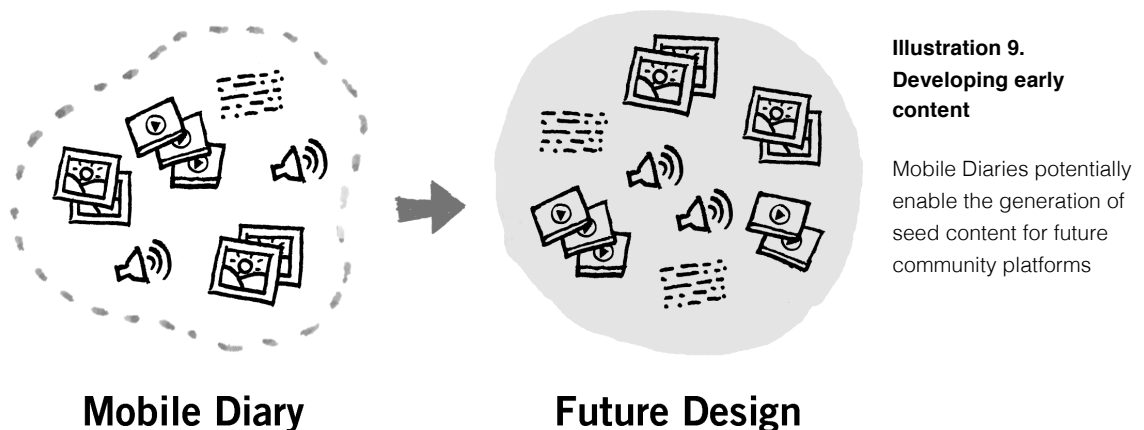
In social technologies designed for community settings, contributors share stories, images and experiences around topics relevant to them. The shape of the community platform evolves in response to these contributions from 'community members'. The use of social technologies as recording tools, and the *layered representations* they make possible, blurs the distinction between self-reporting and the production of user-generated content. There was, at times, little difference between the material participants produced during the Mobile Diaries and what we would hope to see on the user-generated sites or platforms we envisioned designing, other than the framework

under which it was produced. This was due both to the subject matter of the reports, i.e., personal images, stories and videos about a particular topic of interest told from the perspective of the participant (potential community member), as well as the tools and format through which they were produced, i.e., MMS, blog posts and MPEG-4 video; formats developed for communication, publishing and distribution.

For example, Mobile Diary reports included things like the tour of a rooftop garden, home cooking experiments, and demonstrations of strategies for reducing household waste. From a design research perspective these told us something of participants' motivations and interests around sustainability, but such personal stories were also ideal seed content for a future-planned community site around that same topic. Similarly, the 'behind the scenes' material produced by the client in the second field study had the potential to serve as actual content on the community site. Illustration 9 suggests the potential for 'data' collected during the Mobile Diary studies to be transformed into seed content for the future platform.

While acknowledging that participants would censor their material in different ways were it public, reading the early self-reporting material as potential content also gives insight into how the topic becomes meaningful in peoples lives. The material participants produce in Mobile Diaries is indicative of how the questions, topics or issues being investigated become relevant to potential future community members. It also signals something of how people might go about communicating and sharing it with others.

Social technologies are not about building a database and populating it with content. Rather, contributions by community members are the central, ever evolving building blocks of design; they bring meaning to and measure the success of any scaffolds that we as designers might create. Usually content creation takes place after a system has been in some way formed and released to the public. However, the use of tools such as videos and camera phones early in the design research phases means the creation of seed content can begin earlier, opening up the potential for the structure of the future platform to emerge from the 'bottom up' (Twidale & Floyd, 2008). Material developed early in the design process can act as seed content around which the design of the platform can be shaped. For example, themes, navigation structures and taxonomies can emerge out of the content rather than be defined a priori.

Seeing self-reporting as a content development opportunity is also another possible means through which ownership can be fostered. In Context Mapping a key aspect of presenting and sharing the outcomes of the research is the use of personal quotes and images from individuals in reports and presentations (Sleeswijk Visser, 2009). Rijn and Stappers (2008) argue that when participants see material that they have generated in such reports, a sense of ownership over the research is generated. They state "*users will automatically experience results with [their] personal expressions as their belongings*" (p.179). In the case of social technologies and the design of community platforms there is an opportunity to take this further. The material moves beyond that of research 'data' and is instead taken up as seed content in the design itself. The notion of material developed by participants shaping future design also creates potential for a greater personal connection between the design project and participant. Participants are effectively invited to take the role of author and contributor prior even to the development or specification of any particular platform.

The idea that material from self-reporting, usually a private endeavour, could potentially be put to more public uses raises a number of questions about privacy, consent and how data collection is framed. It also offers potential new ways in which participants can actively influence and participate in design through activities related to use early in the design process. Understandings of participation in self-reporting have largely focused on how much control participants have over how 'data' is produced and the degree of influence participants have over the interpretation of that material. Managed appropriately, using self-reporting studies as sources of seed content could be an opportunity for future community members to directly contribute to the design of future platforms.

