Chapter 22
Listening to the Walkable City

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Abstract This paper describes the creation, experience and assessment of a soundscape installation, conceived and undertaken as a contribution to the research project "Hong Kong Stair Archive: Documenting the Walkable City". It examines the use of audio recordings and their presentation in a three-dimensional sound-field installation to provide an additional layer of data, analysis and interactivity to the investigation of pedestrian urban environments. This installation combines culturally and socially definitive sounds, photographs, architectural drawings and introductory texts to draw attention to the unique qualities of walking spaces and their use context, participatory nature and importance to life in the modern city.

22.1 Introduction

Listening to the Walkable City is a stand-alone constellation of audio and computer equipment arranged in an exhibition space and supported by original drawings, photography and text from an ongoing research project in Hong Kong that investigates urban environments and pedestrian walking areas. The proposed interactive experience engages people in the research material collected in the project entitled, "Hong Kong Stair Archive: Documenting the Walkable City". The project uncovers the social, cultural and historic aspects of the 'walkable city': those parts of the urban environment that are dominated and shaped by people and their social interactions. *Listening to the Walkable City* is conceived and undertaken as a contribution to the larger research project by introducing the collection and processing of audio recordings as a way to provide an additional layer of data, analysis and interactivity to the investigation of pedestrian urban environments. The presentation of the sound

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of these environments in an immersive, ambisonic, surround-sound installation aims to transmit the sense of place and ambiance from one context to another, in this case the Hong Kong soundscape to the Trento setting.

The intention of *Listening to the Walkable City* is to activate the experience of the Hong Kong soundfield from two perspectives: (1) the imitation of natural-world acoustic dynamics enabled by the ambisonic technique provides a realistic orientation to listeners, and enhances their engagement with the research material through immersion in a digitally mediated, physical environment; and (2) the creation of a relaxed, playful, social atmosphere within the installation encourages visitors to participate and discuss, further facilitating their engagement with the research materials.

22.2   Soundscape and Ambience

When listening, the multitude of sounds in an environment are encountered and processed as one sensation, a phenomenon referred to as tonal coalescence [12]. A soundscape provides this multitude of sounds, for example, the cacophony of a busy urban space or the equally complex but tranquil acoustics of a rural setting. Yet a soundscape is defined not only as an environment of sound, but also as its perception and understanding by an individual or society. The listener is at the center of the field of a soundscape or acoustic ecology [11]. Similarly, the pedestrian is central to the particular environments transposed to this installation. The information provided by the sounds, and their arrangement in the installation environment, places visitors in the virtual space both contextually and acoustically. Entering into the installation, the visitor is immediately immersed in and becomes central to the content of the soundscape. The acoustic immersion is achieved though a unique implementation of ambisonic audio spatialization in MAX/MSP, an interaction programming interface. In the ambisonic space, audio sources can be stationary, or can move dynamically through the space. This dynamism of sound replicates the natural listening situation for participants who enter into the installation's sphere of influence.

The character and nature of an environment, human-centered or otherwise, can be referred to as its ambience, which is a complex matrix of sensations encountered as a whole. Sound is uniquely capable of communicating ambience, as opposed to light, smell or temperature alone, as it can be recorded, arranged and replayed for analysis [10]. In everyday experience, voices and activities are major contributing factors to the character of sonic environments. Likewise, spatialization and localization by way of sound are fundamental to engaging with the surrounding environment. Although within a digitally facilitated media space this engagement with sound is restricted [7], the proposed installation is melding media space with a real environment.

In *Listening to the Walkable City*, sonic attributes form an ambient backdrop which communicates the prevailing spatial practices and cultures that inhabit the space being represented. However, the experience of a sound is mediated, facilitated

by the listener's relation to the sound and their ability to contextualize the auditory experience [8, 9]. As the time and place that this installation represents, and the socio-cultural information it communicates, may not be immediately apparent to all audiences, it is necessary to provide some visual and textual background to help create a frame of reference for listeners. The sound environment is therefore augmented with images and text related to the listening experience and the Hong Kong stair environments. These materials are presented indirectly, discontinuous from their position in the soundscape, as the primary aim of the work is to draw attention to the auditory qualities of urban pedestrian spaces.

