"Fancy a Schmink?" : a novel networked game in a café¨

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ABSTRACT
In this paper we describe a week long public field trial called Schminky. Based on our findings from the trial we consider the design implications for spontaneous, networked sound-based games. The venue for the trial was a café in a digital media centre. The paper reflects on the role of place and the notion of embedded histories.

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1. INTRODUCTION
Harrison and Dourish [7] distinguish "place" from "space" and argue that places are spaces that are valued and invested with understandings of appropriate behaviour that govern our actions. They propose that collaborative systems should be designed to support the duality of space and place. Public spaces present technology designers with unique and complex challenges because, as Hindmarsh *et al.* note, at any one time, people can be central and peripheral, active and passive, in groups or alone overhearing and overseeing watching and glancing [8].

Studies reveal how the social interactions and community building properties of cafés are less structured than museums [11, 17] which have been the focus for much of the experimental applications of mobile and ubiquitous technologies to date [2, 6, 8]. Social spaces are beginning to attract more research interest. Churchill *et al.*'s Plasma Poster, for example, allows content to be posted to a notice board digitally. Their work shows how this provides a rich conversation initiation resource and encourages community building and nurturing [3].

This paper looks at the social entertainment value of spontaneous networked games played in public places on present-day mobile computing devices. In particular we look at a café/bar environment and consider how such places may act to hold on to the state of encounters and relationships formed over time and repeat visits. The findings are based on a week long public trial of a music based game called Schminky that was based at the Watershed café. The venue was chosen because of its rich established social context.

The Watershed is a digital media centre in Bristol, UK. In addition to the café/bar – an established entertainment venue serving food and drink – it offers various amenities including an arts cinema, conference halls, exhibition rooms, as well as art and media training facilities. It is used by a diverse selection of people of all ages including students, conference attendees and business people; locals and tourists; customers and staff. Regulars describe the place as "*unusual*" in providing a "*creative social hub*" or "*sort of centre point for activities*" that suits "*all walks of life*".

We used observation, interview, data logging and questionnaires before and during the Schminky trial to gather feedback on the experience. During the trial 140 people signed up to play. Of these 94 completed questionnaires and 13 were interviewed in depth. 5 people came back on more than one occasion and one person came in every day. Bar takings increased 11% compared to the week before.

2. The Schminky System
There are three aspects to the end user system each with its own purpose and goals

- A musical game with a choice of music.
- A capability to play with others
- A public display of the social network formed through group play.

2.1 The game
Schminky is a musical game delivered over a wireless 802.11b network to iPAQ 5450s. Players can choose to play with one of seven sound sets. Each sound set consists of a backing melody, which is always playing, and four tracks. Players first have to learn which of the four small buttons plays which track. The object of the game is to listen to the music and identify a track that is not playing, within five seconds. This detection task is made harder if players progress to higher levels.

The iPAQ in Figure 1 illustrates the game interface. The graphical user interface (GUI) is split into three sections. Game status is shown on the top, with the bars on the left showing the time remaining. The lower half of the screen shows who is playing on the left and the options they have available, such as quitting and starting games, on the right. Each sphere represents a player, with the owner of the device's sphere emboldened and a tick appearing inside when a player completes the current stage. The name identifies the player whose turn it is now. The large button was always used for navigating between screens, and the four other buttons each played one of the four sounds.

Figure 1

The entertainment value of the game was both the challenge of solving the musical puzzle and the sophistication of the music. We had worked with a sound artist, Duncan Speakman,[1] to develop the game and the quality of the musical experience was a key factor in peoples enjoyment of the game and was highly praised

> *""Nice sounds"; "liked the sounds"; "very advanced sounds"; "surprisingly good tunes"; "it was good, not gimmicky which I thought it might be"; "sounds were better than [I expected] and more diverse"; the music in the game suits the environment well, it's excellent"*

The environmental noise, especially the music in the bar, did present a problem. It was the second most common reason cited for rating the game's suitability to the café/bar as lower than average. A typical comment explained that you:

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[1] http://www.kleindesign.co.uk

> *"needed the volume up high just to hear over the sound of the bar, but could still hear the bar music so couldn't concentrate fully"*

We reflect on this problem and its consequences for design later on in the paper.

