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Conveying Identity with Mobile Content

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ABSTRACT

A series of mobile phone prototypes called The Swarm have been developed in response to the user needs identified in a three-year empirical study of young people's use of mobile phones. The prototypes take cues from user led innovation and provide multiple avatars that allow individuals to define and manage their own virtual identity. This paper briefly maps the evolution of the prototypes and then describes how the pre-defined, color coded avatars in the latest version are being given greater context and personalization through the use of digital images. This not only gives 'serendipity a nudge' by allowing groups to come together more easily, it provides contextual information that can reduce gratuitous contact.

Author Keywords

Mobile phones, digital images, virtual presence.

1.   INTRODUCTION

The discourses surrounding the mobile phone herald this artefact as the defining cultural icon for the digital generation, the one item a person can possess to represent their status as a participating member in early twenty first century society. "If you want to assure yourself that you belong to the new century, this is the object to have in your hands" [18] (p.3). Claims of this nature reveal much about the cultural times in which we are living. It can be seen that the shift from a post-industrial to post-modern, digital society results in a culture that is not only obsessed with being in constant contact with each other, but where the idea of connectivity actually defines the culture.

Myerson points out, "The mobilization of the phone isn't really a technological process – it's cultural" [18] (p.7). This suggests the artefact's progression from home to hand and the subsequent incorporation and conversion [26] is not so much a result of technological determinism, as it is shaped by contemporary developments in society and culture such as that symptom of post-modernity, ubiquitous travel [32]. Yet the mobile artefact is itself a powerful force for creating new cultural formations [15]. Not only has mobile technology impacted on everyday life, it has altered concepts of technological determinism themselves. Changes to society are not demarcated by a radical overhaul of the basic mechanisms and routines of day-to-day life. Instead, the disruption is placed more subtly into the cultural realm and what is changed, among other things, is the work that we do to maintain our sense of identity as we redefine ourselves and the world we live in through our often mundane interaction with our mobile devices.

This paper describes a user study, which has had as one of its focuses, instances of mobile phone image capturing and sharing in everyday life. In previous work [e.g. 25], Satchell has described how this practice not only gives serendipity a nudge by allowing groups to come together more easily, but how it also provides contextual information that can reduce gratuitous contact. In this paper we reference and 'work through' the development of the Swarm prototype, a mobile phone application supporting social interaction. We explore how a relatively simple technology (on the surface at least), such as a mobile phone, can support ongoing "face-work" [6] among friends and social networks. We also identify particular design features, namely pre-defined, color-coded avatars and more idiosyncratic icons and text, that support the personalization and context sharing that face-work requires. Finally, we discuss the potential role of digital images in supporting awareness and the possible implications for mundane technology design that emerge from the development of a particular technology called "The Swarm".

2.   THE USER STUDY

The study described in this paper was conducted for the User Centered Design project of the Smart Internet Technology Cooperative Research Centre (CRC) in Australia. The aim of the research was to uncover the unique needs of young users in relation to their use of new digital technologies (specifically mobile phones) so their needs could inform the design process. Thirty-five technologically competent users, 18-30 years old, living in Melbourne, Australia participated. Four key research questions, informed by a preliminary literature review shaped the open-ended interviews.

1) Are there emerging archetypes of young mobile users?

2) In what way does young peoples' use of mobile phones allow them to develop real and virtual social networks?

3) What is the relationship between young people, mobile phones and identity?

4) How do young people use mobile phones to become content producers; active users of technologies rather than passive consumers?

The interviews were tape-recorded, transcribed and coded and a grounded theory technique [14] was used to analyze the data [24]. The main findings were then placed into a matrix describing key themes. These themes have been reported on in detail in numerous other publications [e.g. 22, 23, 25]. This was in keeping with Swallow and Blythe [29], who used techniques drawn from grounded theory to analyze and evaluate users' experiences to generate design ideas for a "Smartphone" that deals with multiple identities. However, here we are not evolving a theory and then trying to "generate design ideas". Instead we refer to particular insights garnered from empirical work which have helped ground particular design features not only in particular user practices (e.g. being constantly "in contact") but also the broader implications of these practices (e.g. contact fatigue and the ensuing need for control).

