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Experiencing the soundscape with Mobile mixing tools and participatory methods

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Abstract

“Neighborhood as a living room” is a subproject of a large Creative Europe project “The People’s Smart Sculpture”. The project aimed to raise the interest and participation of especially young people towards their sonic surroundings. The article examines the issues of creating and experiencing soundscapes in mobile soundscape workshop. The soundscape platform and the workshop method was created to experiment mobile and participatory methods with sound and sonic experiences.

The perception of the workshops indicated that the pedagogical approach and the orientation part of the workshop has an effect on the level of participation and individual sonic experience. The article concludes that the soundscape platform and the workshop methods implemented in the project enhanced participation and engagement to the topic among the participants. The soundscape workshop and the tools created for it offered the young people a possibility to participate in the conversation about the urban sonic environment, changes in it and the future of it.

Keywords: soundscape, smart city, urban planning, sonic environment, mobile tools, participatory methods

1. Introduction

“Neighborhood as a living room” is a subproject of a larger Creative Europe project “The People’s Smart Sculpture”. The goal of the project was to find new ways to make exhibitions at the Helsinki Museum of Technology more interesting especially to young people. The subject of this article is a soundscape project developed as a part of the “Neighborhood as a living room” project. The article examines the issues related to creating and experiencing soundscapes in a mobile soundscape workshop. The goal of the soundscape platform and the workshop method was to experiment mobile and participatory methods in relation to sound and sonic experiences.

The Soundscape project examines ways of learning about sounds, hearing, listening and the sonic environment by using various participatory methods. Different workshops were conducted at the Helsinki Museum of Technology, but also at Public Urban Lab Bremen, Gdańska Galeria Güntera Grassa and Metropolia University of Applied Sciences. The young participants were introduced to the concept of the soundscape, the structure of soundscape, and the significance of soundscape. This article explores how the participants of the workshops experienced the process of creating soundscapes with mobile tools and how the method was able to enhance their participation and collaboration.

During the workshops, the participants created soundscapes with the mobile tool ‘Soundspace’ and Audio Digital Asset Management System developed at Metropolia UAS. The participants then listened together the created soundscapes and discussed them in order to allow the participants share their experiences and opinions. The article concludes that the soundscape platform and the workshop methods developed side by side during the project enhanced participation and engagement to the topic among the participants. The participants’ focus on hearing, listening and observing their surrounding sonic environment increased when emotional engagement and personal experiences were acknowledged during the workshop.

The soundscape workshop and the tools created for it offered the young people a possibility to participate in a conversation about the nature, changes and future of urban sonic environment.

2. The soundscape - hearing and understanding

The approach urban planning has to our environment is distinctively visual and logistic. Architecture, land use, environmental planning, and zoning define what our surroundings look like and how they function. However, the sonic environment is rarely approached from planning point of view. The only exception to this is noise and so-called noise pollution which is widely recognized to be one of the most important environmental stressors affecting public health throughout the world. (Murphy & King, 2014) What goes largely unnoticed is the fact that the soundscape is much more than noise: it is something that unites us as city-dwellers and is an important part of the identity of a city (Arkette, 2004).

The term “soundscape”, which refers to our acoustic environment, was coined by composer and researcher R. Murray Schafer. The discipline studying the relationship between living beings and their environment mediated through sound is called acoustic ecology. Soundscape research aims to understand how soundscapes differ from each other and how they affect us. (Schafer 1977). In this article soundscape is understood as an acoustic environment perceived or experienced and/or understood by a person or persons, in a specific context. The term acoustic environment refers to sound as it is received from all sound sources modified by the environment. (ISO, 2014)

One of Schafer’s main concerns was the rising noise level in the world. Population growth, industrialism, and urbanization increase the number of sound sources. We tend to consider sound as a natural phenomenon exterior to people, but actually sound becomes sound only when it is heard. Sound and its interpretation are a product of the human senses. (Sterne, 2003) From that point of view it should be clear that since we know a good deal about the behavior and tolerance of the ear and the voice, with modern technology it should be possible to design our sonic environment so that it is appropriate to ourselves (Schafer 1994). But at the same time, as modernization has changed the soundscape from a natural element to a product of human design, our capability to control it has decreased (Ampuja 2007, 231). Designing of urban soundscapes has not advanced but is rather a mere by-product of city planning.

