Exploring the project transitions and everyday mobile practices of freelancers: emergent concepts from empirical studies of practice

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ABSTRACT

We present analytic concepts that emerged from field studies of the everyday practices of Film and Television Freelancers. We categorised the freelancers' mobile practices into two dimensions: the interplay of *flux and stability*, and the interplay of *the macro and the micro*. These dimensions emphasised two key practices that the freelancers engaged in while using technologies to manage change in their lives: *sustaining* and *transitioning* practices. These concepts structure our findings in a way that may provide technology designers and researchers with a useful conceptual tool. These concepts draw attention to two aspects that have been little explored in the literature on understanding mobile practices. Firstly, the everyday uses of technologies to manage transitions between longer term durations of practices. Secondly, the integral role of stable contexts, beyond remote work spaces alone, for supporting and shaping mobile practices.

Author Keywords

Studies of practice, mobile technology use, mobility, work/life.

ACM Classification Keywords

H.5.0 [Information interfaces and Presentation]: General

INTRODUCTION

With the rise of portable technologies and broadening of contexts of use, HCI research is increasingly characterised by the turn from workplaces to include homes, everyday lives, and social realms (Bödker 2006). However, with research foundations in fixed computing settings, understandings of mobile and social practices have been dominated by residual traits through conceptual comparison with office based work (Nilsson and Hertzum 2005). As a result, there has been a growing recognition within the literature that the current contexts of research can be expanded to better inform HCI design. For example, Perry and Brodie (2005) argue that detailed studies of the technology use and mobile practices of a broader cross-section of society are required to develop

generalisations to apply back to the design process. Researchers have identified a need for exploring a wider range of contexts of use to develop our understandings of what constitutes mobile practices and related foundational concepts that influence design.

Three significant themes in the extant literature concomitantly aim to expand our understandings of mobile practices. Firstly, a number of researchers have noted that there are a diverse range of mobile people, practices and contexts that have to-date been little studied within the literature (see Axtell, Hislop et al. 2008; Perry and Brodie 2005; Weilenmann 2003). For example, Perry and Brodie (2005) note that studies of particular workers within the CSCW literature have tended to result in the design of mobile technologies that support those workers only. These workers include large scale knowledge work and the work of mobile service engineers. Axtell, Hislop et al. (2008) note that although there are studies of work in 'mobile offices' such as cars or driving trains, there are very few studies of technology use by passengers, a common place in which mobile work is conducted.

Secondly, in parallel to this, researchers have identified a need to expand existing conceptualisations of mobility. Kakihara and Sorensen (2002) note that researchers have tended to define and understand the concept of mobility quite narrowly in terms of spatial aspects alone, such as physical movement, travel and geographical relocation. As a result, studies of mobile work have predominantly focused on temporary absence from a remote established office base (Nilsson and Hertzum 2005; Weilenmann 2003). The wider social, temporal and cultural dimensions of people's experiences of mobility have to-date been little examined (Fallman 2005).

Thirdly, as a result of the turn of HCI research to life rather than work purposes alone (Bödker 2006), a growing number of studies are starting to examine not only work practices in work settings, or social practices in social settings, but a combination of both. For example, family ties and home life across the week (Palen and Hughes 2007) or while studying away from home at university (Chen and Katz 2008). Although these types of cross-contextual studies are emerging within the literature, we note that these tend to focus on family and domestic relationships. There are currently few that explore this from a work perspective, by examining both the work and social practices of mobile workers.

Our research contributes to the growing body of HCI research that aims to expand our current understandings of mobile practices, people and contexts. To do this, we explored the everyday practices of a little examined group of workers within the literature - Film and Television Freelancers. We explored their mobile practices and technology use both within and outside of the work context. These practices consisted of both the everyday activities of the freelancers and their ongoing transitions from one work project to the next. In our research we aimed to understand the role that technologies played in supporting or inhibiting the freelancers' ability to be mobile.

Unlike other types of mobile workers studied within the literature, such as intermittent business travellers and teleworkers (Axtell, Hislop et al. 2008; Kakihara and Sorensen 2004; Perry, O'Hara et al. 2001), the freelancers form temporary teams to complete projects. The projects themselves exist only for the finite period of time required to complete the work. The project dissolves once it is completed, and the workers then move on to find their next job. This pattern of ongoing temporariness and change in the freelancers' lives represents a temporal duration of activity for exploration beyond the everyday alone.