### 9.2.4  Designing *With* and *For* Social Technologies: Opportunities for Seeding Design Through Use

It is possible to argue that the connection between user-generated content and self-reporting is obvious given the constraints of the formats being used, or that the capacity of such tools to foster sharing and interaction is already well documented (e.g., Engeström, 2005; Okabe, 2004). Obvious as these relationships may be, they are not accounted for in current methods of self-reporting or particularly supported by current methodological or project infrastructures. This raises the question of how we can better

support and leverage these phenomena as approaches to seeding participation relevant to social technologies.

The experiences of self-reporting described above represent new patterns of participation in design made possible by social technologies. The activities of *socialising the research, bridging current and future practices* and *developing early content* represent opportunities to go beyond inspiring and informing design, to seeding design through use. The use of social technologies as design tools, for the design of social technologies themselves creates an experiential connection between the design method and the subject of design. This creates new opportunities for participation. For example, the experiences of socialising the research were made possible due to the sharability and sociability of the tools themselves, as well as the emergent set of practices and expectations around sharing and participation that social technologies give rise to. In this way the project became a 'public object' (Ehn, 2008), appropriated into people's daily lives. The methodological connection between the tools used for the research and the subject of the research also created opportunities to connect design and use, allowing for the bridging of existing and future practices and the early development of seed content. In *doing* Mobile Diaries people negotiated, incorporated and appropriated particular physical, social and technical devices and practices into their daily lives, producing and sharing digital artefacts. Participants experienced something of how such technologies might take up physical, technical and social residence in their lives.

Similar to the rudimentary Patchwork Prototypes described by Twidale & Floyd (2008), participants (and designers) gained access to a visceral, concrete experience of the modes of interaction and self-expression that constitute participation in social technologies early in the design process. Using social technologies themselves as tools for research into future community platforms created the potential for roles and activities typically acted out in use, such as the appropriation of design as a public object or the development of user-generated content, to be brought into the early phases of design and research. Such forms of participation are appropriate and valuable to the design of social technologies because of the tight coupling between design and use that constitutes their form. This direct engagement in design through use opens up opportunities through which people can actively shape, influence and take ownership over design early in the design process, from the context of their daily lives. What were

once opportunities to conduct contextual research became opportunities for participation in design informed through experiences of use.

Embracing this potential extends the role of methods like Mobile Diaries beyond self-documentation and reconfigures them as exploratory interventions that are in themselves rudimentary prototypes and compositions of existing social software. In this light Mobile Diaries can be conceived of as a hybrid, experimental approach that takes on something of the physical, *exploratory* characteristics of 'prototyping in the wild'. They act in ways similar to early seed prototypes (Botero & Saad-Sulonen, 2008); as interventions that make available experiences, reflections and information about tools and practices whilst also seeding the use of such tools with the community. Rather than turning off the Mobile Diaries at the end of the self-reporting study, as we did, they could be evolved and built upon as a potential prototype or start point for future community platforms.

To achieve this more emergent approach, the blurring of boundaries between private and public participation and the shifting roles of participants require consideration. We have begun this process by including clauses in consent forms that cover the potential to negotiate more public use of material. Technically, we would also need the resources to evolve the platform from the initial 'diary' state into its next, more public form. But, as we have seen, social technologies lend themselves to exactly this sort of recomposition and reconfigurability (Floyd & Twidale, 2008; Jones et al., 2007; Lievrouw, 2006). The real challenge, based on the experience of this research and ongoing design practice, is how these more "causal and exploratory formats" (Brereton & Buur, 2008) become manageable in a commercial context.  As Floyd and Twidale (2008) also point out, the barriers have little to do with the design itself or the 'technological environment', and more to do with organisational culture and politics. Particular challenges relevant to the context of this research are explored further in the following sections.

## 9.3   Barriers to Participation

As previously discussed social technologies challenge certain conventions around participation embedded in traditional design and research methods. They also disrupt assumptions about the kinds of contributions and modes of participation that are possible so early in the design process and how participation might be supported. Attempting to apply the findings outlined above within projects at the CD Agency

revealed a number of barriers that needed to be negotiated. These barriers stemmed from inherent assumptions about how we practise and manage design common to commercial design practice and exposed the limited ability of some existing approaches to adequately support the more participatory and emergent approaches both demanded and enabled by social technologies. Four aspects in particular were identified as requiring our attention: i) the ways in which traditional approaches to managing participation in research and design frame, constrain and impact the relationship participants are able to have with the design, ii) the expectations around how projects are conceived and managed and the value of participation within them iii) the competing interests and commercial constraints to which any design project is subject and iv) a concern for relinquishing control that comes with any genuine commitment to participation.

The discussion and reflection of these limitations and barriers presented below is based on my experiences as a practitioner and supported by discussions with other practitioners from commercial research and design agencies about their own experiences and approaches. The provision of specific examples is at times limited by the need to protect commercial in-confidence material and I have also drawn upon relevant literature addressing similar issues to demonstrate how such conditions are known to exist across design practice more broadly. It is anticipated that documenting and drawing attention to these aspects helps to expose the changing nature of participation in design in the context of social technologies, as well as provide start points for where we might better seek to support it.

