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'Soundwalk': An embodied auditory experience in the urban environment

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Abstract. Mobile and locative media are systems of technologically mediated communication providing the opportunity to relate physical environments with digital information in order to create "hybrid" spatial experiences, which may function as the context for cultural activities. This has led to new ways of creating, representing and communicating meaning in relation to space and consequently to emergent artistic practices. At the same time, the emerging field of urban informatics addresses novel ways of interacting with our cities and their digital content. Mobile sound art, at the intersection of these technological innovations, deals with the urban environment as a musical interface and employs mobile devices that offer new possibilities for artists to actively involve their audiences. This paper focuses on the soundwalk, as a subspecies of mobile sound art, and attempts to shed light on the relationship between sonic artistic practice samples of this art form.

Keywords. Mobile sound art, soundwalk, urban computing, hybrid spaces.

Introduction

The emergence of web 2.0 tools, such as social networking sites, blogs, wikis, podcasts and web applications has introduced a more collaborative and interactive Internet experience, where the role of creating and publishing content is no longer the privilege of the few but potentially of any web user. Nowadays, this technology is also available for mobile phones, which are evolving from devices for one-to-one communication to powerful (wirelessly) networked computers, supporting social interaction while being mobile.

Advanced sensing systems and location-detection technologies are providing personal mobile communication devices with the ability to gather contextual information which may subsequently affect the course of the content presentation and in general the act of communication that these systems support. The use of mobile computing, wireless networks, and digital media for the purpose of associating information and meaning with geographic locations via location-detection technologies, has led to the concept of locative media [32]. Mobile and locative media (LM) are therefore systems of technologically mediated communication providing the

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opportunity to relate physical environments to digital information in order to create "hybrid"2 spatial experiences, which may function as the context for social and cultural activities. The use of these media has already resulted in new ways of creating, representing and communicating meaning in relation to space and consequently to emergent artistic practices.

New media theorists are currently discussing the nature and characteristics of the emergent 'pervasive' media environment, in which all media may become available on a variety of wireless platforms and devices ([21], p.32). This technological infrastructure supports advanced interaction, the potential of collaboration amongst users, personalization and most importantly affords the possibility of new forms of social interaction which may take place in the urban context. Indeed, mobile and location-based systems are seen as supporting novel and revolutionary new ways of inhabiting urban spaces and therefore their emergence and their potential impact on social interaction in the urban context suggests that new conceptual models regarding the design of such hybrid, dynamically evolving environmental experiences are needed. Consequently, the resurgent field of urban informatics addresses novel ways of interacting with our cities and the layers of digital content with which these cities are augmented and investigates the transformation of everyday life as a result of the introduction of the aforementioned techno-social systems.

This paper, discusses one type of emergent artistic practice supported by the aforementioned media, mobile sound art, and attempts to understand "how the power of social technologies can be harnessed for social engagement in urban areas" [14]. For this purpose, it explores the soundwalk, as a subspecies of mobile sound art at the intersection of sound art, mobile communication and artistic practice. The soundwalk is perceived by sound artists and musicians as an auditory experience which may mobilize urban space. The purpose of this paper therefore is to shed light on the relationship between sonic artistic practices and the everyday mobile communication experience, by investigating how sonic artists and mobile audio application developers have implemented their vision of a 'sociable smart city.'

1. Emergent artistic practices using mobile and locative media

Location-based systems and media provide the ability to situate information, as well as the mediated interpersonal communication process, onto physical space. By supporting synchronous or asynchronous communication amongst multiple remotely situated participants, this form of mediated communication potentially affords physical proximity in real space. The combination of these elements provides participants with a new hybrid spatial experience [12]. Souza e Silva defines a hybrid space as "a conceptual space created by the merging of borders between digital and physical spaces, because of the use of mobile technologies as social devices. Nevertheless, a hybrid place is not constructed by technology. It is built by the connection of mobility and communication and materialized by social networks developed simultaneously in physical and digital spaces ([27], pp. 265-266)."

² The paper discusses systems which afford a hybrid (virtual as well as physical) spatial experience. For a more complete definition of the term "hybrid space" see Kluitenberg (2006) [19] and Souza e Silva (2006) [27].