2.2 Playing with others

In addition to the single player game Schminky offers users the chance to play in groups. Anybody can start a multi-player game by choosing "multi" from the start screen. Following a warning pop-up, this sends a message to everyone not already playing, inviting them to join a game. The ensuing computer-mediated dialogue determines the names of players who want to join the multi-player game and whose sounds are going to be used. Players take turns to identify the missing sound and everyone must complete the current stage before the game can progress to the next stage. When it is your turn the iPAQ will vibrate and so you don't necessarily have to look at the screen whilst waiting for your turn.

Figure 2. Group play

Data gathered shows that 74% of players played a group game and of these 48% played with strangers. Before Schminky was introduced we did not observe many occurrences of people talking across tables, people generally sat in friendship groups and talked to others at their own table. The game acted as a spur for people to walk over to different tables to find out who the other Schminky players were and so increased social interaction in the bar.

The entertainment value in the group game came from its design flexibility which allowed players to bring their own goals to the group game. For example some players, who were interested in "winning" took a covert approach to group play and enjoyed being able to join groups and be the first to succeed. These players were less interested in social interaction and tended to keep their real identity concealed.

Others used it as *"a chat-up pulling tool"* which *"allowed you to meet strangers"*. These players valued the way mobility allowed them to use Schminky as *"a portable networking device"*. To them, the visibility of the portable computer and headphones was useful because it made other players easy to identify. This

provided an excuse to approach other players. As one player put it:

> *"People who have stepped into Schminky World have to expect other people to come up to them and ask for a game!"*

We observed how, in this way, some people used the game to convert apparently surreptitious meetings into more substantial interactions. We also observed moments of frisson when people thought they had identified the "stranger" they were playing with.

Others were more interested in using the game to help build group cohesion and tried to exclude strangers from their group. Sitting together meant that more substantial verbal exchanges were possible while players waited for their turn. Co-location also meant that whilst setting up a game, individuals were able to adopt roles, such as leader and follower, and it was easier to make sure that everyone who wanted to play was included.

In multi-player games everyone heard the same music. This meant they could hear each other's mistakes and point out the correct answer. Players were frequently observed congratulating and commiserating with each other, or indicating which button played the missing sound.

2.3 The Public Display

The third aspect of the Schminky system was the public display that we put up in the café.

Figure 3. The public display

The screen displays a portion of the social network centred on one of the registered Schminky users. This person is represented by a coloured orb in the centre of the screen. Connected to this orb by arcs, and rotating around it, are more coloured orbs that represent the people the user has played with and branching out from them, the people with whom they have played.

In addition, music is automatically generated that reflects the richness of the connections. The music is heard via headphones attached to the display. When users are not interacting with the screen it rotates through each registered user and so provides a constantly varying snapshot in image and sound of the emerging social network encompassing the players.

The idea of the social network display was to see if it made players more motivated to try to play with as many different people as possible and thus have a rich social network representation. Technical glitches meant that the display was only available for the last two days of the trial. In that time it certainly acted as a curiosity and players were keen to look up their own social network. There was also evidence of it having what Brignull and Rogers call the "honey pot" effect, whereby the more people played with it the more interest it got from others in the bar [1].

Over the course of the week several players came back to play again often bringing their friends with them. These players in particular found enjoyment in showing their friends their networks and used the display as a way of "selling" the fun of the game.

3. Summary of findings

Schminky provided sensation through sight, sound, touch and movement. It was mentally very challenging, drawing in particular on ability to distinguish discrete sounds within a musical score. It could be both isolating, because of the headphones and need to concentrate on the task, and social, because it acted as a common bond or talking point. Previous studies [9] have led us to believe that these three dimensions are important for an experience to be compelling. The high enjoyment rating for Schminky is further evidence for the success of including a mixture of all three dimensions when designing networked games.
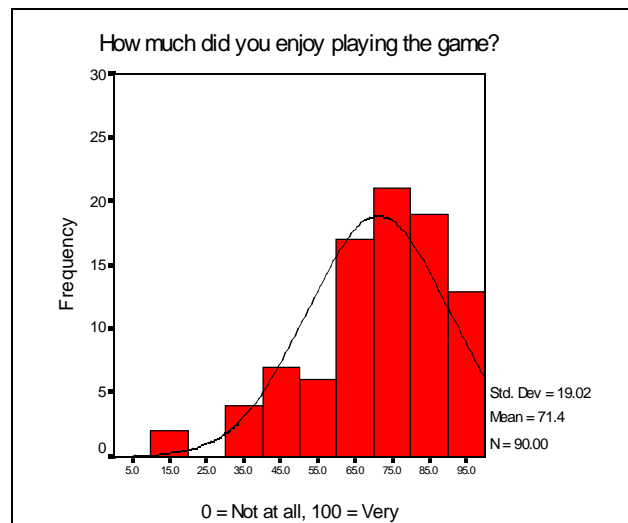

Figure 4. Questionnaire response to enjoyment of the game

Analysis of responses to how much people enjoyed the music, whether it suited the bar, whether people would tell others or if they felt isolated, showed that players' enjoyment ratings increased in relation to how difficult they found the game and how much they liked the music.