In this paper we do not provide a detailed account of the empirical research (see Sadler, Robertson and Kan (2006a; 2006b) for a discussion of some of these details). Instead, we outline concepts that emerged from the findings. We categorised the freelancers' diverse range of mobile practices into two dimensions: the interplay of *flux and stability*, and the interplay of *the macro and the micro*. These dimensions emphasised two key practices that the freelancers engaged in while using technologies to manage change in their lives: *sustaining* and *transitioning* practices. Together these dimensions and practices may form a useful conceptual tool for designers of technologies to support mobile practices. In particular, these concepts draw attention to two aspects that have been little explored in the literature to-date on mobility and mobile practices: the everyday uses of technologies for managing transitions between longer term temporal durations of practices; and, the integral role of stable contexts for supporting and shaping mobile practices.

OUR RESEARCH PROCESS
Our research approach was shaped by the specific challenges of studying mobile practices in two key ways. Firstly, to explore the life practices and technology use of freelancers, rather than work practices alone, we needed to locate participants who were willing to provide access to their work and private lives. Secondly, we needed to seek out and negotiate access to multiple work locations, employers, and diverse social situations over time as a result of the frequent project changes the freelancers.

To meet these challenges an iterative approach was taken to the research, based on an interpretive and phenomenological case study approach (see also Stake 2000). We conducted three complementary field studies over a two year period. Our aim was to collect and analyse data, then refine and focus emerging themes before returning to the field for further more detailed exploration of mobile practices in a range of contexts. Across all three studies, where possible, we aimed to use methods that provided direct access to the experiences of participants.

The research began with an exploratory series of interviews with eight freelancers, from a broad range of media industries. Participants were interviewed for approximately one to one and a half hours, using a semi-structured approach. The aim of this initial interview series was to develop an understanding of the problem domain that was grounded in and by the real concerns and behaviours of freelancers.

For the second study, we observed a team of twenty seven Film and Television freelancers working together to develop a television advertisement for an Advertising Agency. We were interested in the freelancers' patterns of mobile work practices and how they used their mobile technologies to collaborate with people working on the project, and also people outside the project. Thirty hours of observational data (consisting of both direct observation and informal interviews) were collected over the life of the project, along with relevant project documentation.

In the third study, eight self-reporting kits were given to film and television freelancers, followed by post-interviews, to access social practices predominantly outside of working hours. Drawing upon both cultural probe methods (e.g. Gaver, Dunne et al. 1999; Mattelmaki 2005) and self-reporting diary studies (e.g. Carter and Mankoff 2005; Grinter and Eldridge 2001), the kits were designed specifically to encourage participants to reflect on, and narrate experiences of, their own practices and technology use. Contents of the kits included activities such as audio recordings of experiences with mobile phones, drawings of a 'day-in-the-life-of' cartoon, daily mobility maps, a disposable camera, and postcards with provocative questions.

The analyses focused on both the issues discussed by the participants, and patterns of behaviours regarding their use of mobile phones, as they managed their everyday activities. We were specifically interested in the role that technologies played in the mobile practices of the freelancers rather than how people interacted with their technologies. Full transcriptions were made of observation notes and audio recordings of interviews. The complete data set (including photographs, transcriptions and documents) was analysed by systematically coding the data and recording emerging ideas, using NVivo software (Fraser 1999) where appropriate. Card sorting and affinity diagramming were then used to group categories and distinguish relationships between emergent themes (Miles and Huberman 1994). The core analytic concepts that emerged assisted us in developing an understanding of the freelancers' diverse mobile practices over different durations. These concepts are detailed below, along with a discussion of their significance and usefulness to technology design.

FINDINGS

Two key findings emerged from the studies that differentiate the technology use of freelancers from other types of mobile workers, such as office workers or tele-workers, studied within the literature. Firstly, as a result of their changing work projects, the freelancers relied predominantly on their mobile phones during work hours for the bulk of their mediated interactions with others. They used their mobile phones to make and receive quick calls and text messages with others. Of these interactions throughout their working day, their mobile phones were essential for managing their project transitions and their personal relationships with others across work and social boundaries. Their team work was not distributed across multiple locations; all of the team members worked together in changing locations. They did not use their mobile phones to communicate with remote workers; often there were no remote team members to contact. They used their mobile phones for purely social and personal concerns unrelated to the locally unfolding work.