European Union has set a directive intended to avoid, prevent or reduce on a prioritized basis the harmful effects, including annoyance, due to exposure to environmental noise (EU, 2002). As a result of this the EU countries have implemented large noise mappings in bigger cities and carried out noise action planning process to reduce the harmful effects of the noise (Murphy & King, 2014). Urban landscape or soundscape affects the individual's relationship with their habitat. Soundscape research’s aim is to improve this relationship (Lercher, 2003). Even if all the noise would be eliminated there would be sound and all sound affects the quality of living.

In the last decades, there have been important developments in research and practice of urban sound environment. For example, methods have been created for noise control (Murphy & King, 2014), environmental policies and regulations (EU, 2012) and subjective soundscape evaluation (Jennings 2013, Yano 2012). However, gathering the data of sonic experiences in the cities is problematic due to lack of systematic methods (Puustinen 2006). The soundscape research involves diverse practices and approaches, fields of study and interests. The research field overlaps with various different fields like urban planning, environmental research, smart city development, etc. (Brown, 2011). It has been recognized that sound level alone does not determine the experienced acoustic quality, but it is rather related to the individual's overall experience of the environment, including e.g. visual experience and landscape features (Bjarre 2017). Challenge in designing a high-quality sonic environment is the fact that different groups of people react to sounds differently (Schafer 1977). Because the soundscape has no specific character or value outside the individual experiences and definitions (Arkette, 2004) there is no clear solution for creating a “perfect soundscape”.

Since Schafer's World Soundscape Project there have been several projects and attempts to raise people’s interest towards their sonic environment (Brooks, 2014, Järviluoma, 2005). Schafer's original method was using so called “soundwalks” where people walked outdoors concentrating on listening to the surrounding soundscape. The aim was to re-engage the participants with their aural senses and hence to start to understand the importance of the soundscape. Schafer also presented a classification of the soundscape elements:

- Keynote: ambient sounds (such as wind, traffic, humming etc.) which are not actively listened because they are filtered out cognitively.
- Soundmark: a sonic landmark; a sound which is characteristic of a place
- Sound signal: a foreground sound that is listened actively. These sounds usually carry a signal with a message (car horn, dog barking etc.)

Schafer stated that gaining knowledge about the soundscape and practicing his exercises would enhance the individual sonological competence (Schafer 1977). This term refers to the capability to actively listen and analyze one's sonic environment. Later research has proven that it is actually much more complicated to gather systematic information about sonic experiences (Jennings 2013, Yano 2012). Describing a sound consists the emotion and experience of the sound (Koivumäki 2006). A soundscape can be experienced negatively, positively or something in between and this is dependent on experiences, personal history, and preferences. Each individual has a different capacity to hear, different ties to the surrounding spaces and different hopes, dreams and disfavours. (Jennings 2013)

In the era of mobile technology and participatory planning and governance, the challenge of gathering sonic experience data smartly has still remained unsolved. In our project, the target was to test and develop methods to enhance the sonological competence and understanding of the soundscape with participatory methods.

As described earlier, sonic environment plays a significant but seldom observed role in the urban. Using mobile technology in soundscape research is not only suitable for the young digital native target group, but also brings a realistic, acoustic, and above all an interactive dimension to it. Traditionally soundscape research has leaned on soundwalks, verbal descriptions, mapping sounds and gathering experiences, written memories and pre-recorded examples when conducting a survey about sonic experiences and soundscapes (Brooks, 2014, Järviluoma, 2006, Ampuja, 2007). These surveys have created bases for soundscape research and produced data about different spaces and their acoustic environments. The Neighborhood Living Room project aims to develop smart tools for this purpose.