A key theme was that mobile phone ownership goes hand-in-hand with the obligation to regularly update others about one's actions through the capturing and circulation of experiences [22]. Twenty-six of the 35 participants in the open ended interview study, coupled this 'virtual' obligation with the actuality of events themselves, reporting that an event is not complete until it is shared digitally through text, voice or more recently, images [23]. This suggests a need to 'make a good

show of oneself' and thereby maintain social interactions [6] through mobile phone interaction. The suggestion is also that this "face-work" [ibid], as Goffman suggests, is an ongoing accomplishment that is collectively engaged in and managed through particular social networks and that it involves playing by particular, negotiated rules.

Furthermore, 20 users revealed there were times when they were exchanging messages so frequently with close friends they were providing each other with continual updates of their unfolding day-to-day activities. One user stated:

> I am constantly in contact with colleagues and friends (via voice, SMS and MMS). I am always able to be part of the loop in all aspects of my life. But I also have the power to choose who I want in my world … the digital world helps me control the real world.

In keeping with prior research [11] [8] [27] it could be seen that what was being created was a new paradigm of interaction amongst peer networks, where the boundaries of real and virtual worlds are not only blurred, giving way to a sense of constant connectivity but also where one 'world' is being used to shape and manipulate the other. In the case of the user above, and in Urry's [32] terms, "communicative mobilities" can help shape participation and involvement in the physical aspects of life through e.g. face-to-face conversations. Here, the obligation to 'stay in touch' is managed through digital technologies; the user maintains 'face' through managing "the ritual organization of social encounters" [6] across physical and digital encounters.

It is significant that the nature of these exchanges was such that they did not necessarily require a reply; rather, the users in the study were occupying the digital space on each other's mobile phone interfaces in order to increase intimacy and awareness. Indeed, twenty-six users in the study reported that there were times when they were so regularly exchanging scheduling orientated text messages that they were providing a continual update of their day-to-day activities. Their interview responses revealed that this sort of communication was often of quite a mundane nature, like a sort of virtual 'small talk'.

Ito and Okabe use the term "ambient virtual co-presence" or "a way of maintaining ongoing background awareness of others, and of keeping multiple channels of communication open" to explain this practice [11]. In addition, Spasojevic [27] found that image capturing and sharing facilitated by a mobile phone involved enhancing co-present interaction or interaction with absent family members as well as personal reflective uses. Van House & Davis [33] complement these findings, showing that cameraphone photography, as well as creating and maintaining social relationships, also supports self-presentation and expression. This work also suggests that mobile phone cameras, and particularly the photos they produce, support social encounters and ongoing 'face-work' [6].

Although connectivity and the consequent sharing of experiences provided the users in the study with a sense of reassurance within their social networks; this practice generated new problems. Twenty-six participants reported that they struggled to maintain the balance between the need for connectivity and the desire to be at times, uncontactable. These users resented the incursion the artifact brought into their lives. The most common example of this was incoming phone calls. However, even asynchronous communications such as text and multi-media messages could be intrusive, as certain messages required some sort of response. A key finding in the study was that, although users wanted to maintain a virtual presence in each others' lives, paradoxically, they desired a way to exert more control over their mobile connectivity, ideally, by reducing unnecessary contact.

3.   THE INITIAL PROTOTYPES

We present the incremental development of an animated prototype – it has initially been developed as a Web-based animation – below. The piecemeal presentation of the rationale for development provides opportunities to reflect on particular aspects of social interaction that this new technology supports – how it maps onto and might fit into the commonplace actions and interactions that inhabit our everyday lives. A major challenge in developing the various versions of the prototype, called "The Swarm" was facilitating presence, "our subjective sense of social others whilst we are separated from them by time or space" [7], while at the same time, reducing unnecessary interactions. To meet this need, The Swarm provides a series of avatars that act as digital representations of the user. The avatars depict the user's current activity and can be programmed to appear on the user's friends' mobile phone. As the activity changes, the avatars can be updated accordingly. This allows individuals to see at glance what the other members of their friendships network are doing at any particular time. By providing users with this contextual information about what other members of their social group are doing, presence and intimacy are maintained. In turn, this allows users to draw on their sense of social and cultural etiquette and, depending on the nature of the activity, decide if they should contact each other or not. This is similar to chat applications in that users can represent themselves by an icon, although, unlike chat, which originally rests on the assumption that the user is bound to their PC (although mobile versions of messaging technologies are now available), the Swarm is specifically for a mobile artifact meaning the user, can indeed, be anywhere.

