Chapter 14
Towards a Virtual Soundwalk

Tin Oberman  
University of Zagreb, Croatia

Bojana Bojanić Obad Šćitaroci  
University of Zagreb, Croatia

Kristian Jambrošić  
University of Zagreb, Croatia

ABSTRACT

This chapter presents the debate on the conceptual framework for the virtual soundwalk as a tool for soundscape assessment for use within urban design tasks and the management of urban open spaces. A hybrid model between a soundwalk in situ and a listening test in laboratory conditions is needed to gain benefits from both methods by simulating links between spatial relations and soundscape changes in actual urban open spaces. This link is vital due to the widely accepted architectural theory background on the urban open space experience. A prototype of a virtual soundwalk tool is described. It was used by the authors during laboratory research conducted in 2014 and 2015 and developed further in 2017. The prototype was based on partial virtual reality reconstruction of visual and aural field recordings. Its potential use is illustrated using a case study of the waterfront promenade in the historical centre of Zadar, Croatia. The future prospects for the method described are debated according to the most recent developments within the field of soundscape research.

INTRODUCTION

Urban open spaces are always experienced in context. Whether a set of open spaces, or a series of interiors and open spaces, the inescapable fact of the urban pedestrian experience when moving from one point to another is that each space is experienced through a certain spatial sequence. It is like music, where each note or chord has a relative function within the tonality of the entire piece, alongside its absolute characteristics, such as pitch, or frequency. Each note and chord can be perceived quite differently, depending on what the listener hears immediately before, or the sounds that follow.
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For example, the chord of E major (E – G# – B) may be the tonic in one musical piece, but have a completely different musical meaning in another. The opening of Edward Grieg’s Peer Gynt Suite (Morning) is in E major, and hearing it makes the listener feel content and steady. On the other hand, hearing the same chord in the next movement (Anitra’s Dance), which is in A minor, induces drama, because its relative function has changed. So the meaning of each element can change drastically, depending on the context.

It can be argued that soundscape perception is affected by a similar principle. After all, this principle has been widely accepted within the field of soundscape research, as the concept of soundwalk dates from the same period as architectural theory on the experience of urban open space. The soundwalk is one of the main soundscape research tools, and includes inherently experiencing a sequence of places characterized by different atmospheres. In the broader sense, a soundwalk is the act of walking through a setting with a focus on critical listening to the sounds that can be heard there (Truax, 1999). In an urban environment, the aim is to collect audio data and grasp a mental representation of a city and its public space by combining soundscape with urban morphology (Venot & Sémidor, 2006). It is used for both quantitative and qualitative analyses (Jeon, Hong, & Lee, 2013), by conducting soundscape assessment questionnaires and collecting objective data, i.e. measurements and recordings, for further analysis (Aletta, Kang, & Axelsson, 2016).

However, critical listening within a soundwalk in situ ensures the most comprehensive, relevant research environment but rarely offers the opportunity to observe key design factors closely, such as the precise distance from the sound sources simultaneously with the exact vista. Another widely-used tool for soundscape assessment is based on laboratory experiment, which in most cases does not include the contextual principle already described, but eliminates many potential biasing factors which are unpredictable in situ. The virtual soundwalk was proposed to combine the benefits of both approaches.

The prototype of a virtual soundwalk tool described in this chapter was created in 2014 to research four acoustically specific urban open spaces. Three of them were examples of aural perception driven design; the waterfront promenade in Zadar which contains a wave-powered organ, a historical park in Zagreb which features an echo-generating pavilion, a museum plaza in Graz with an adjacent electro-acoustic sound art installation, and a sequence of equally sized squares in Zagreb characterized by different soundscapes (and reverberation times). Along with the detailed description of the prototype, the waterfront promenade in Zadar was described and compared with research conducted using a different method in 2011.

The proposed virtual soundwalk can serve as a tool to assess the congruence of visual and aural experiences of urban open space, which is major indicator of its quality. It enables the assessment of soundscapes in urban open spaces to be conducted so that the participant can understand the spatial relations between the analysed ambiences and experience their consistent representation (through the corresponding visual and aural recordings), while the benefits of standardization provided by laboratory conditions, are obtained and expanded by introducing selected key soundwalk elements, such as the spatial sensation of sequence of ambiences in the exact order in which they would be experienced in situ.