3. The Neighborhood Living Room Project

Metropolia University of Applied Sciences' *"The Neighborhood Living Room"* project studies methods that could help a museum – in this case, the Museum of Technology – to be integrated to a community while offering an emotional and participatory experience especially for the young residents of the area.

'The Neighborhood Living Room studies ways how a museum could build a more dynamic and participatory audience relationship. [...] The methods to be used are based on applied arts, community theatre, applied music education, social media, mobile technology and cultural production. Art based methods will work as a tool for promoting communal spirit between residents and as a driving force for a unique city life based on the original elements of the district.' (Metropolia, 2015)

"The Neighborhood as a living room" is a subproject of a large Creative Europe project "The People's Smart Sculpture"¹. The "Neighborhood as a living room" aims to raise the interest and participation of especially young people towards themes presented at the Helsinki Museum of Technology. The Soundscape Project is one of the subprojects of this main project. It examines ways of learning about sounds, hearing, listening and the sonic environment using various participatory methods. The first target of the project was to design and implement a smoothly working mobile soundscape mixing application to increase user interaction by developing soundscapes from building blocks stored in audio digital asset management system (Salo et. al, 2016). The second phase of the project was to test workshop methods in order to find ways how the mobile tool could be used.

The Soundspace mixing tool and the workshop method were designed joint by Mr. Kari Salo and Dr. Merja Bauters and their students from the department of Information Technology and Mrs. Aura

¹ The People's Smart Sculpture is a creative research, art and innovation project about the cultural evolution of future European smart cities. <http://smartsculpture.eu/>

Neuvonen and her students from the department of Film and Television of Helsinki Metropolia University of Applied Sciences, Helsinki, Finland.

The Soundspace tool allows the user to test and play with soundscape elements. The user can search audio files from a backend service, and listen to sounds before selecting them as a part of his/her soundscape. The application offers the users a possibility to record their own audio files and implement this recording to their project. After that the user can create a soundscape segment by segment. Finally, the user can mix the sound components by changing the volume and the repetition of the audio files. Soundspace then plays the audio files together by looping them and thus giving an audible example of different kinds of soundscapes.

The sound library of the tool has 142 sound files (figure 1). They contain ambient sounds and signals, and a few sounds that could be defined as soundmarks. The cultural frame of reference for the sounds is Finland or northern Europe. The length of the sound files varies from a few seconds up to 30 seconds which is the limitation of the mobile system. The sound archive contains the kind of sounds of people, nature, vehicles, and machines that commonly occur in a Nordic city.

This article concentrates on the development process of the workshop method as well as the feedback received and observations made during the process. The focus of the development process was to create a workshop where the participants would be given general information about the sonic environment, then they would discuss the topic with other participants and share opinions about their sonic experiences. The Soundspace tool was created for this purpose to allow the participants to work with real hearable sounds.