### 9.3.1  Managing Participation

Recruitment is often focused on identifying people who represent different 'user types' from an identified 'target audience'. Under this model participants' primary role is that of 'representative user', rather than as an individual. It is common at the CD Agency for example, to recruit different representative users based on persona types that have been established through earlier research. The concept of seeding on the other hand emphasises opportunities to build connections with potential future community members, as authors, contributors and citizens. This is particularly important in the context of community projects where we may be responsible for 'bringing a community into being'. The value is on the relationships we can build with specific, actual individuals, and their particular networks, in their particular context. This suggests that

we may need to reconsider how, and under what conditions, participants are enlisted into design. In discussing design and participation in relation to community projects, Botero et al. (2003) suggested a broader understanding of people's roles is needed. Instead of conceiving of our participants as 'users', we should think of them as citizens, family members, residents, planners, actors, creators and decision makers. This places participants in their active 'public' roles and requires a subtle but important shift from recruiting participants as 'research participants' to inviting them, from the beginning, to participate as potential future community members. Our approach to the recruitment of Mobile Diary participants might have changed for example if rather than recruiting 'representative users', we had approached it as recruiting future community members for seeding momentum, energy and input on equitable and if appropriate, public terms.

The question of how people are enlisted into the design process is compounded by the assumptions of how their participation in design is then portrayed. As suggested in Chapter 8, common consent protocols in professional design research contexts are constructed around assumptions of anonymity both for the participant and the material they produce.[6] Data usage is also usually restricted to the 'purposes of research'. These protocols were developed in order to protect participants, however they also frame participation in particular ways. They do not, for example, anticipate the kinds of actions observed in the Mobile Diary studies where participants wanted to publish, share, or claim ownership of this material themselves. Nor do they account for the potential to transition or reinterpret the design material into seed content, published on future public platforms.

Social technologies not only suggest a potential rethinking of ethics and how we structure consent during research, they also point to opportunities for different kinds of participation in design that are more public. When our goals are to seed content, connections and community, our protocols for consent need to embrace, support, and appropriately protect participants while also enabling them to participate as authors and contributors, choosing how and with whom their content is shared. To date these

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6 It is not common for self-reporting or generative studies in literature to detail the contractual arrangements they have with their participants but where they do, anonymisation is the standard approach. The most prominent exceptions take a participatory design or participatory action design approach where such roles are negotiated with the participant (e.g., Botero et al., 2003; Ivey & Sanders, 2006).

findings have been reflected back into practice through changes to consent forms that cover the potential to negotiate more public use of material. Investigating different models for managing and framing consent and participation is also identified as focus for potential future work, outlined in the next chapter.

### 9.3.2  The Value of Participation

Barriers to supporting more exploratory and ongoing forms of participation can also be created by assumptions about how projects are managed, and where the value of participation is embedded. While from a design practice perspective we may understand design to be iterative, design projects are often managed instead as a series of discrete phases. These project management and contractual limitations create certain boundaries around how participation can be supported and participation can become bound to a particular phase. Compartmentalising aspects of projects in this way is part of managing them, but it assumes that activities of research, design and use progress in a relatively linear sequence, and that the value of participation can largely be embedded in the outputs and 'deliveries' of each phase.

Even in generative research there has been an assumption that the value of method is largely realised in the material that is generated. Whether it be to inform understandings of practice (e.g., Grinter & Eldridge, 2003), inspire design (e.g., Gaver et al., 1999) or foster empathy (e.g., Mattelmäki & Battarbee, 2002) the emphasis on generative methods is on the generation of design material. Other outcomes such as dialogue and relationship building are recognised, but descriptions in studies are largely framed around the value of the activity to produce tangible research deliveries and participation is couched in terms of the generation and co-interpretation of that material. The Mobile Diary method was presented and sold to clients in the same way as other commercial research studies; there was an assumption of specific tangible outputs at particular milestones for a particular budget, and that we recruited participants for the period of the Mobile Diary study. While we were able to foster a close relationship to participants over the period of the study, when the study ended, so did any formally resourced relationship with participants. Under this model momentum and connections developed during the study had nowhere to go. Time and budget was assigned to developing the tangible deliverables and outputs from the diaries, but no real framework existed within our standard research protocols and project conventions for valuing or maintaining the ongoing relations with participants.

Taking an evolutionary prototyping approach, however, means the shape of design and the associated project emerges over time and builds in response to the energies and interests of the participants in these early phases. There are no clear specifications, deliverables or budgets upfront, only an initial commitment to support the process. This is in stark contrast to many of the project management models that commercial design currently operates under. In proposing such approaches, we have found that clients may recognise the value of developing systems that have a 'bottom-up' motivation, but still find it nearly impossible to reconcile such an approach with existing expectations about structures of budgets, business cases and deliverables. Botero and Saad-Sulonen (2008) found similar issues in working with their local council, who were initially unwilling to invest in seed prototypes, although they embraced the process once the results were demonstrated. As Ehn (2008) suggests, the traditional notion of a design project is being challenged in these contexts, but what kinds of contracts, engagements or periods of involvement are now appropriate? Further case studies and appropriate frameworks for budgeting and reporting success can assist clients in building confidence about more open-ended and emergent approaches where design is participant-led through use. The concept of seeding can also sensitise us to the value of the less tangible outputs of early design research interventions, and suggests possible ways for articulating the value of taking this approach to design.