4. SCENARIOS UNCOVERING FURTHER NEEDS

As a precursor to the development of the iterative prototypes, a scenario of the Swarm [22] was used to further uncover young peoples' needs in social environments. The scenario focused on the 23 year old Jade who lives with her parents, goes to university and has a part-time job in a pharmacy.

It's 4pm on a Friday afternoon. Jade has finished her last lecture for the day. She gets on the tram at Melbourne University and heads into the city. She gets her mobile device out of her bag and logs into her virtual lounge room.

The first thing Jade sees is that a note has been left by her best friend Sarah who must have visited the virtual lounge room while Jade was in a lecture. Sarah would have been met by an avatar of Jade sitting in a lecture theatre. Jade clicks on the note and an avatar of Sarah in a business suit pops ups. Just by looking at the avatar Jade is able to determine that Sarah must still be at work. However, the avatar is also embedded with a specific message for Jade which advises her that Sarah is finishing work early and wants to catch up with Jade in the city. Jade, who is about to get off the tram at Collins St., clicks on her avatar menu and selects one that depicts her carrying boutique shopping bags. She attaches a voice tag, "In Collins St, meet you here as soon as you can get away from work."

She instructs her 'shopping' avatar to notify Sarah of her activity and the avatar of Jade with boutique shopping bags appears in Sarah's virtual lounge room. Meanwhile, not wanting to be disturbed by anyone else while she is shopping, nor alert her boyfriend and parents to the fact that she is out spending money, she decides to leave her 'in a lecture avatar' activated for everyone else but Sarah. She instructs her mobile device to screen all calls according to the avatar profiles she has set up, puts the mobile device back in her bag, gets off the tram and heads for the stores.

Twenty minutes later she is in a shoe shop and her phone rings. She knows that unless it is an emergency, in which case avatar profiles can be overridden, it must be Sarah as every other visitor would be subjected to the 'in a lecture' scenario and know not to call. Sarah is two minutes away and they meet up and spend a happy, uninterrupted hour shopping. Sarah, who has left work early, has left her avatar on 'in a meeting mode' so she is not disturbed by calls either.

At six-o-clock, the two friends go to an up-market bar for a drink. Both girls take their mobile devices out of their bags and log into their respective virtual lounge rooms. Jade sees that while she has been shopping or rather 'in a lecture' three friends have visited her. The have all left notes which she clicks on and their avatars appear. The friends are happy that it is Friday and want to catch up. She quickly goes to her avatar menu and selects one of her with a martini glass. She makes this her universal avatar so that everyone that comes to her virtual lounge will see this scenario.

She also notifies specific friends who she really wants to see by sending the avatar of her with a martini glass to their virtual lounge rooms. She attaches the voice tag "At Amber Lounge with Sarah. Here until about ten. Come down."

Both girls order a snack and a drink and leave their mobile devices on in front of them on the table. Not only are they engrossed in a conversation with each other but also are aware of the comings and goings in their virtual lounge rooms. Assorted friends drop in both in real life and virtually. Jade has a quick video conversation with a group of friends in London and touches base virtually with her parents. She meets her boyfriend in his virtual café and they exchange virtual kisses. In real life he is still at work.

Jade uses the picture and video options on her phone to put 'up to the minute pictures' on the 'walls' of her virtual lounge room.

And so the night continues...

It was hoped that the narrative conveyed through the above scenario would provide users with an additional way of reflecting upon their own practices of use. They could, for example, recognize and confirm their own behavior, distance themselves from what was portrayed, or re-write the scenario in new and unexpected ways. Moreover, this approach augmented the open-ended interviews by testing the validity of the initial findings from the interviews, fill in any gaps in the research and generated new insights.