22.3 Interaction and Participation

The focus in discussions about interactivity has long been technology-oriented [4], examining engagement with audiences through digital artifacts. However, emphasis is currently shifting from interactivity's technological facilitation to its perceived modes of interaction, such as its aesthetic, ludological and more frequently, empowerment modes [1]. While the level of interactivity has often been gauged by a given work's similarity with face-to-face communication, deemed to be the ultimate frame of reference for the interactive, this may not always be an applicable paradigm for imagining and examining interactivity [5]. One perspective is that the activities associated with interactivity "expand the boundaries of audience engagement in the unfolding of the work and the correlated process of meaning-making, thus promoting new participatory roles and practices" [3]. Modes which assess to what degree the work facilitates this expansion can be a more accurate measure of the interactivity of an installation.

As a soundscape is comprised of a complex interrelation between sounds, space and the listener, so the ambisonic sound-field that we create is an interrelation of digital artefacts, analog signals, equipment, and the exhibition space. At the center of this is the visitor, without whom the installation, it's content and context has no meaning. This space becomes a performance similar to that of the real environment [6], actively acknowledging the visitor as participant and performer. Voice, as we have mentioned, is our paramount contribution to the sonic environment. To enact a vocal participation in our soundscape installation, and return to participants a sense of their own place within the environment, a simple technological interactive system using a microphone is introduced. Participants can speak into the microphone, and hear, from within the soundscape, conversations in Cantonese and Mandarin recorded on the stairs in Hong Kong. Alternatively, the microphone audits the installation environment, and as noise levels rise among the physical participants, so too do voices become louder and more numerous in the virtual environment. The Chinese voice, possibly unintelligible to many who visit the installation in Trento, Italy, provides a commentary on the collective production and experience of language and noise in the urban sonic environment and can lead to reduced listening [2], regardless of its semantic content. This simple technical implementation that

triggers sound files based on audio level analysis augments the installation's other inherent modes of interactivity with a playful form of participation whereby the vocalizations of the audience contribute to both real and virtual soundscapes.

22.4   Assessment and Outcomes

Listening to the Walkable City is focused on examining the soundscape installation as a transmission of particular research outcomes. Therefore, in order to discover what the installation adds to the public reception of the urban environmental research, a qualitative evaluation approach based on an open sorting methodology will be used to gather feedback as to visitors' attentions, interests and attitudes concerning the experience.

Feedback will be collected in the form of a survey, taken either textually or using hand-held audio recorder, not on exiting the installation, but during the experience. In this case, direct access to participants' thoughts and ideas while they visit the installation will be of greatest value to the research. The design of the questions is meant to extract specific positions as well as open-ended intimations of the experience. Sample questions include: What sounds can you identify, or seem familiar?; Can you determine in which direction the street is located?; Where in the installation space do you feel the most comfortable?; What thoughts or emotions does the experience evoke?; Does the experience revive a particular memory?; Can you imagine you are actually in Hong Kong?; Can you make any associations between these heritage spaces in Hong Kong and those in your own city?; and Can you describe any similarity or differences to other walkable urban environments?

Additionally, a significant amount of data will be gathered through audio and video analysis. This can be examined quantitatively to determine how long each visitor spends in the space and where in the installation they go and spend the most time. This audio-video analysis can be approached qualitatively to address questions such as: How do visitors interact with each other?; Does the microphone interactivity attract attention and stimulate activity?; and Does the social interaction between participants encourage their engagement with the materials?

The performance of the audio questionnaire, the observation of the participants and the correlation of these datasets will enable categorization of the interactions and engagements and begin the formulation of an overall view of the installation's reception by the participants in relation to the presented research.

22.5   Conclusion and Development

The process of developing, assessing, refining and redeploying an installation as a means of communicating research outcomes is itself an iterative design process. Through this process, more concrete research questions can be formulated to

determine how better to implement the immersive, interactive, multimedia environment to express and extend our research. This line of inquiry leverages creative activity and playful, social interaction to open academic inquiry to the public. The interactive arts serve here as an invitation for recipients, as participants, to engage, to interpret and become active meaning-makers. Thus the work contributes not only by expanding our understanding of sonic interaction and soundscape installation, but by investigating and testing new and engaging means to share and digest research outcomes.

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