Personal and social interactions have increasingly been identified as a use of technologies in many work settings (e.g. Harper 2001; Messeter, Brandt et al. 2004; Nardi, Whittaker et al. 2002). However, the specific role of these personal and social interactions in work settings has to date been little considered. The important finding, here, about the freelancers is that personal and social networks play an important role within the community or to indirectly support the local work itself (see also Nardi, Whittaker et al. 2002). The freelancers were engaged in two essential types of social interactions while at work: one was for contacting family and friends; the other was to manage their movement between projects. Although managing their frequent job changes was not directly related to their immediate work, this played an integral role in facilitating the work itself in the future. This has resulted in a wide range of negotiated practices and norms amongst the freelancing community that provide a place for these types of interactions to occur in local work contexts.

Secondly, throughout their frequent job transitions and changing work locations, the freelancers were for the most part self-sufficient. Encountering new and changing mobile contexts was usually unproblematic for the freelancers. They carried the resources they needed to do the work with them. They adapted their skills to the specifics of each new work location. The freelancers relied upon, and generated, stable social structures that were essential for enabling their frequent job changes. Within the literature, mobile work has tended to be associated with absence from a resource-rich work base (and physical place), see for example Axtell, Hislop et al. (2008). The freelancers did not have an established office space that they could use as a base for their work. Instead, they relied on other types of stable contexts to provide structure for their mobile practices. These included the continuity provided by mobile phones, their ongoing relationships with other freelancers and with Production Companies. Their relationships with people were an essential resource to assist in the management of future job uncertainty and fluid work conditions.

Drawing on these findings, we identified two inter-related dimensions that allowed us to categorise the diversity of the freelancers' mobile practices and technology use. These dimensions are *flux and stability*, and *the macro and the micro*. The freelancers specifically relied on, and worked to sustain, stable social structures to manage flux in their lives. Furthermore, their experience of flux and stability occurred at both macro and micro temporal durations. They used available technologies, predominantly mobile phones, to manage both change (for example to deal with contingencies encountered while travelling to meet friends), and to interact with the stable structures they relied on to be mobile (for example to inform their ongoing social networks of their upcoming work availability to generate new work opportunities). They did this through two essential practices: *transitioning and sustaining* practices. These two dimensions and two practices are outlined in detail below.

Flux and Stability

The different patterns and frequencies of the freelancers' project work, and the changing locations of the work itself, demonstrated a range of different durations of change along a spectrum from flux to stability. Flux was experienced in the freelancers' daily lives as change. We choose to use the word 'flux' here, rather than 'mobility' to refer to the freelancers' experience of change. Flux indicates a period of transition and fluctuation. The concept of 'mobility' is a complex term. In its use within the literature the term refers to a diverse range of aspects, from contexts to people to activities to devices (see Kakihara and Sorensen 2002). To avoid the complexity of this concept, we instead use the term 'flux' to refer to changing routines, changing travel routes, changing home or work places, and changing social situations. For example, Dana describes the flux of frequent project changes.

> Interviewer: Can you give me run down of the last 12 months, where you've worked and for how long?
>
> Dana: Last November, I worked for about 6 weeks on a Kid's Show for Production Company X…Then after that I cut a Documentary again in someone's Production Office…and then when that finished I was unemployed for about 2 months over summer. I didn't do much, I kind of had bits and pieces where people would ring me up and ask if I could cut a promo for a Documentary or something like that. They'd just lend me their laptop and I'd just do that at home…So there were a couple of little jobs like that, little promos and stuff. Then I started getting a few Ads over January when things started to pick up again…

Flux involved changing from one known situation and/or location to another and required management to transition to the new. Flux was often marked by periods of concentrated coordination in the freelancers' lives to mesh their upcoming movements and activities with others.