People had mixed responses to how suitable the game was to play in the bar. 36% of players did not feel it was at all suitable. The most common reason cited was the noise in the environment and then opposition to games or technology being in social spaces "*It is better to be in a bar with friends chatting and communicating with each other face to face, not on machines*",

"I don't think it is particularly a social game - like people who play games on their phone in a bar, I would get irritated with it if it was played in front of me"
At the other end of the scale 14% thought Schminky was very suitable for the bar *"Good way to play with friends and strangers", "somewhere like the Watershed is ideal as it's a place where you come to relax so you can easily sit back and indulge"*

In response to the question "Would you be willing to pay to play Schminky?" 39% did not answer, 21% said no and 40% said yes. The people who were willing to pay suggested amounts varying from 50p to £5 per hour. The average price suggested was £2 for an hour's play.

4. Implications for design

4.1 Sound based games.

The quality and sophistication of the music in Schminky surprised and delighted many of the players. It also helped make the game appeal to the art and media-savvy clientele that the Watershed tends to attract, and distinguished Schminky from being perceived as a "kids" game. Unfortunately the background music in the bar often intruded on the game and made the game too hard and led to frustrations. The worst scenario was when the music in the bar had a similar sound or beat to the music of the game. This effectively means that Schminky is only really playable in quiet venues.

Having observed the Watershed before the trial for two days, there are ebbs and flows of people over the course of a day and the bar fills up and empties quite regularly. The music is on constantly but is turned up and down to match the activity in the bar. Rather than conclude that sound based games are incompatible with noisy bars we feel that there may be an interesting market for sound based games that are designed so that they suit "quiet" times. Such games would need to be quick and easy to start up, easy to connect to other players and join in groups, and equally easy to drop out of a game without catastrophic consequences for the other players.

Schminky is designed in such a way and if it was available on your own personal device then people might play it if they found themselves in a quiet time with a few minutes leisure. Social conventions might arise whereby registered players could arrange to meet up at quiet times to have a game, bars might even have dedicated "quiet" times when the background music is kept low.

Players suggested that airplanes, buses, trains and waiting rooms would be good alternative venues for Schminky.

One of our original design goals was to design a game that could be played without the need to look at the screen. We felt that the game play would be much more sociable if people were able to look at one another whilst they were playing. Unfortunately we found that sound alone was not enough for people to learn how to play the game, they needed the visual cues. Few people became expert enough to avoid looking at the screen for feedback even though all the game cues were designed into the sound. If Schminky had been available for a longer period of time it would have been interesting to see whether people did look at each other more and the screen less as they became more expert.

One of the most entertaining games we observed did indeed involve an expert player who could use hand signals to try to help a less skilled player pick the right choices.

4.2 Headphones

Whilst a sound based game has the advantage that it can be designed to free up over dependency on a computer screen it also has the disadvantage that you need to use headphones.

Most players modified their communication to overcome this isolating aspect of the game. They wore their headphones so they covered just one ear, restricted comments to quick phrases and relied heavily on gestures or eye contact at crucial points in the game. This 'glance chat' dominated multi-player games. Eye contact and simple gestures were also used to welcome strangers.

Figure 5. Adjusting headphones to talk

The headphones did make it easy to spot the other Schminky players in the bar but constrained people's ability to talk to each other. As mixed-reality computing systems become more pervasive [2, 4, 14] then a wide diversity of applications become possible. Sound is an important feature in many mobile applications such as sound-scapes or games that are being explored within the Mobile Bristol program[2]. New forms of wearable directional speakers that do not need to fully enclose the ears and allow people to easily speak to each other and yet still experience high quality sound delivery would be a significant benefit to these kinds of application.

4.3 Interleaving with other activities

The device was light enough to be picked up and small enough to be held in one hand, affording users micro-mobility. Research has shown how mobility can support collaborative activities like social interaction [12, 15].