Augmented and mixed-reality technologies merge the physical and the digital sphere making them coexistent in the same environment. Layers of physical and digital space give rise to researchers' visions about the cities of tomorrow, described in different ways as 'Networked Cities' [23], 'Mediascapes' [24], 'Hybrid Space' [27] or 'Hybrid Spaces' [26], 'Sentient Cities' [13], 'Augmented Cities' [1], 'Real-Time City' [31], 'Network Landscapes' [25], or 'Wikicities' [11], in relation to the fields of ubiquitous computing and urban informatics [14].

The resulting communicative experience may enable the diversion and reappropriation of social space, thus serving the emerging needs of city dwellers and affording novel ways of public activity. However, the manner in which communication via LM may enrich the ways we interact with other people and the environment is not yet fully understood. The use of LM in emergent artistic practices may reveal ways of using these media not only as services and commodities but also as systems mainly geared towards supporting communication, spatial awareness and collaborative location-specific activities. LM systems are shaped and evolve within the urban spatial context. Thus, they may result in the creation of digital representations of the city that are continuously augmented with the lived experience of its inhabitants, as indicated by the digital "traces" of their movement and action.

Location-based technologies and services may differ significantly in the way they are designed and structured. They can have a hierarchical top-down structure or they can be bottom-up frameworks and open systems for exchanging content. Artists use location-aware and ubiquitous technologies to create artistic interventions which aim to reconfigure our understanding of their use and to question the way they may affect everyday life in the city. Apart from their aesthetic value, LM artworks may also result in raising public awareness on various issues such as surveillance, the tracking of human bodies and objects, location detection, the process of map making and the ability to form social networks in the city.

Bourriaud ([8], p. 28) notes that artistic activities since the early 1990s indicate a shift of focus of artistic practice towards the sphere of inter-human relations. Indeed many artists have focused on creating artworks which provide novel social experiences ([8], pp.14-18). In his discussion of contemporary art practice, Bourriaud suggests that "art is the place that produces a specific sociability...Over and above its mercantile nature and its semantic value, the work of art represents a social interstice...a space of human relations...the contemporary art exhibition creates free areas and time spans, whose rhythm contrasts with those structuring everyday life, and it encourages an interhuman commerce that differs from the "communication zones" that are imposed upon us...Art is a state of encounter" ([8], pp.16-18).

However, Kraan ([20], p. 46) suggests that artists have so far made limited use of LM to bring about location-specific social activities that focus on initiating inter-human relations. This has so far been achieved mostly by commercial applications of location-based services. These services rely on a user/consumer model and are meant to satisfy the users' needs or even create new ones, resulting in increased profit for private telecommunication providers. On the other end, artistic approaches of LM are primarily motivated by a more creative and open vision for these techno-social systems and by the prospect of illustrating the complexity and richness of culturally constructed space [30].

2. Brave New Mobile World

Mobile (phone) music belongs to the tradition of sound and media art. Sound art, positioned between fine arts and music, has 'displaced' music from the traditional performance space, marking the end of the distinction between active artist and passive audience. However, mobile music goes a step further, as developments in technology, which brought the ubiquitous networking in everyday life, have changed the technological, social and geographical context. Therefore, it may be regarded as a new art form that positions the presentation of and the interaction with musical content in any physical space (urban or landscape), with the support of mobile communication technology, thus escaping the traditional context where performances occur, such as concert halls, and 'spills out' in the streets [4].

Mobile music emerges at the intersection of ubiquitous computing, mobile audio technology and NIME (New Interfaces for Musical Expression) [16]. The term mobile music includes every musical activity using portable devices that are not affiliated with a fixed unit, and it extends in creating, editing and sharing music on the move [6]. Mobility, the main characteristic of mobile music, "allows NIME concepts to occupy exterior urban space and exploit people's movement through it, as well as the heterogeneous space and social dynamics found in those environments" [16]. Moreover, the introduction of mobility reveals a need to re-examine the role of space in mobile music and sound art in general, since it involves users into acting and thus dynamically exploring the mobile audio environment, thereby increasing the power of new forms of musical experience.

From a technological perspective, the convergence of networked digital technology on mobile devices still poses many challenges and its implementation is in need of improvement. However, this study focuses more on the geographical and social aspects of creating such artistic interventions, than the supporting technological framework, since physical presence in a specific place is not necessarily needed because the mobile telephone is located in the pocket of the user. This fact may potentially disconnect the act of perceiving the artwork from the performance space. Nevertheless, as we can see in the majority of mobile music works, artists render locality a crucial element of the work [4]. The majority of mobile music and sound art works are "concerned with the urban environment as a musical interface. Location-aware sound art, audio annotation of physical space, and other creative applications" [18] echo the traditions of locative, sound and public art, three relevant art forms which consider site-specificity as a central parameter of the creative process.