### 9.3.3  Project Vulnerability and Stability

Another barrier to supporting the momentum and interest built up over the Mobile Diary studies is the inherent vulnerability and instability of design projects. Continuous and emergent design requires a commitment to ongoing resourcing. To leverage off the goodwill and energy generated during the study and potentially transition participants into active community members, some degree of continuity and stability is required. The relationship built up over the study needs to be nurtured and 'the project kept alive in the world'. Such intentions are challenged by the competing interests and commercial constraints to which any design project is subject. Loi (2008) describes timelines, corporate directions, belief systems and comfort zones as potentially destabilising factors inherent in commercial environments. Whilst Loi (ibid) specifically makes reference to large corporate environments, these aspects are equally disruptive to design in smaller companies and organisations and can easily derail attempts to support more ongoing forms of participation in design. In particular, we found changes to key

members of the client team, common within commercial projects (Rönkkö et al., 2008), led to shifting project priorities, project inertia and delays. What *is* our obligation to participants who, for example, might find their 'emergent community platform' withdrawn due to the arrival of a new CEO at the client organisation who has alternative political interests? Funding limitations or other delays between the commencements of new project phases can also cause the project to become inactive. In this time any momentum and interest gained in the first stages of the project can be lost and the community has moved on to other things. In discussing the success of community driven projects, Karasti (2004) highlights the importance of their organic and ongoing nature which changes in response to the community's needs. This kind of continuity is hard to support and maintain under traditional agency and project models.

### 9.3.4  Fear of Participation

A genuine commitment to participation by an organisation necessarily means relinquishing some control. Using methods such as Mobile Diaries to support a participant-led approach that seeks to seed design and allows its shape to emerge through use is particularly appropriate for community and local government organisations that have clear responsibilities to serve their constituents.  As participants *socialise the research* and *develop early content*, the organisation is able to gain a concrete understanding of where community interest lies, as well as how people are most likely to go about engaging with it. But it also requires organisations to be flexible about how their objectives are met and even change those objectives as a result of feedback. Organisations need to be open and responsive, have the capacity to let go of their expectations of what is needed, and allow design to emerge through use. We have found that this presents a real challenge for organisations who, for example, strongly associate their brand with qualities such as 'accuracy', or who have very strict policies and procedures surrounding the kinds of information they can publish. This can translate into requirements for heavy moderation or shutting down of community input, which is converse to the opportunities social technologies present. While this is changing it might be some time before some organisations are truly willing, and able, to let go of the reins and be led to solutions and formats by their stakeholders. Client organisations might feel the pressure to embrace the opportunities of social technologies and/or see the value in concepts of participation and engagement, however they also need to be culturally and politically mature enough to take on such approaches and

physically resourced to support the level of engagement required. Twidale and Floyd (2008) are at pains to point out that while it is the malleable nature of technologies that make the Patchwork Prototyping approach possible, the appropriate values and attitudes must also be present in the organisation. As Rönkkö et al. (2004) suggest, the social and political issues that influence design and development methodology can be far removed from the actual context of design and use and come instead from interactions between actors in and around the client organisation.

## 9.4   Summary

This chapter has presented the third and final phase of analysis in this thesis through an exploration of potential new forms of participation suited to the early design of community platforms, not accounted for in traditional descriptions of self-reporting studies. The concept of seeding has been used to analyse experiences reported in the field studies, showing how they are enabled by social technologies, and to argue for their value as strategies *for* seeding important to the early design of community platforms. The methodological connection between the tools of research and the subject of design was explored in terms of how it can directly connect the activities of research with designing and using, seeding design *through use*. The discussion in this chapter has shown how it is possible for roles and activities typically acted out in use, such as the development of user-generated content, to move forward into the early phases of design. By relating these outcomes to a growing number of studies that look at evolving practices of 'design in the wild', new forms of participation appropriate to the early design of social technologies were identified.

The discussion and analysis in this chapter has also explored how assumptions and conventions about design and participation embedded in our existing project infrastructures are framing and constraining the potential for participation in the design of social technologies. Through the exposure of these limitations it is possible to identify how the nature of participation in design is shifting in response to the emergent, participatory, social and embedded everyday nature of social technologies. It has also been possible to identify existing barriers and potential start points for future, more appropriate protocols, methods and frameworks.

# 10

# Conclusions, Contributions and Future Work

This final chapter provides a summary of the research and its outcomes. The research questions are revisited and the core findings of the thesis outlined. The contributions of the thesis are presented along with potential directions for future work.