The scenario was printed on a piece of paper. They were left with the participants who were instructed to comment on, or even re-write the scenario. They produced a high level of user feedback, providing not only a means for the users to reflect further upon their own use, but also, the opportunity to suggest potential additions. Five of the seven users provided detailed analyses of how or why the proposed scenario would or would not benefit them and three made extensive changes.

The most significant finding to emerge from this exploration was that, although the use of highly contextualized avatars was seen by all the participants to be a positive addition, they introduced a new set of problems. Users could now see what their friends were doing and in turn, convey what activity they were currently engaged in, yet this did not necessarily mean they wanted to convey the same message to all the people in their contact list. In Goffman's [6] terms, the design simply didn't support the 'face-work' they wanted and needed to do to be "consistent with face", the "effort on everyone's part to get through…all the unanticipated and unintentional events that can cast participants in an undesirable light". One user noted,

> I like this idea of using an avatar, I like it a lot, but I just realized - you could never just use the same one for every caller. That's what's wrong with this design.

This was also noted by Andersen et al [1]. In order to solve this issue, the Swarm was modified so that the avatars could allow for the simultaneous expression of multiple activities to different groups or individuals.

5. COLOR CODED AVATAR PROTOTYPE

The initial Swarm prototypes were developed with avatars that were icon based. For example, being 'at the beach' was represented by an avatar of a person in a bathing suit. However, the multitude of different icons looked cluttered and messy on the small real-estate display of a mobile device. An alternative solution was needed. A cleaner interface was achieved through the use of color coded icons.

Figure 1a below shows the main screen of the color-coded Swarm phone prototype. The large avatar represents the user. The horizontal color bars show the different modes of representation the user can simultaneously convey. Clicking on a color bar reveals which of the user's contacts sees the person in that particular mode. For example, in Figure 1b below, the user is currently indicating 'social mode' to Ben, Darren and Vicki. The color bars remain visible along the left hand side of the screen and double as a pH tester for presence so the user can see as at a glance what each color represents.

Figure 1a: Main Screen – What are my friends doing now?

Figure 1b: Keeping track of what I am revealing to others

The smaller colored avatars at the bottom of the screen (Figure 1a) display what the user's friends are doing now. Again, the color bars double as a pH tester for presence. For example, Kym's avatar is blue; this corresponds to the blue color bar labeled 'sleep'. Thus, it can be deduced that Kym is asleep. More detailed information about what the user's contacts are doing is reveled when these avatars are clicked on (see section 7 below). Although more research is needed, early testing of the design indicated that users would quickly come to associate a color with a specific activity. As one participant noted, color associations are quite powerful:

> I think that I would quickly come to recognize which color represented which activity. After all, that is the main way I browse through my record collection. I know that the blue CD spine is the Nirvana album.

Although this particular observation is grounded in the materiality of the physical form of music which is being challenged through digital exchange and ownership, it is useful nonetheless. The avatars also enable the projection of particular 'face'; whether or not that was a true representation of self and situation or not mattered little. Most importantly, the avatars supported the obligations incurred by proliferating "communicative mobilities" [32] associated with presence – showing availability, staying in touch etc.

6.   CONTEXTUALSING WITH ICONS

The use of color-coded avatars represented a significant challenge in regards to how the Swarm might provide users with the ability to personalize their digital identity. For users to be able to associate 'color' with 'activity' there had to be continuity in that the device would not work if one person's pink avatar meant 'leisure mode', while another person's pink avatar meant 'at work'. To overcome this problem, pre-defined colored avatars were necessary. This was problematic because the idea of pre-programmed avatars contradicted the findings of the user study which revealed a culture of use where re-contextualization and personalization is paramount. Twenty-nine users noted that it is not until the mobile phone loses its pre-programmed identity that it becomes desirable. They expressed the desire to impose their own modifications onto their mobile technology and a design challenge was how the Swarm could provide users with the freedom to personalize their digital identity by creating their own categories of representation while supporting group communication.