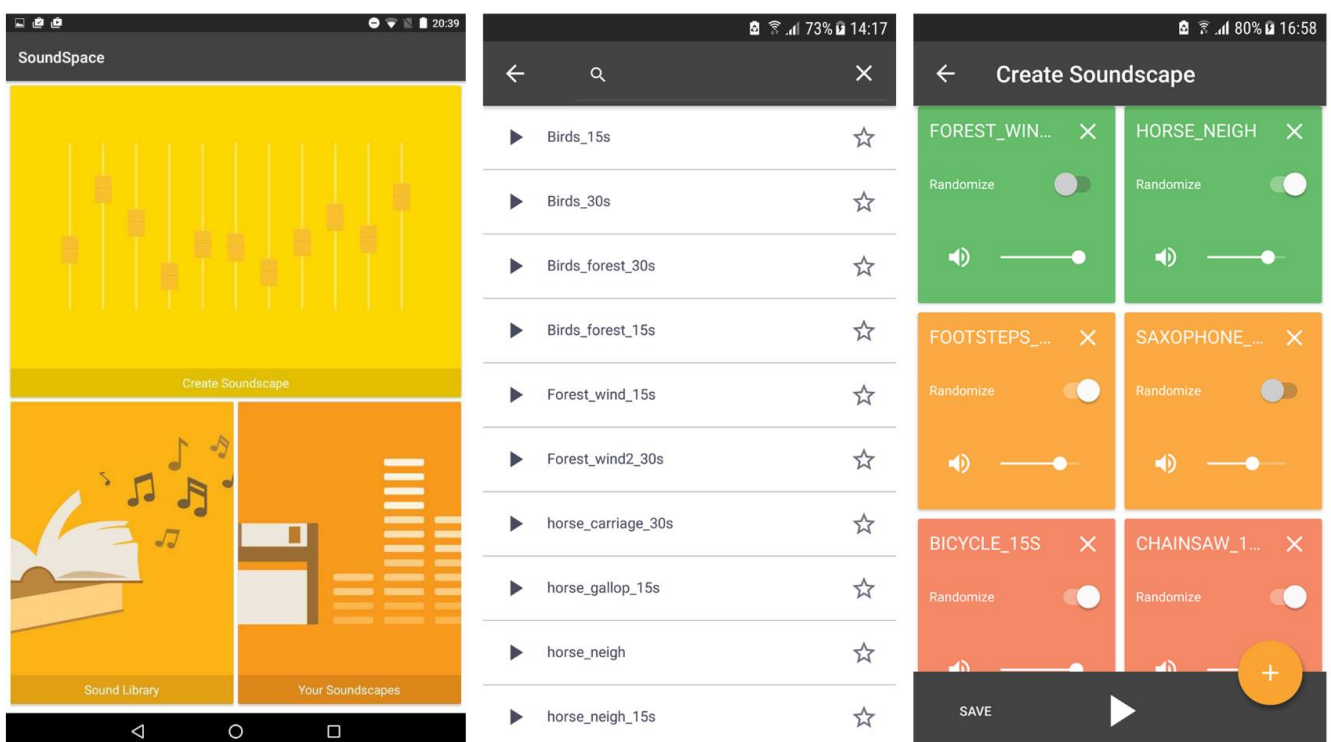


Image of the application
Figure 1

4. Developing the workshop method

The Soundspace mobile tool alone is just a simple mixing tool that could be used for various purposes. As the target of the project was to enhance the knowledge and understanding of the locals about their

sonic environment by using the mobile tools created, it was necessary to develop a workshop method that would work with the mobile tool.