This thesis has been an investigation into how the new capabilities, expectations and practices that constitute social technologies are impacting on the nature of participation in design. The research questions driving this thesis have been addressed through a practice-led study of the trend to use social technologies as self-reporting tools, within a genuine design context. A self-reporting method, Mobile Diaries, was iteratively designed and implemented in a commercial environment. The evaluation of the method in a practice context has demonstrated how the introduction of social technologies as design tools supports and enables outcomes important to early design research. It has also shown how social technologies foreground different kinds of expectations by participants about participation, and create new possibilities for how participation might be enabled, conceived and managed. The research has made possible the development of knowledge and understanding about how the emergent and participatory nature of social technologies themselves demands and enables new forms of participation in their design; these in turn exploit the tight coupling between design and use. While the Design Research undertaken in this thesis was practice-led, the process of doing the research has involved a moving back and forth between theory and practice throughout and the findings presented in this thesis have been generated through a concurrent analysis of both empirical research and related literature.

## 10.1  Addressing the Research Questions

The central research question was:

*How are social technologies impacting on the nature of participation in design?*

In the introduction to this thesis it was stated that our understandings of, and commitments to, participation in design are embedded within our choices of design methods, tools, protocols and project infrastructures. It is through an analysis of how these things are changing, as evidenced in literature and the field studies, that this overall research question has been addressed. In this thesis social technologies have been identified as impacting on participation in design in a number of ways. They are being co-opted as *design tools* that enable new forms of participation in design, as shown through the example of Mobile Diaries. They also constitute new *subjects for design,* such as the community platforms being developed by the CD Agency, which demand forms of participation in design that respond to their personal, social,

participatory and emergent nature. They also constitute a *context in which we design*, as the emerging emphasis on and capability for mediated social participation enabled by social technologies impacts on how participants can, and expect to, participate in design.

Broadly speaking, social technologies put emphasis on enabling participation from within the context of people's ongoing, social and mobile lives. This increasingly integrated nature of research and design with people's daily lives can be a challenge to traditional notions about the nature of participation in design, and how participation is managed. For example, during the evaluation of the field studies it became clear that assumptions about anonymity, and considerations of self-reporting as an individual or private research activity may no longer make sense or be relevant in the context of social technologies where the emphasis is on personal production, sharing and distribution. These findings show how the new expectations and capabilities in relation to sharing and the shifting norms and practices around private and public inherent in social technologies, are carrying over into the practices of research, design and use. Similarly, project infrastructures and methods that assume the value of participation in design is to inform or inspire development of artefacts do not account for the inherently participatory and emergent nature of social technologies themselves.

Two sub questions focused the way in which this broader research question was investigated, and the responses to each of these below also form part of the response to this broader research question.

### 10.1.1 Sub Question 1

*How and in what ways can social technologies as design tools support participation in early design?*

In order to answer this research question it was important to first identify the kinds of outcomes and experiences that are valuable early in the design process, and the kinds of methods that could support such outcomes in practice. The approach taken to defining these was guided by the theoretical and philosophical perspectives on design, design methods and participation established in Chapter 2, in particular the commitment to designerly methods and to methods that privileged participants as active contributors in the design process. Specific early design goals such as immersion, inspiration, information and dialogue were identified through a literature review of early design

research methods in Chapter 3 and further informed and contextualised through the specific practice and project-based objectives of the CD Agency.

It was then important to understand how, and in what ways, social technologies *as design tools* could support these outcomes and what methodological and ethical considerations they introduced. The two field studies documented in Chapters 5 and 6, in which a specific approach to self-reporting named Mobile Diaries was iteratively designed and evaluated, constitute the main response to this aspect of the research question. The field studies allowed access to an empirical understanding of, and sensitivity to, the kinds of experiences and outcomes that could be enabled for participants and designers through such methods and the role of the various tools in enabling those experiences.

This empirical investigation resulted in two specific outcomes that address the research question. The first is the Mobile Diary method itself; the form of its implementation into practice is described in Chapter 7. The method is an example of how social technologies, as design tools, can support participation in ways beneficial to the goals of early design research. The second outcome is the seven experiential qualities and the discussion of their implications for participation presented in Chapter 8. These qualities help to describe how social technologies are impacting on the nature of participation in the context of social technologies. They point to the expectations and capabilities being introduced to self-reporting by the appropriation of social technologies as design tools and convey something of the changing nature of participation in self-reporting as a result.

The findings presented in Chapter 8 also identified specific issues and outlined potential responses in relation to assumptions about consent, ownership and the perceived boundaries of participation in design research challenged by social technologies. In this way, the research builds on earlier concerns about the inevitable ethical and privacy issues raised by such approaches and referred to by other researchers and practitioners such as Masten and Plowman (2003) and Hulkko et al. (2004). For example, the findings showed that the use of everyday mobile and online tools means the activities of self-reporting become more closely integrated with people's everyday lives. This has the potential to blur traditional boundaries of private and public and shift expectations and perceptions about ownership. The inherent sharability of social technologies also challenges more traditional and simplistic notions of participation in design research as

a private, anonymous and contained activity. In summary, social technologies can support participation in early design through the extension of traditional contextual methods such as self-reporting, but the integrated nature of that participation requires us to reconsider how we conceive of and manage participation in early design research.