Behrendt3 has proposed a classification of mobile music works into four main categories: 'Placed Sounds', 'Sound Platforms', 'Sonified Mobility' and 'Musical Instruments' [4]. She focuses on the relationship of the geographical, social and technological context of mobility as a framework for the development of the methodology she employs and attempts to classify the particularities of mobile sound and multimedia experiences. In the first category of 'Placed Sounds', the projects involve specific sites that are selected by the artist and the participants experience in situ their own versions or remixes of tracks depending on the route they choose to follow and the time they spend on the track. The second category of 'Sound Platforms' comprises mobile music works where the audience, using a special platform, must

³ Behrendt has published various papers on the topic of mobile sound art [5, 6, 7] and has completed her PhD thesis on the subject, under the title: *"Mobile Sound: Media Art in Hybrid Spaces"*.

choose and edit sounds and connect them with locations. The 'Sonified Mobility' category includes projects that use the movement of the participants within space and translate it to sound, creating a dialogue between movement and the urban landscape. The fourth category, 'Musical Instruments', includes applications developed for mobile phones and comprises works that reuse existing mobile media - especially mobile phones - like musical instruments.

A common feature of mobile sound art works is the exploitation of the mobile nature of these technologies as a key part of the project. All four categories, 'Placed Sounds', 'Sound Platforms', 'Sonified Mobility' and 'Musical Instruments', have in common the engagement with a mobile communicative experience in the urban, networked public space. Mobile music and sound art works propose a use of sound in public space which is neither commercialized (eg Muzak), nor individualistic (eg iPod) [9].

3. Soundwalks and the City

The variety of already implemented mobile music projects offers valuable insights into the auditory dimensions of public spaces. A popular mobile sound art subspecies of the first category of 'Placed Sounds', which deals with the relationship between listeners and their surrounding sonic environment, is the soundwalk. The term was used by the Canadian composer R. Murray Schafer4 : "Soundwalking is a creative and research practice that involves listening and sometimes recording while moving through a place at a walking pace. Soundwalks take the everyday action of walking, and everyday sounds, and bring the attention of the audience to these often ignored event practices and processes [22]." In recent years, there has been an increase in soundwalk projects by urban sonic research groups probably due to the fact that the creation of such an activity is significantly aided by the aforementioned mobile audio technologies. Taking into account the characteristics and the dimensions chosen to be brought forward by the artist, this paper proposes the following categorization of soundwalks, according to the role that sound plays in the overall experience:

- 'Sonic Memorial Soundwalks',
- 'Music Routes' and
- 'Augmented Sound Games'.

The projects of the first category, 'Sonic Memorial Soundwalks' are dealing with cultural heritage and aural history as they invite participants to listen to places and people that don't exist anymore, therefore we can describe them as historic or mnemonic listening. Memory has long been intimately related to topography and place ([10], p.894), and by adding a layer of aural information participants can make imaginative associations to the history of the place, in an embodied, active and multisensory way. An example of this category, is the project 'Sidney Sidetracks' (2008) by Australian Broadcasting Operation (ABC), which draws on the ABC's sound archives, recorded on location during different moments of a site's history, in order to generate different ways of experiencing contemporary spaces in central Sydney. These past auditory traces, available on mobile platforms, are used to frame a particular auditory encounter with the same sites today [2]. This 'auditory turn', shifting the

⁴ R. Murray Schafer and his colleagues of the World Soundscape Project in the 1970s at Simon Frith University initiated the study of Acoustic Ecology.

attention from the visual to the aural dimension serves as an alternative methodology for approaching the cultural walk.

In the category of 'Music Routes', recordings of specific places in a city are used to create a musical composition intended to be listened to with the help of a mobile device. While users move in a specific route, they associate the sounds that they hear in their headphones with the sounds coming from the external environment. The 'Music Route' is adding a layer of sonic experience as a means of increasing participants' engagement with their environment, provoking a dialogue between them. As an example of this category, the project titled "There to Hear: Reimaging Mobile Music and the Soundscape in Montreal" by Samuel Thulin, imaginatively reframes the city's soundscape. Field recordings of a specific route in the city of Montreal are used for the musical composition, intended to be listened to while moving in the specific route [28]." Thulin's approach to the use of mobile music devices contends Bull's work stating that: "the iPod user struggles to achieve a level of autonomy over time and place through the creation of a privatized auditory bubble ([9], 344)." In Thulin's mobile music, listeners, instead of being disconnected and separated in their 'bubble', they remain connected to their environment. His research is inspired by the work of David Beer, who notes the persistence of sounds of the city even while someone is listening to headphones, stating: "This may even form new and distinct experiences of the music as it intermingles with the hum of the city and the places the listener moves through ([3], 859)."