In contrast, stability was experienced in the freelancers' daily lives as constancy. For example, they developed and sustained ongoing relationships with other freelancers to assist with securing future work. They also relied on more stable organisations to generate and fund the project work, such as Advertising Agencies and Production Companies. The continuity of phone numbers provided by mobile phones was also essential to ensure ongoing contactability despite frequently changing job locations. Computers in the home environment formed a stable base from which to manage the meta-project coordination work, such as creating invoices or exchanging contracts for upcoming projects. The stability that the freelancers experienced marked a range of social situations, locations, activities and relationships with others. For example, after the period of frequent job changes described above, Dana worked for a period of time on a longer-term project in an ongoing stable situation.

> Dana: Then once I was doing that for about a month or so, I did four or five Ads, I got a phone call from Production Company Y saying that they were looking for someone to take over the editing of a show. The Editor didn't want to do it any more…And then I ended up staying there for the next, what March until September. So what's that? Six months. And I just worked there kind of like I was full time.

Stability was often marked by periods of ongoing communication and awareness of other's lives through regular (although not necessarily frequent) interaction both in person and via technological mediums.

The freelancers experienced flux and stability in terms of the changing locations of their practices. For example, some of the freelancers worked in relative flux; they changed jobs and work locations on a daily basis, with no access to fixed infrastructures to interact with others. In comparison, other freelancers worked in relative stability. They changed jobs on a monthly basis. Some spent periods of time working from home, while they were between jobs, to locate and bid for new projects. In this sense, the home environment formed another temporary work-space, much like any other work location they encountered through their work.

The flux or stability of the freelancers' physical location had considerable implications for their choices of when, where and how to interact with others via the available technologies and infrastructures. It also had implications for their reliances on remote people, places and resources. Freelancers who changed work locations frequently used mobile phones and resourcefully adapted their skill sets to the specificities of each local context they encountered. In contrast, those who worked for longer periods of time in an ongoing location often had access to land-line telephones and internet. The availability of fixed technologies during the day shaped the freelancers' mediated interactions with others out of working hours. Freelancers without access to fixed resources during the day relied heavily on their mobile phones during the commute to and from work, and on fixed technologies in the home, to connect with friends and loved ones. Freelancers with access to the internet and landlines were able to attend to personal relationships during the work day (e.g. during lunch breaks), reducing a portion of the time spent conducting these social activities out of work hours.

The freelancers also experienced flux and stability in terms of movement between longer term situations over time. They invested time and effort to both move from one situation to another, and to sustain ongoing relationships and involvements with others. In their social lives, the freelancers described flux, or periods of social transition, while they were moving house, starting or ending relationships, or organising an unexpected holiday. These periods of flux were intermingled with the regular routine and rhythms that marked the ongoing maintenance of stable social relationships, situations and structures with others. The freelancers described periods of social stability in their lives while they enjoyed ongoing relationships and regular activities with others. Researchers who examine the role of technologies in relationships distinguish between periods of relationship maintenance, and periods of bridging and breaking to form new bonds with others (see Boase 2008; Shklovski 2006). In comparison with this, flux refers to the bridging and breaking phase of sustained situations and relationships, while stability refers to maintenance through ongoing interaction.

Our findings demonstrate a strong interplay between flux and stability in the lives of the freelancers. They could not be mobile without a stable base from which to set out into the unknown (Bödker and Christiansen 2006). For the majority of the freelancers this was not a regular work space. Instead they relied heavily on the stable social bases they formed through their networks with other freelancers and staff at Production Companies. The freelancers were constantly experiencing flux and stability. This occurred as a result of their involvements in multiple social worlds. They managed many relationships, organised many social events with others, and travelled to many locations for various reasons as part of their daily lives. The temporal duration of their ongoing participation in different situations varied as some were longer than others. These different durations, infused in the themes above, present another related dimension along which to categorise mobile practices - *the macro and the micro*. These are discussed in detail in the section below.

The Micro and the Macro
The freelancers' mobile practices ranged in duration along a spectrum from *the micro to the macro*. Analysing data in terms of macro and micro social orders is not new (see for example Jenkins (2004) for a discussion of three distinct orders, drawn from work by sociologists Giddens and Goffman). However, what is new here is the categorisation of mobile practices along this dimension. Research on mobile practices within the literature has tended to examine mobility in terms of the day-to-day movements of mobile workers, as they go about their work from one location to another. Few researchers within HCI have examined the implications for daily technology use that occur as a result of transitions

between longer-term, more stable situations (for an important exception see Shklovski (2006) and her exploration of the relationship between technology use and people moving interstate). Management of these longer term transitions by the freelancers formed a significant often daily use of their technologies that were regularly interspersed amongst the general management of day to day activities.