### 10.1.2 Sub Question 2

The second sub question asked about the role of social technologies as design tools within a particular domain, specifically: *How can such tools support participation in early design when social technologies are themselves the subject of design?*

This question was initially addressed through an analysis of Participatory Design literature in Chapter 3, which enabled the identification of considerations important to supporting participation in the early design of social technologies in community settings. This analysis demonstrated that in designing social technologies, additional outcomes and experiences that go beyond immersion, information, inspiration or dialogue, become valuable in the early phases of design. The inherently participatory nature of social technologies, and the close coupling between design and use they highlight, put a direct emphasis on connecting design to the concrete places in which it will be used and the people who will use it. The term seeding in particular, was further developed as a way of conceptualising and naming the work that needs to be done in the early design of social technologies to connect the activities of design and use.

The results of the field studies were then analysed in terms of how the Mobile Diaries enabled experiences and outcomes valuable to the early design of community platforms in particular. This made it possible to examine and evaluate how social technologies as design tools could contribute to the early design of social technologies themselves. The main finding and response to this research question, presented in Chapter 9, was that in using social technologies as tools for designing other or more social technologies, an experiential connection between the method and subject of design was being made in the context in which the design would be used. This connection in turn created new opportunities for participation early in the design process. In Chapter 9 the capacity for Mobile Diaries to support participants to *socialise research, bridge current and future practices*, and *generate early content* was presented in terms of potential opportunities for *seeding* community platforms, made possible by the use of social technologies as design tools. These are additional design outcomes not identified or accounted for in

traditional concepts of self-reporting, but outcomes that directly engage with the dynamic relationship between design and use inherent in social technologies and the need to allow social technologies to be *designed through use*.

The research findings responded to the research question by demonstrating how participation might be supported. They also made it possible to identify the current barriers to doing so. As was documented in the discussion of challenges in Chapter 9, leveraging the opportunities for seeding design described in this research requires us to support researching, designing and using as concurrent and emerging practices. The barriers that were faced in trying to embrace these news forms of participation as part of commercial projects at the CD Agency served to highlight existing assumptions about participation embedded in our methods and project infrastructures. It also drew attention to the limited capacity of approaches and project environments modelled around linear and compartmentalised design projects, to respond to the nature of social technologies as a subject for design, providing start points for future work.

## 10.2 Contributions

The intention of this Design Research thesis was to develop research outputs that were valuable to both researchers and practitioners. The four main contributions of this thesis to design practice, theory and research are summarised below. Significant outcomes and impacts of this research on how design is practiced at the CD Agency itself are documented at the end.

*1. The development of Mobile Diaries, a specific self-reporting method beneficial to early design research and suited to commercial use*

This thesis contains a descriptive analysis of the development and evaluation of the Mobile Diary method and its implementation into commercial practice. The documentation and evaluation of Mobile Diaries contributes to existing knowledge, studies and literature about emerging self-reporting methods. Key practical and methodological findings and guides about using Mobile Diaries have been made available for other researchers and practitioners through academic channels (e.g., Hagen & MacFarlane, 2008; Hagen et al., 2007) and industry arenas (e.g., Hagen & Rowland, 2010). In addition to their use at the CD Agency, Mobile Diaries have also been taken up by practitioners in different commercial design research contexts.

*2. Conceptual tools that reflect the impact of social technologies on self-reporting and draw attention to the new ethical and methodological implications they introduce*

Increasingly social technologies are being appropriated as design tools. The seven experiential qualities of *layered representations, life on the move, in the moment, shared windows, continual interaction, experimentation* and *co-experience* developed in this research help to describe how the method of self-reporting is being extended or enhanced by the use of social technologies. The intention of such naming is to put emphasis on the experiences and outcomes for participants and designers enabled by different kinds of tools, and to help frame the discussion from the perspective of the experiences we want to support and privilege. They are offered as conceptual tools that can be used by designers and researchers choosing between or evaluating different self-reporting tools. The research also contributes to the identification of key methodological and ethical issues introduced to self-reporting by the appropriation of social technologies as design tools. Specific protocols and expectations around participation in relation to consent, privacy and ownership are highlighted as needing particular consideration when using such methods.

*3. Strategies to articulate and support experiences and outcomes important to the early design of social technologies in community settings, through the use of social technologies themselves*

As a subject for design, the participatory and emergent nature of social technologies foregrounds particular concerns and issues around how exactly designs will be taken up and evolved in the 'real world' and by whom. This research contributes to a growing number of studies that look at evolving practices of 'design in the wild' (Dittrich et al., 2002), and the new forms of participation this represents. The concept of seeding is extended as a resource that can help orientate early design activities in ways appropriate to social technologies and for analysing how such activities can be enabled. Potential strategies for seeding enabled by social technologies themselves have been presented along with potential barriers that may need to be negotiated in their implementation.

