Audio Technology and Mobile Human Computer Interaction: From Space and Place, to Social Media, Music, Composition and Creation

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ABSTRACT

Audio-based mobile technology is opening up a range of new interactive possibilities. This paper brings some of those possibilities to light by offering a range of perspectives based in this area. It is not only the technical systems that are developing, but novel approaches to the design and understanding of audio-based mobile systems are evolving to offer new perspectives on interaction and design and support such systems to be applied in areas, such as the humanities.

KEYWORDS
Design, Ethnography, HCI, Humanities, Interaction, Location, Mobile

1. INTRODUCTION

This article represents a series of research projects and approaches, which expand upon an initial workshop, “Audio in Place” that took place in 2016 (Chamberlain et al., 2016). The key theme of the workshop was audio and its relationship to mobile HCI (Human-Computer Interaction). The approach of the workshop was not to restrict submissions to one particular area, but to encourage papers from a multiplicity of domains. The research presented in this paper aims to extend our understandings of audio-based mobile HCI, provide a platform for discussion and debate, extending our understandings of mobile HCI and encouraging approaches to understanding technology that are at the forefront of Mobile HCI.

Mobile devices (in particular smartphones) as often stated, are now commonplace, affordable and used by large amounts of people on a global scale. Their portability, adaptability and ‘always on’ capability mean that they are often the “go to” technology for developing, testing and researching geo-locative interactive systems. However, recently there has been a growth in even more affordable...
technologies, systems such as the Arduino and BeagleBone, are but two of the many small form-factor hardware systems available. Often these systems are adaptable, are easily repurposed and can be used in conjunction with other existing technologies making them an attractive proposition for people wanting to develop portable exploratory audio-based systems. For a fuller exposition see McPherson et al. (2016) and Moreale et al. (2017).

However, the technology is only one part of the story, being able to take technology out into the world opens up a plethora of interactive possibilities, different ways to understand and interact with one’s surroundings, new ways to interact with each other and the chance to develop different approaches to understand such interactions. Of course, the work in this article primarily focuses upon audio interaction, but still, in doing it has enabled people offer a wide range of perspectives that range from autoethnographic methods (Eslambolchilar et al., 2016) for mobile system design, through to location-based interaction, and design approaches that use the past as way to design, re-imagine and develop technologies today (De Roure et al., 2016a).

2. RECORDING SOUNDS, MAKING MEANINGS

In ‘Acoustic Territories’ (2010), LaBelle makes a case for understanding sounds as part of a “charged spatiality” (xviii); a social and emotional topology implicated in the emergence of a sense (- and politics) of place. Sounds, LaBelle suggests, are never private, but must be understood as a relational force that somehow weaves a space together while at the same time ‘unhinging’ it in unforeseen ways by associations, forming personal memories and emotions but also networks of social connections, cultural meanings and so on. In this section, we suggest that in order to imagine and build mobile interactions around localized sound, we need methods to address the opportunities in this field and that are attentive to the possible emotional and subjective values inscribed in the consumption as well as production of localized sound.

As such it suggests that practices of sound recording on mobile devices (as well as the ensuing use of recorded sounds for the purposes of distributing, sharing or mapping) offers relatively untapped modes of engagement. Particularly as both urban and rural architectures, infrastructures and mobile digital medias are becoming intertwined to form meaning and experiences (under the general motifs of ubiquitous computing, Internet of Things, or ambient intelligence), we see a need for methods that can help in exploring some of the possible ways in which tangible places and ‘intangible’ content such as sound can interact. Beyond (or arguably before) any technical challenges associated with building accessible and easy to use systems to allow people to record and share sounds using a mobile device, comes the question what values such systems might fulfil or what purposes they might serve.

We suggest that autoethnographies can play a part in an effort to connect sound recording to mobile HCI. Specifically, we explore possible connections between digital media, space and ‘meaning making’, suggesting how autoethnographies (Bødker and Chamberlain, 2016) might help in discovering and articulating design opportunities in the merging of mobile digital devices and meaningful place making practices.

3. AUTOETHNOGRAPHY

Using an auto-ethnographically inspired design approach to locate media goes beyond the conventional “implications for design” (Button, 2000), is more than a “scenic” study (Dourish, 2006), or an ‘imposed’ analytic. We suggest that it can be used as method of imagination, as a lens through which we can discover social as well as personal potentials in design. It can be associated with a self-design agenda … that focuses on the potential of self-experience and articulation for the designers work.

Autoethnographies are ‘personal’ accounts of cultural experiences. They rely on the ability of the ethnographer to reflectively connect an autobiographical account with broader cultural formations (Ellis, 2000). As autobiographical renderings, they are particularly open to ‘vulnerable’ narratives,
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