In order to achieve this, the pre-defined avatar categories were kept generic, for example, 'at work', or 'socializing'. These categories came from the users in the study who revealed the need for their virtual presence to possess an ambiguous quality. Users could then add their own layers of meaning by embedding one of the colored avatars with icons or messages of their choice.

For example, in Figure 1a, Ben and Darren's orange 'social' avatars are embedded with a Martini glass indicating they are 'out on the town'. While Linn's pink 'leisure mode' avatar is embedded with a heart, indicating that she is on a date. This represents an extra degree of user programming that requires more work and some users may never venture beyond the predefined color coded categories. It does, however, provide the opportunity for greater involvement should the user so desire.

7.   NEW DIRECTIONS: CONTEXTUALISING WITH USER PRODUCED CONTENT

Although the use of icons provided users with more autonomy over the creation of their digital representations, there was still another need to be met. In the digital age of Myspace, personal blogs and flickr, a new generation of users seeks to reveal, rather than conceal their digital identity [23] through a stream of digital content, whether that be status updates, online quiz results, photographs or videos. The result is that considerable effort is put into the creation of virtual representations [1]. As a user in the study stated:

> "The way in which I come across is really important to me. I don't want to be represented by some daggy font."

This indicates an implication of quite low-level design choices for the user's sense of 'face'. For twenty-four users in the study digital interactions and exchanges were enhanced when they became more dynamic, for example through the use of home produced content. [23]. As a user noted,

> I would rather send a picture though my phone of what I was doing to try and get my friends to join me than I would describe it in a text message. Or send a picture rather than a written description of my weekend.

On a practical level, sharing a digital image potentially could provide a quicker and more user friendly means of forming social networks than an SMS would. A user stated:

> I find that the picture of a pot of beer sent to my mates at about 5pm on a Friday communicates volumes.

This was in keeping with the research of Ito who notes: "Once the visual stream enters this shared virtual space, it can lessen the volume of text exchange" (p.3) [10].

To extend the degree of personalization and contextualization further than pre-fabricated icons, this version of The Swarm prototype is now being modified so that users can include their own content through the use of digital images they have taken themselves. This means users can add 'up-to-the-minute' pictures, creating a presence that reflects a continual digital representation of their real life. For example, in Figure 2 below, Kim has a camera icon next to her name. This indicates she has chosen to augment her virtual presence with a digital image. When the camera icon is rolled over or clicked, the image opens up to full screen size (see Figure 3). This provides additional visual cues as to Kim's current activity, which can, in turn, act as an incentive for those not present to join her, or allows for those who cannot be there to 'get the picture'.

Figure 2a: Snap-shot of what all my contacts are doing now

Figure 2b: Augmenting current activity with digital content

Again, this feature supports the ongoing presentation of self and a web of ongoing ('virtual') interactions that need not spiral out of control, but instead support the obligations around awareness of and direct involvement with others.

8.   DESIGN IMPLICATIONS

The ongoing development and incremental production of The Swarm prototype has provided particular insights concerning the social interaction and mundane technology:

*   **Control** – how users can configure different levels of engagement in different 'worlds' sustained through different ICTs and media;

*   **Self-presentation** – how technology can support 'being acceptable' through the projection of being involved in particular, expected activities;

*   **Obligation** – how new technologies 'fit in with' and extend existing obligations to 'keep in touch' and stay up-to-date with others;

*   **Awareness** – the apparent paradox of technologies that demand more through providing 'awareness-type' information yet also reduce gratuitous contact through that same information.

Although not a "probe" in either the manner in which Gaver [4] or even Hutchinson et al. [9] deploy the term, the different instantiations of The Swarm prototype have been useful in 'probing' the kinds of things people want from a simple, 'social' technology and has firmly grounded the four insights above in technology design and use. However, we acknowledge that long-term use and adaptation can be quite different from the more immediate opinions and feelings that we have presented here.