*4. An example of how practice-based design research can be conducted in a commercial context in ways valuable to both practice and research domains*

This thesis also makes a specific contribution to knowledge about how practice-led research might be conducted, and the value of such an approach to Design Research for

both practice and research domains. The thesis presents a detailed description and reflection on the process of conducting practice-led research in a commercial design agency. Specifically it describes the process of collaboratively choosing, evaluating and implementing a method in practice, documenting the strengths, weaknesses and possible variations. In doing so it makes available to other researchers a detailed account of conducting practice-led research in such a context, including challenges and considerations and how they were negotiated.

It also demonstrates the value of fostering an exchange between the domains of academic Design Research and design practice. In the case of this research, the bringing of academic Design Research to a professional design context resulted in a direct contribution to that practice, including the implementation into commercial practice of an emerging design research method. Another significant benefit of the research was that it enabled the agency to see the value of investing in research and infrastructure around design process and design methods (expanded on further in the following section). At the same time, as Sevaldson (2010) has suggested, taking commercial design practice as a focus and location for academic research helped to generate research questions that responded to specific challenges and patterns of use that may not be understood in an academic context alone. For example, the exposure of the assumptions and limitations embedded in conventional protocols and commercial project structures about how participation is to be supported help to make visible the changing nature of participation in design.   Locating the research in a commercial context in which relationships with users are negotiated through clients, and where the financial and service relationship with clients must be accounted for, also helped to identify particular challenges to supporting participation in practice.

## 10.2.1 Impact on the CD Agency

The research partnership represented by the work in the thesis has had a number of additional benefits for the CD Agency that have extended beyond the duration of my time there. In Chapter 1 it was noted that the adoption of academic design methods into commercial design practice is one of the visible outcomes of a shift in emphasis from communications design to Interaction Design. Participating in this Design Research project contributed to the CD Agency's adoption of terminology around methods and the development of a critical and masterful approach to the use of design methods in daily practice. The research made visible the significance and potential of participatory

and designerly methods in particular and supported ongoing reflection about what doing collaborative and participatory design means at the agency. For example, design and research practitioners involved with the Mobile Diaries have gone on to adopt and incorporate more visual, subjective data capture and reporting techniques. The research helped to foster a culture of ongoing learning about practice within the agency. The development and dissemination of collaborative methods is now central to the internal training program and has since become a point of differentiation for the CD Agency. In addition, we found that offering Mobile Diaries as one of our research approaches contributed to the positioning of the company as innovative and illustrated our commitment to stakeholder-focused design to clients. That we could demonstrate that the method had the ability to promote reflection and possible behavioural change in the lives of participants was particularly significant, given the agency's commitment to working on social change issues.

## 10.3  Opportunities for Future Work

In the process of conducting this research a number of topics have presented themselves as worthy of further investigation. Five in particular are identified here as areas for future work.

### 10.3.1 Concepts and Conditions for Participation

Already the seven experiential qualities presented in Chapter 8 can be used as practical resources that stimulate reflection, conversation and consideration about how our choices of methods and tools impact on conditions for participation in self-reporting. There is an opportunity to explore and extend the ways in which the seven qualities can be practically applied as a critical tool for practitioners. This could be through making them more accessible in terms of how they are shared or published, for example, on blogs, via downloadable flash cards or through industry forums. It would also be of benefit to support practitioners to contribute to, build on, or edit the qualities as new tools and studies emerge or as they are used in different contexts or for different purposes. In addition, evaluating the general applicability of these concepts to other design research methods is also an area for future work, for example, exploring their application to other emerging mediated participation tools such as the Owela online participatory platform (Näkki & Antikainen, 2008; Näkki et al., 2008), or more persistent online community forums.

## 10.3.2 Participant-led Design of Community Platforms

Future work could also include the identification of ways to create and support project environments that allow us to deliberately engage with the opportunities *to design with and for* social technologies such as those outlined in Chapter 9. This means working consciously to navigate or build alternatives to the challenges presented by many current commercial project structures. Part of this work might include the further examination of what constitutes a design project and the kinds of infrastructures and political arrangements that *do* make such emergent and participatory approaches more viable in commercial contexts. This might be through working internally within organisations, or by refocusing our work away from the production of 'things', to more intentionally supporting, enabling and up-skilling client organisations to embrace and manage participation as part of their operating principles. Part of this might also include crafting better ways to convey, communicate and represent the value *of* participation and of investing *in* participation. Our role might include helping to ensure that organisations are able to account for and support this outcome in project planning and resourcing. Building up the notion of seeding, perhaps through case studies, could be useful here, as could more thoroughly exploring the potential relationship between emergent and participatory design and agile development, briefly addressed in Hagen and Robertson (2009) and others (Beynon-Davies & Holmes, 1998; Rittenbruch, McEwan, Ward, Mansfield & Bertenstein, 2002). Participatory Action Research (McIntyre, 2008) may also offer case studies, frameworks and protocols more suited to emergent approaches that can be adapted for commercial design contexts. In addition, participatory development methods (e.g., Dearden & Rizvi, 2008) which place relationships at the core of the design process may also provide useful start points for approaching the design of social technologies.