At the micro level, the freelancers managed and responded to events and activities that occurred in the immediate short-term. For example, they used their mobile phones to deal with the unexpected opportunities and contingencies they encountered while travelling, as Nina describes:

Nina: When I was riding home from work and I was really [tired]. I'd been working six-seven months, fourteen hour days. It was on the last week. I rode every day to work. I was riding home and it was about nine thirty at night. There was a sewerage spill on the road and I didn't know. My bike flipped up and I crashed, bleeding everywhere and there was no-one around. I was cold and I was crying. I rang my boyfriend to come and get me. And he got me and took me to the Hospital and I had to get stitches…

Another time was when we were trying to go to a play and it was that night the ships were in town and the traffic was terrible. We were totally stuck in it. We'd gone about ten metres in about an hour and we knew there was the Car-park just up the road. So I thought "I bet they're full". So we just called 123 whatever [Directory Assistance] and got the phone number for them and rang. We said "Are you full?", and they said "No". And we said "Great". Because we thought if we'd pulled in and they were full, we'd never ever get anywhere. We just parked there and ran down to see the play.

Micro practices were commonly handled using mobile phones as the freelancers' plans for the immediate future were shaped by emergent events in the moment. At the micro level, actions were shaped by locally unfolding events and contexts. The freelancers relied on their mobile phones to manage the emergent consequences and opportunities of situated action on travel, time-management, locating places and people, and negotiated activities with others. Examples of this type of micro activity management in the literature examine issues including dealing with contingencies, making the most of down time, and dealing with problems during travel (see Oulasvirta and Sumari 2007; Perry, O'Hara et al. 2001; Tamminen, Oulasvirta et al. 2004).

At the macro level, the freelancers managed and responded to social situations that occurred over longer temporal durations, both to deal with flux and stability. At this temporal granularity, situations endured over time through a series of ongoing and related interactions with others. For example, the process of changing projects often involved a chain of interactions over a period of time to negotiate interviews, start-dates, pay-rates, and contracts. Another example was provided by one of the

participants, Elliot, as he described the important role of his mobile phone for sustaining relationships with others.

Interviewer: I wanted to ask you just to expand a little bit more because here [on a postcard] you've said that mobile phones are useful because you're keeping in touch and need to be close to your friends.

Elliot: My phone lets me.

Interviewer: How does it let you? In what way?

Elliot: Anytime of the day I can ring. I'm a really social person and there are two elements of it. One is the distant friends, of just keeping in contact and communicating with them…All the time, like "What are you up to, I'm doing this". And I have chats with friends every two or three weeks, old friends, of "What are you doing?", that sort of thing… Then the other thing is to organise meeting up with people, so the actual "What are you doing?", "Let's go see a movie", or "I'll meet you here", that sort of thing.

The freelancers described a range of macro social involvements in their lives that lasted for different temporal durations, from a few weeks to many years. These durations of involvements had implications for choices of technological mediums, and the intensities of their interactions with others. For example, technology use differed when the aim was to achieve a shorter-term collective goal with others, in contrast to the series of ongoing interactions that formed sustained relationships with others over years. Macro activities also tended to occur over time via a combination of technological and paper mediums, such as email, various messenger applications, landline calls, mobile phones, and paper diaries to record schedules. Examples of these types of longer-term macro practices include management of less frequent transitions in peoples' lives, such as the impact of interstate moves on relationships with friends and family (Shklovski 2006; Shklovski and Mainwaring 2005), and the ways in which people develop a sustained sense of connectivity with others (Ito and Okabe 2005; Okabe and Ito 2006).

Macro practices were made up of a related series of micro-interactions with others over a period of time. For example, the longer-term macro process of organising a new job often culminated in, as Ling and Yttri (2002) term it, the 'micro-coordination' of face-to-face meetings as the transition concluded with a specific event or activity with others. As another example, the freelancers described their use of mobile phones to record unexpected events and funny moments as they happened. In conjunction with other types of regular interactions, these then sustained longer term relationships when they were shared with friends. By considering macro practices, everyday activities and interactions can be placed within their wider social context.