Observations showed that players frequently took advantage of the small size of the device to hold it with one hand. This left the other hand free to gesture to a friend or move or use other things that were around such as leaflets, cutlery, ashtrays or mobile phones. Players were also able to hold a drink or item of food.

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[2] www.mobilebristol.com

The nature of the multi-player game meant that players often got into a rhythm of focusing on the game during their turn and sipping their drink afterwards. In contrast, there was an absence of natural breaks in single player mode. For one player, it was:

"so compelling, the challenge of finishing it stopped me eating"

although, single players were of course also able to eat and drink during play.

The devices' portability meant players could easily move them around. The small size of the tables meant this was frequently necessary to make room for other artefacts, like refreshments. In fact, when eating and drinking became the central activity, Schminky had to be moved completely out of the way (see Figure 6).

Figure 6. (a) Schminky fitted into drinking, (b) but was moved to a chair when players started to eat

Schminky facilitated movement, parallel activities and choice – it was easy to start and stop playing. We feel that this kind of flexibility is an important aspect in the design of social public systems.

For a game such as Schminky to be sustainable users would need a wide range of different sound sets to try out. A nice extension to the system would be the ability for other people to compose their own sound sets and make them available to the Schminky community.

5. Reflections and Further research

5.1 Histories embedded in place
Being a networked game Schminky can, in principle, be played in any location. However, observation and feedback confirms that for most people co-location was an important aspect of the experience. Players would frequently draw together even though they could play the game from anywhere in the café and people were more likely to laugh or be expressive during group games. Even in single player mode the ambiance of being in the café and being around other people expands the experience.

Part of the ambiance of a place is a sense of the kind of human encounters or events that have happened there, and even though there may not be any physical change to the environment, places seem to absorb and reflect their history. Place has always been a central concern for architects and urban designers and Whyte [18] provides detailed descriptions of places that work and that don't work. An interesting question for ubiquitous computing systems research is whether technologies can and should record aspects of this human history and whether this would be valued or despised.

Schminky was very good for initiating social contact and is an effective social ice breaker. However it was less good at sustaining the relationships formed. The social network records might be an interesting mechanism for enhancing this aspect.

The idea of public display and historical record is certainly not new. Trophies, games high scores, league tables, notice boards and photographs are commonly found in pubs and clubs to acknowledge and record events and games.

The social network on the public display begins to explore more interactive forms of representation and how people present themselves and their relationship to a place [5 ,10, 16] will be the subject of further research that we will conduct in collaboration with more artists[3].

5.2 The role of interventions
The Schminky field trial attempts to fast forward the future to a wireless world where networked hand held devices are common place. We used iPAQs because they are relatively easy to program and are representative of the kind of capabilities that most smart phones or ultra-portable devices will have. During the week of the trial an invigilator desk, leaflets, stickers, the public display, iPAQs and headphones were introduced to the bar. In addition the research team acted as observers and players in the bar.

Figure 7. Sticker worn by the observers and some of the players

Over the course of the week there were many more people who did not sign up to play Schminky than those that did. Social embarrassment has been identified as a key factor for why people won't interact with a public display in front of an audience [1]. It might also have been a factor for some people who showed interest but did not sign up to play although they did not express it as such when asked. We assume that approaching the invigilator desk and having to register for the trial were probably the strongest deterrents to uptake.

We observed the majority of bar users taking some interest in the promotional leaflets and posters. We were also interested in how people who were not playing Schminky felt about it. None of the

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[3] eg. www.watershed.co.uk/bursary/dane.html

people interviewed felt that the game or the trial paraphernalia spoilt there own experience of the Watershed. Schminky does not emit any fumes, sound or bright lights and so does not change the overall ambiance of the bar. Its mobility also means that players can sit wherever they like and not necessarily invade the space of non players. This makes its impact on non-players less intrusive than a regular mobile phone [13].

6. Conclusion.

The high enjoyment rating, the repeat visits and the recommendations to friends show that overall Schminky was an enjoyable experience. It suggests that despite having reservations about the intrusion of technology in public spaces people will value optional, spontaneous mechanisms to play co-located games. Our experience leads us to believe that such games should be designed so that they can be inter-leaved with other activities such as drinking, eating, chatting and phone calls.

Sound based games are very compelling to some people who have an interest in music and fun for people who like playing games in social spaces. There may be a niche market for them to fill the quiet social leisure times in a day.

7. ACKNOWLEDGMENTS

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