In the third category, 'Augmented Sound Games', the soundwalk is constructed in a playful way and guided by a mobile phone application. An emerging trend among mobile audio apps is the exploration of how audio content can be connected in various ways to aspects of place. These applications operate with sounds picked up by a microphone, for instance, which are processed in real-time with effects such as echo or reverb and mixed with the music in the headphones. As a result, the user is immersed in an augmented acoustic experience provided by a variety of ways in which the audio content might change, depending on the physical environment surrounding her. As an example of the third category, 'Dimensions: Adventures in the Multiverse' app, by Reality Jockey Ltd., is a "sonic adventure game" that invites users to explore an audio landscape with the purpose of collecting artifacts. 'Dimensions'5 is "a mind bending game that uses Augmented Sound" for a "unique immersive gaming experience [33]." The developer and RjDj's founder Michael Breidenbrucker, describes it as "a highly crafted, artistic piece" [34]. Although the game doesn't allow user's participation in the production of the scenes, by recording and uploading their own audio mixes, it engages users into interacting with the scenes, thus affording an immersive experience [29].

4. Conclusions

With the aid of mobile pervasive and locative media, space is being hybridized as the mediated spatial experience that is mapped onto the physical urban environment, allows for new kinds of collaborative activities and social interaction. Thus, the experience of urban space may be augmented by multiple layers of multisensory stimuli and information. The application of the aforementioned media to the development of city network infrastructures that reform and enhance citizen's relation

⁵ According to the description of 'Dimensions' on the iTunes store.

to urban space is potentially accessible to all participating mobile users. However, apart from designing and constructing digital, smart cities affording artifacts and services as commodities, it is also important to ensure that the available technological infrastructures are also used for building social interactions between them and the people that inhabit them. Social media and digital communication technologies have so far enabled people to interact with their cities in novel ways and have made new cultural experiences possible.

This paper presented and discussed works of mobile sound art in an effort to analyze how artists and mobile audio applications developers have so far realized the "sociable smart city". Their works resonate their perception of the city and afford potential users with a hybrid spatial experience. In the beginning of the paper, the genre of mobile music and its characteristics was briefly discussed, highlighting the fact that mobile sound art works explore sonic interactions with urban spaces with the shift from visual to aural experience, augmenting urban spaces. Then, a more specific subspecies of sound art, the soundwalk has been discussed. Soundwalks deal with the idea of "the city as interface and mobility as musical interaction, allowing everyday experience to become aesthetic practice [4]." The paper has proposed a categorization of soundwalks into three categories and has attempted to use few specific examples of such artworks for the purpose of explaining how people interact with their environment while experiencing these mobile artistic interventions.

A key feature of the works discussed above, and also of all works of mobile music and sound art is immersion. The listener-participant enters a new augmented dimension immersed in sound and media, while at the same time navigating within the urban environment, which is "increasingly conceptualized as a complex techno-social network" [15], and thus experiencing it in new ways. One central issue in the process of creating these artistic interventions is the quality of the immersive experience they afford. The use of mobile media such as cell phones as platforms for artistic creation [17] is the key to the transfiguration of the everyday experience into an embodied aesthetic practice, performed in a 'hybrid space'.

Finally, a common factor in all works of mobile sound art is interaction, the active participation of the user that takes place in everyday life contexts. Interaction is a central element of mobile sound art works and available technologies may allow the audience, to a greater or lesser extent, to affect and shape the presentation of the audio content, through interacting with it, with the urban space and with other members of the audience. Mobile music and sound art works and audio applications for smartphones are exploring sonic aspects of spatial perception, providing an alternative approach to the linear understanding of time and the Cartesian conception of space. This embodied active and multisensory experience that renders audience participation a crucial element of an artwork or a mediated activity, could be seen as the main impact of urban computing on cultural citizenship in the case of these artistic activities. How audience interaction will affect and co-produce mobile music and sound art works, is yet to be explored.

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