Transitioning and Sustaining Practices
In response to managing mobile practices across the two dimensions above, the freelancers exhibited two key practices to manage their mobility using their technologies. They engaged in *transitioning* practices to

manage and respond to change, uncertainty, temporariness, and flux in their lives. They also engaged in *sustaining* practices to keep relationships and social situations going over time, particularly during periods of absence. For example, the freelancers relied on their mobile phones to coordinate the transition between projects, and to provide back-up for dealing with contingencies and opportunities that arose in the flow of the immediate moment. They also relied on their mobile phones to sustain social connections with others during periods of absence, in between meeting with others in person. Examples of these two practices are outlined below.

Transitioning Practices

The freelancers described their transitions from old situations to new ones, from one location to another, in which mediated interactions played an important role. These types of transitions required the use of technologies to manage, negotiate, and mesh one's movements with others. Technologies, particularly mobile phones, were used to deal with any unexpected contingencies and for the macro and micro coordination of upcoming activities with others. The transitioning process often resulted in communication hot-spots for the freelancers, particularly at the macro level during the process of renewal, reconfiguration or replacement of one work project with another. At the micro level, the freelancers engaged in transitioning practices as they negotiated travel to new locations, contacted friends to let them know they were running late, and dealt with unexpected contingencies while mobile.

As an example, one of the core uses of mobile phones by freelancers was for the securing of future project work with others. The move between projects began a long time before the physical relocation between different project work sites at the start of a new project. A significant part of the work involved in transitioning between projects consisted of a series of interactions prior to securing and starting a new project. For example,

Interviewer: Could you give me an example of say how you got your last job? Or the job you're working on tomorrow?

Amanda: The job I'm working on tomorrow, I got a phone call on my mobile [phone] and it was a Producer who I'd worked with on Big Brother. He's working on a Pilot [show] currently so I think he probably got my number from a crew list. Crew lists never list home numbers. When he rang, you know this is also someone I like very much, we ended up having kind of a 20 minute conversation that ended in would you like to do this job…we got about 5 minutes in and he said "Are you at home, can I call you on the landline?". So we changed phones to the landline. Then we organised for having coffee the next day and meeting the other Producer that's working on the project. So I went in and had coffee. I got an email confirmation the next day that they wanted me definitely. Then we've just been both emailing and phoning, both on mobiles and the local

phone, to organize when's and where's and how's. And the when's and where's and how's keep changing every couple of days so that's why there's been constant [communication], and it's been on both phones and on email.

Through a combination of interactions both mediated and face-to-face, the freelancers fielded calls for future work opportunities, informed others of upcoming availability for work, sent CVs to potential employers, organised meetings with prospective employers, negotiated pay rates and coordinated often shifting start and end dates. The combination of coordinating the move between projects as projects neared completion, and fielding calls about upcoming projects at any time, made the coordination of their project transitions a regular part of the freelancers' daily or weekly mobile phone use.

Sustaining Practices

The freelancers used their mobile phones extensively to sustain connections with others while managing unpredictable working lives. They used them to connect with other freelancers and mobilised these connections to assist with securing upcoming work. They also used them extensively to connect with family and friends. In the work realm, mobile phones then performed the important role of sustaining relationships with family and friends during periods of absence while working long, uncertain and non-traditional hours. Mobile phones provided the freelancers with a way, as Samantha noted, *"to keep your social life going while you're at work"*.

As an example, one of the participants Nathan noted that his usual frequent short interactions with his wife during the day to coordinate everyday activities were replaced with longer conversations to engage with his kids. Along with stored video footage of his children on his phone, these longer chats provided him with a virtual way to deal with absence as a result of his changing work demands. For example, Nathan described his mobile phone use while away on work trips.

Nathan: I've got photos of family in there so if you're away or someone goes what do your kids look like, it's like a portable photo gallery, a bit like that. I don't have them in my wallet, I have them in my phone. I've got a whole gallery set up. You can give a slide show to people. And video too, you know decent video, like [one of my son saying] 'Hi Dad, yeeeah'. So if you're away and feeling really homesick.

Interviewer: Away for work?

Nathan: Away for work, yeah.

Interviewer: Did you notice that your mobile phone use changed when you went away?

