

***undersound*: Music and Mobility Under the City**

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ABSTRACT

3 million people each day travel through London by means of the Underground, the oldest subway system in the world—people hate it, people love it. Still, the Tube is one of the most widely recognized symbols of the city, and practically one of the most used transport systems. With the project *undersound* we are exploring the experience of riding the Underground and the mediated perception of the urban space through the design of a highly contextualized interactive system—a music-based application that encourages people to interact with others and with the Underground itself. The aim of the project is to make people reflect on their experience through the use of music, to see people’s behaviours and patterns of movement in new ways.

Keywords

situated design, music sharing, mobility, urban computing

INTRODUCTION

Computation has already moved well off the desktop and has made its way into our everyday lives. Researchers in ubiquitous computing who are developing these off-the-desktop technologies have recently taken an interest in mobility and the in-between spaces which we move through as we traverse our daily landscapes [e.g. 1, 3]. Rather than attempting to make portable versions of desktop computers, there is a growing concern in understanding what sorts of innovative technologies might reflect and enhance current social practices of mobility and the personal and collective relationships we begin to build with and within the spaces we move through every day [e.g. 4, 5]. In this paper we present a design sketch for an example of such a technology. *undersound*, currently a work-in-progress in its conceptual stage, is an interface, drawing on prior research [2], which supports situated music sharing and distribution within the London Underground.

MOTIVATION

It is often said that there is little interaction between strangers travelling on the tube, but we would argue that although this might be true of verbal exchanges there is nonetheless a complex form of socialization at work in the Underground. There is, for example, a free, daily newspaper, called Metro, available at every tube station which commuters often use to catch up on the news during their journey to work. On reaching their stop, instead of

taking the paper into the office, many people fold the paper neatly and place it onto the narrow ledge between the backs of the seats and the windows in the tube carriage. This subtle act repeatedly performed by countless individuals constitutes an acceptable, almost compulsory, social gesture. It is a channel through which one can express an awareness and an acknowledgement of current and future passengers. Taking a cue from this socially negotiated behaviour of newspaper exchange, we are developing a system which attempts to afford a similar sort of situated interaction through the exchange of digital music.

DESIGN

undersound uses three distinct, but deeply interrelated, technological pieces in order to achieve a unique way by which people can use music to interact with one another and the space around them. Permanent Bluetooth transfer points will be located in each Underground station for uploading and downloading music in the *undersound* network; Bluetooth-enabled mobile phones will be used for storing, playback and exchange of music; situated visualizations providing a station-specific overview of activity within the *undersound* network will also be located at each station. In the design of *undersound* we are seeking to create a completely immersive experience, something that is an extension of and in harmony with ones life underground, rather than something pasted over top of it—*undersound* is intended to be wholly part and of the tube. To accomplish this each piece of the underlying technology is meant to address three different aspects of life in the underground: situated understanding of the space, localized interpersonal interactions, and emergent large-scale flows which people constitute and participate in. We will address each of these in turn.

Situated Understanding of the Space

In order to populate the *undersound* network with new music people will use their Bluetooth-enabled mobile phones to “check-in” tracks (which we envision to be music recorded by local area bands and creative commons licensed content) at any station’s designated transfer point. A track may only be checked-in to the *undersound* network once, and the station where the track is first checked-in will be considered its point of origin. When a person who is running *undersound* on their mobile phone enters Bluetooth range of a transfer point, a message will pop up on the phone asking them if they would like to grab that station’s

“top” track. They will have a one-click option to answer yes, or to choose browse <station name> tracks, upload track or no. This alert is meant to be as unobtrusive as possible and will disappear from the phone once the person has exited the Bluetooth range of the transfer point. If they choose yes the “top” track will be downloaded to their phone and available for playback. Each time a transfer of music occurs within the *undersound* network the information of when, and with what transfer point the exchange occurred, is locally recorded on the phone of the person receiving the track. Every time a person actively interacts with a transfer point, i.e. they upload or download a song, this stored metadata is uploaded to the transfer point in order to track the movement of the music within the *undersound* network. This data will allow us to see the journeys that each track is taking. In the same way that Londoners leave and retrieve newspapers, so too will they with music. Unlike newspapers though, which are of unknown origin, each track will have a birth-place and thus a sort of added meaning—perhaps the desire to collect tracks from particularly significant stations, or all 275 of them, might emerge. But interaction with particular places is not the only sort which *undersound* will support.

Localized Interpersonal Interactions

While in the carriages of the tube, *undersound* users in Bluetooth-range of each other will be able to browse one another’s available tracks as well. Because we will be gathering metadata on the stations where the track has been (via uploading/downloading at the transfer points) and thus its spread within the network, the time it has been in the system, the number of times it has been played, the number of people who have played it, and so on, it will be possible to display all of this to the users as they look through each other’s music. The end of each line for example can have almost mythical status for many regular tube travellers—one can imagine the curiosity with which people encounter a track from High Barnet or Morden. People can browse through other’s tracks anonymously, but when person decides to download a song from someone else an alert will be triggered on their phone letting them know that someone is grabbing one of their tracks. In this way, you cannot take a track from another passenger without them knowing—there is a social cost. It is possible for the other person to ignore the act altogether, but in keeping with much of the tacit interaction which tube riders engage in, we hope that this will provide an acceptable social opportunity to connect with another person. This might only take the form of reciprocally glancing through their tracks, but it could incite someone to look around the carriage and try to locate the downloader or to stay on past their stop rather than breaking of an exchange. This sharing of music would not violate current social practices and would ideally afford new ones.

Emergent Large-Scale Flows

Each of the local interactions contributes to a broader trend—every time I listen to a track, drop one off at transfer

point or download music from someone else, I have an effect on the overall state of the system. Not only is this reflected in the rankings of the tracks that I see as I browse through the lists of available music from transfer points and people’s mobile phone, but it will also be incorporated into public displays which are installed in each of the stations. These displays will serve to convey the most recent state of the *undersound* network—the journeys and lifetimes of the tracks. Each stations display will uniquely reflect information pertinent to that station so that users are presented with a quick visual overview of what the station has to offer. Because people are moving quickly, we intend these displays to function as an aid for deciding what tracks I might most want to download as I pass through this station. Additionally the display will function as a visual representation of the sum of all the individual actions that shape the *undersound* network. I can then see that my personal choices have a global effect and perhaps I will change my behaviour given that knowledge.

CONCLUSION

undersound leverages the exchange of new emerging music to supports the rise of grassroots, underground, social and cultural phenomena. Overall, *undersound* combines situated and ubiquitous technologies, as songs are highly linked to the location where they become accessible but their journey throughout the space depends on people’s movements and behaviour over time. Although *undersound* is in its early stages of development we believe that this type of design has rich potential. We are currently working with the EU funded project BIONETS to develop the network infrastructure and we will be conducting more directed studies of an ethnographic nature in the coming months to aid in further refinement of the interaction design.

ACKNOWLEDGMENTS

This work was supported in part by the National Science Foundation under award 0133749 and by BT and the EPSRC.

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