## 10.3.3 Managing Private and Public Participation in Design and Research

Throughout this thesis a number of ethical questions about consent, privacy and ownership were raised that reflect how the increasingly blurred boundaries between private and public inherent to social technologies are impacting on research and design. The norms and protocols of how we store, utilise and share material is changing. Our response as design researchers is often ad hoc, on the fly or in response to moves by participants. One of the issues raised was participant control and ownership over 'data', for example, the personal material that is generated through studies like Mobile Diaries.

In custom online qualitative research platforms such as *Revelation™*, these decisions are framed by having participants choose between publishing material as shared (between the group) or private. The focus of future work could extend to collaboration with participants to understand what control they would like to have over the material they generate, how it is treated, and what they believe is appropriate. Little is reported within studies of self-reporting about the decisions participants make in regard to what they share, what they keep hidden, or the potential they might see when doing self-reporting for approaching issues of ownership and privacy differently. Just as these technologies have social dimensions that lend them to deeper practices of sharing and communication within research, these same qualities might provide us with channels to further investigate and explore these questions about ethics with our participants. Perhaps we can co-opt the technologies and platforms of social technologies themselves as channels to explore these issues.

Equally, there is work to be done with design teams and clients to ensure they practise ethical and appropriate approaches to the use of any of the rich, personal material they may gain access to, as part of the design research, as the use of such audiovisual tools and shared platforms becomes a more common way of involving participants in generative design research.

### 10.3.4 A Role for Participatory Design in Social Technologies

In this thesis Participatory Design has been a methodological, theoretical and philosophical resource that has helped to frame and motivate discussion and analysis around participation. There is an opportunity to contribute more directly to investigations of how the agenda of Participatory Design can be extended, applied or engaged in the context of social technologies. In considering the impact of social technologies, Ehn (2008) asks, *"What roles could and should professional design play in creating such infrastructures and things and making them public?"* (p.98). The political perspective on participation offered by Participatory Design is critical to understanding and bringing attention to the power struggles being played out as social technologies become central to how we live our community, social, civic, political and professional lives. Ongoing issues with privacy, ownership, opting-out and sharing of personal information by major social network providers such as *Facebook* (e.g., Opsahl, 2010) could be seen as indicators of what can occur when participation is not at the core of the development of participatory systems. The risks of not being participatory are not

just a failed website with no users. As the non-consensual exposure of private data in the case of *Google Buzz* showed, they can be dangerous to people's personal safety (Carlson, 2010). If we take as our basis Greenbaum and Madsen's (1993) justification of the political perspective of participatory design: that people have the right to influence their own lives, then, bringing a participatory approach to the design of such systems is critical to ensuring people have the ability to negotiate, control and understand the implications of participation as they evolve.

### 10.3.5 Supporting more Practice-led Research

Finally, from the perspective of research methodology, there is an opportunity to build appropriate resources for other practitioners who hope to undertake Design Research within the commercial environments in which they practice. Hobbs et al. (2010) are right to call for more Design Research within professional practices such as User Experience Design and Information Architecture. But in their call for 'maturing a practice', they underestimate the complexities and sensitivities involved in making this possible. There is more involved than just questions of confidentiality. Other kinds of support are also needed, particularly in smaller organisations where there is less room to support non-billed commercial R&D. As described in Chapter 4, numerous issues arise when considering how to integrate academic Design Research, by designers, within a specific actual client design project. To do so means weaving an additional set of relationships, expectations, outcomes and accountabilities into both the design project, and the research project. The complexity of this is enhanced when the researcher is also the designer. Efforts such as the Creative Industries Innovation Centre, hosted by the University of Technology, Sydney, which aim to connect enterprise and research are the kinds of projects that might go some way to supporting this.

## 10.4   In Closing

The working definition of 'design' provided in Chapter 2 of this thesis draws upon the work of Buchanan (1992). He describes design as a supple activity that continues to expand in its meaning. He suggests that the changing ways in which we perceive design are dependent on the changing subject matter of design itself, that both our perception and practice of design evolve in response to the subject with which design is concerned. This thesis has explored how social technologies as tools *for* design, a subject *of* design, and a context *in which* we design, are reshaping not only the nature of participation in

design, but also the practice of design. In the context of social technologies design becomes concerned with configurations, relationships and ongoing and emergent entities: platforms around which communities come together and interact. Our role can be understood as one of supporting communication, sociability and learning through the provision of flexible tools, whatever form they take. The facilitation of participation is central to design practice and as a design practitioner the opportunities, challenges and responsibilities suggested by social technologies are both exciting and humbling! As Ehn (2008) suggests: "*Participation in the making of things stands out as the ultimate challenge for professional design*" (p.100).

To date, the results from this thesis have been made formally available to the design research and practice community by being published in six peer-reviewed conferences and one journal.

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In addition, findings from the research have been shared formally with the design practice community through a peer reviewed online industry magazine and an invited industry presentation:

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[Production Note: the URL updates for the following two papers by Scrivener.]

The current URL for Scrivener 2000a is
http://www.herts.ac.uk/__data/assets/pdf_file/0014/12281/WPIAAD_vol1_scrivener.pdf
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