Nathan: It was really erratic because sometimes you'd be out of range. Sometimes you'd be somewhere there was no signal. You'd make longer calls home. If you had service you'd probably make sure you had a good long chat, two a day normally if you possibly could. At least once a day. Whereas if I'm going home tonight I'm going to see them.

Interviewer: You wouldn't do that?

Nathan: Nope. Like I might [normally] ring on the way home but I probably won't, I'll just go home. If you know you're not going to get there, phone and have a chat instead.

These changes in practices were not related to the actual physical distance between people. Working long hours at a location close to home, and leaving and returning to the home after family members were asleep, could have as much of an impact on personal relationships as travelling to remote locations for work. Instead, it was about the duration of physical absence from others as a result of their work demands. In these cases mobile phones were heavily relied as a temporary substitute for usual time spent together in person.

CONCLUSIONS

We have presented analytic concepts categorising the mobile practices of freelancers along the dimensions of *flux and stability*, and *the macro and the micro*. By viewing their mobile practices in relation to these dimensions, we found that the freelancers utilised their technologies to manage flux in their lives through two key practices: *transitioning* and *sustaining* practices. These concepts structure our findings about the mobile practices of freelancers in a way that may provide designers of technology with a useful conceptual tool. When applied to the everyday lives of other types of mobile people, these concepts may assist with the identification of a range of mobile practices at varying durations that can result in very different types of technology use. As such, these concepts provide a means to consider the temporal complexities of dealing with mobility, and people's varying reliances on both remote physical locations and longer-term social situations to manage change in their daily lives.

In the Mobile HCI domain, designers and researchers have tended to focus predominantly on mobile practices in terms of flux at the micro level. This is evidenced through an emphasis within the literature on the spatial aspects of mobility (for example in terms of navigation, travel, geographical relocation) and on the role of mobile contexts in shaping mobile practices. Our findings indicate that managing flux and stability at different temporal durations also formed an additional essential use of technology by the freelancers to support their mobile work. For example, the freelancers drew on their relationships with others, both similarly mobile freelancers and loved ones, as a resource during periods of flux. Their transitions between longer-term situations also tended to result in periods of intensive communication with others across a range of technological mediums. As such, our findings suggest that value could be gained by expanding examinations of different contexts to include the range of longer-term social structures, beyond remote offices alone, that can shape and influence mobile practices. By considering the interplay of *the micro and the macro*, and *flux and stability*, and their impact on daily practices and

technology use, it is possible to sensitise designers to aspects of mobility beyond the physical or spatial alone.

The applicability of the concepts we have developed to the lives of mobile workers more generally is the work of further research. In addition to the dimensions we present here, there may be additional ones that exist in other types of mobile work. These could be identified both through an examination of studies within the literature and empirical studies in a range of contexts. Identification of these, together with the concepts we have developed, might contribute to the conceptual tools that are available to designers to apply to technology design in HCI.

REFERENCES
Axtell, C., D. Hislop, et al. (2008). Mobile technologies in mobile spaces: Findings from the context of train travel. International Journal of Human Computer Studies 66, (2008), 902-915.

Boase, J. (2008). Kei-Tying teens: Using mobile phone e-mail to bond, bridge, and break with social ties - a study of Japanese adolescents. International Journal of Human Computer Studies 66, (2008), 930-943.

Bödker, S. (2006). When Second Wave HCI Meets Third Wave Challenges. NordiCHI'06, Oslo, Norway.

Bödker, S. and E. Christiansen (2006). Computer Support for Social Awareness in Flexible Work. Computer Supported Cooperative Work 2006, (15), 1-28.

Carter, S. and J. Mankoff (2005). When Participants Do the Capturing: The Role of Media in Diary Studies. CHI 2005, Portland, Oregon, USA.

Chen, Y. and J. E. Katz (2008). Extending family to school life: College students' use of te mobile phone. International Journal of Human Computer Studies 67, (2998), 179-191.

Fallman, D. (2005). From Freedom to Involvement: On the Rhetoric of Mobility in HCI Research. 38th Hawaii International Conference on System Sciences, HICSS 2005, Hawaii, IEEE.

Fraser, D. (1999). QSR NUD*IST Vivo: Reference guide. Melbourne, Qualitative Solutions and Research Pty.