Nevertheless, research reported on in this paper finds that when members of a social group cannot be together physically, circulating a digitized account of an activity becomes an authentic way to share the experience. Thus, as with blogging technologies supporting particular events (e.g. Jacucci et al. [12]) there is a sense that awareness technologies like The Swarm will not only support meetingness [31:161] but enable the actual exchange of "rich social goods" to maintain social ties:

"Rather what I will call the degree of meetingness is crucial to the nature of networks. Such meetingness varies as to how often the network or some sub-network meets up, the exchanges of information, gossip and informal pleasure that occur, the significance of meetings in producing outcomes and generalizing trust, and the degree to which weak ties extend through such intermittent but selective meetings…what gets exchanged in such meetings through intense and dynamic conversational interactions are rich social goods. These include friendship, power, projects, markets, information, rumours, job deals, sexual

favours, gossip and especially trust. Central to networks are the forms and character of 'meetingness' and hence of travel in order both to 'establish' and to 'cement' at least temporarily those weak ties."

Ito and Okabe [11] suggest that the kinds of everyday exchanges through mobile phones that users have talked about in this paper, represent an "augmented flesh meet" where interaction with a mobile phone actually extends the boundaries (and the membership) of a social encounter. What we believe is important in both Urry's notion of "meetingness" and Ito and Okabe "flesh meeting" for the discussion here is physical co-presence and how this is related to physical, communicative and temporal proximity i.e. who is 'there', how they are 'there' and how simultaneous their 'being there' is. Thus technologies like The Swarm can not only potentially extend 'the event' in terms of membership through communicative mobilities – e.g. people 'looking in' who are actually not 'there' – but also in terms of time beyond the physical encounter itself to support the exchange of "rich social goods". The argument is then that The Swarm prototypes can perhaps both decrease gratuitous mobile interactions by providing contextualised information of different kinds about the individual and increase the support for and relieve pressure on interactions of higher 'value' – both physical and otherwise. How much different kinds of media – images over icons for example – can enhance and supplement these higher value interactions is something for further research.

The suggestion is not that users cannot handle interruption and that they are being somehow suffering the temporal distortion of "the vortex" – "some centrifugal force because of the uncontrollable acceleration of events" [13]. Indeed such an apparently foreboding force is a feature of both office and mobile work [20, 14] and is managed. For example, Kakihara and Sorenson's [14] mobile worker manages multiple threads of interaction across different technologies with different temporal affordances such as 'right now', voice interaction and more 'deliberate' interaction through email exchange. Rouncefield's [20] study of the small office worker warns us, however, that we need to be careful that the technologies we devise to minimise interruptions are not removing real, enjoyable interactions from people's lives and instead imposing on them a kind of social "dirty work" [3]. For as Gaver [5] argues:

"…unless we start to respect the full range of values that make us human, the technologies we build are likely to be dull and uninteresting at best, and de-humanising at worst."

We argue that The Swarm technology described here is open and ambiguous enough to permit social and cultural etiquette – the rules around 'face-work' for example – to dictate both *if* and *how* interactions should take place. There is also a very strong suggestion that using The Swarm is actually more fun than handling multiple phone calls when 'busy'.

How The Swarm may aid in the formation and augmentation of social networks is less clear at this stage however. The technology, as presented here, focuses on pre-existing groups. However, there is no reason why The Swarm design cannot scale to allow multiply configured multimedia representations of the user for different users. For example, the representations of other users could scroll left and right to support views on more people. In such a scaling The Swarm may offer more 'windows in' to different worlds more easily through the ready availability of awareness information than information which is garnered through opening VoIP and IM applications, sending SMS or email and/or simply making a voice call. However, a question also emerges about the kinds of intimacies The Swarm can actually enable even with the "visual streams" [10] offered through both still and moving images. There is a sense that The Swarm supports comfort in the common and the known not dissimilar to Kerouac's vision of physical mobility in America being supported by sameness and familiarity: "I can go anywhere in America and get what I want because it's the same in every corner, I know the people, I know what they do. We give and take and go in the incredibly complicated sweetness zigzagging every side." As Nardi et al [19] note with regard to Web blogs: "Maybe we are ready to hold each other at arm's length. But not to disengage." Thus despite the awareness and potential for intimate exchange The Swarm offers in new iterations perhaps we will see users conscientiously engaged in the "face-work" [6] and careful "boundary work" [20] observed in other, non-mobile settings.

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