Gaver, B., T. Dunne, et al. (1999). Design: Cultural Probes. Interactions 6, (1), 21-29.

Grinter, R. and M. Eldridge (2001). y do tngrs luv 2 txt msg. ECSCW, Amsterdam.

Harper, R. (2001). The Mobile Interface: Old Technologies and New Arguments. Wireless World: Social and Interactional Aspects of the Mobile Age. B. Brown, N. Green and R. Harper. London, Springer-Verlag, 207-223.

Ito, M. and D. Okabe (2005). Technosocial Situations: Emergent Structuring of Mobile Email Use. Personal,

Portable Intimate: Mobile Phones in Japanese Life. M. Ito, M. Matsuda and D. Okabe, MIT Press, 1-16.

Jenkins, R. (2004). Social Identity. London, Routledge.

Kakihara, M. and C. Sorensen (2002). Mobility: An Extended Perspective. 35th HICSS, Hawaii.

Kakihara, M. and C. Sorensen (2004). Practising mobile professional work: tales of locational, operational, and interactional mobility. info 6, (3), 180-187.

Ling, R. and B. Yttri (2002). Hyper-coordination via mobile phones in Norway. Perpetual contact: Mobile communication, private talk, public performance. J. Katz and M. Aakhus. Cambridge, Cambridge University Press.

Mattelmaki, T. (2005). Applying probes - from inspirational notes to collaborative insights. CoDesign 1, (2), 83-102.

Messeter, J., E. Brandt, et al. (2004). Contextualizing mobile IT. Designing Interactive Systems, Cambridge, MA, USA.

Miles, M. B. and A. M. Huberman (1994). Qualitative data analysis: an expanded sourcebook. Thousand Oaks, California, Sage.

Nardi, B. A., S. Whittaker, et al. (2002). NetWORKers and their activity in intensional networks. Computer Supported Cooperative Work 11, 205-42.

Nilsson, M. and M. Hertzum (2005). Negotiated rhythms of mobile work: time, place and work schedules. 2005 international ACM SIGGROUP conference on Supporting group work, Sanibel Island, Florida, USA.

Okabe, D. and M. Ito (2006). Everyday Contexts of Camera Phone Use: Steps Toward Technosocial Ethnographic Frameworks. Mobile Communication in Everyday Life: An Ethnographic View. J. Hoflich and M. Hartmann. Berlin, Frank & Timme, 1-17.

Oulasvirta, A. and L. Sumari (2007). Mobile Kits and Laptop Trays: Managing Multiple Devices in Mobile Information Work. CHI 2007, San Jose, CA, USA.

Palen, L. and A. Hughes (2007). When home base is not a place: parents' use of mobile telephones. Personal and Ubiquitous Computing 11, (5), 339-348.

Perry, M. and J. Brodie (2005). Virtually connected, practically mobile. Mobile Virtual Work: A New Paradigm. Andriesson and Vartiainen. Berlin, Springer, 97-127.

Perry, M., K. O'Hara, et al. (2001). Dealing with mobility: understanding access anytime, anywhere. ACM Transactions on Computer-Human Interaction (TOCHI) 8, (4), 323-347.

Sadler, K., T. Robertson, et al. (2006a). Balancing Work, Life and Other Concerns: A Study of Mobile Technology Use by Australian Freelancers. NordiCHI'06, Oslo, Norway.

Sadler, K., T. Robertson, et al. (2006b). "It's Always There, It's Always On": A Study of Mobile Technology Use by Australian Freelancers. MobileHCI'06, Espoo, Finland.

Shklovski, I. (2006). Residential Mobility, Technology & Social Ties. CHI'06, Montreal, Canada.

Shklovski, I. and S. Mainwaring (2005). Exploring Technology Adoption and Use Through the Lens of Residential Mobility. CHI 2005, Portland, Oregon.

Stake, R. E. (2000). Case Studies. Handbook of Qualitative Research. N. K. Denzin and Y. S. Lincoln. Thousand Oaks, Sage Publications, 435-454.

Tamminen, S., A. Oulasvirta, et al. (2004). Understanding mobile contexts. Personal and Ubiquitous Computing 8, (2), 135-143.

Weilenmann, A. (2003). Doing Mobility. Department of Informatics. Goteborg, Goteborg University: 1-190.

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