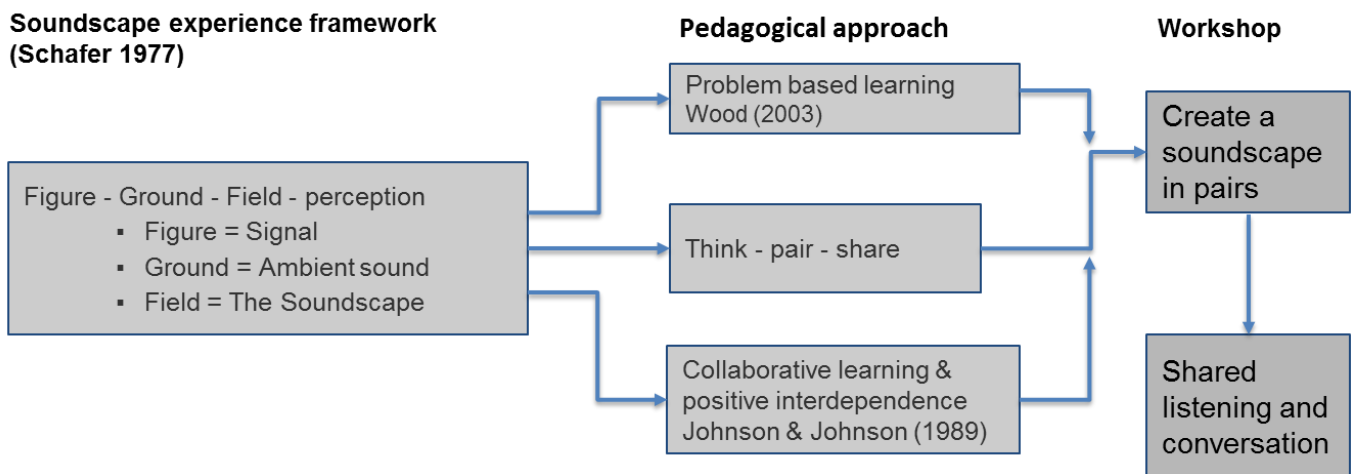


Figure 2

To explain the structure of any soundscape and to give the workshop participants understanding of what they are hearing it was necessary to choose an appropriate framework for it. The used framework (figure 2) for analyzing and understanding a sonic experience and the soundscape listened was Figure - Ground - Field perception that has been modified to fit the soundscape context by R. Murray Schafer (Schafer 1977). Figure - Ground - Field perception is a method of grouping that is known in Gestalt psychology as identifying a figure from the background. In the visual perceptual process the brain decides what part of the scene is a figure and what belongs to the background based on hints like color, size, shape etc. Phenomenological psychologists later pointed out that this interpretation is affected by the place where the observation takes place and the subject's relationship to it. Thus Field was added to the framework. (Schafer 1977)

As described earlier, soundscape can be divided into signals, soundmarks, and ambient sounds. Schafer suggested that Figure - Ground - Field perception could be applied in soundscape research as a method of organizing a sonic experience (Schafer, 1977). In his theory signal equals figure, the ground is the ambient sound and field the place where all the sounds occur - the soundscape. This framework was used in the workshop as an overall guideline for an individual for organizing a sonic experience and as a basic structure to explain the idea of the soundscape. The sounds selected for the Soundspace tool followed this logic. The collection of sounds contained ambient sounds, signals, and soundmarks. The participants were advised to choose sounds from these different categories.

The pedagogical method in the workshops was a combination of problem-based learning (Lam, 2004), collaborative learning and positive interdependence (Bruffee, 1998). Problem-based learning is based on the idea of learning through open-ended problems instead of studying the topic theoretically. This method has been found to be an efficient method for understanding the subject and associating it with previous experiences (Lam, 2004).

Collaborative learning refers to workshop or a classroom situation where a group of people attempt to learn something together. All members of the group should rely on each other and believe that their collaboration is the key to their success. This is called positive interdependence. Collaborative learning and positive interdependence work in this kind of workshop setting in combination with problem-based learning for several reasons. These pedagogical methods rely on searching for understanding, exposure to diverse perspectives and sharing of knowledge. Since soundscapes are common but the sonic experience is private it is necessary to include communication and interaction to achieve wider understanding.

Schafer suggests in his soundscape perception theory that whether a sound is a figure or the ground has nothing to do with the physical dimensions of the sound itself, but is rather related to the individual's state of mind, personal history and relation to the field (Schafer, 1977). This basically means that we all have

our own unique interpretation of sounds that we hear. Therefore problem-based learning method offers a setting where these personal sonic experiences can be discussed and shared.

The workshop starts with a short communicative lecture about soundscape and its basic structure. The concept of soundscape was not expected to be common to all the young participants. The workshop follows a "Think - pair - share" collaborative learning strategy (TPS) in which participants work on a problem given by the instructor first on their own, then in pairs and finally all together in a larger group discussion. For creating the soundscape the participants were divided into pairs and given a task to create a soundscape with the mobile tool. Working in pairs and discussing with a partner enhances participation, focuses attention and creates the positive interdependence.

After the creation of the soundscape, all the soundscapes were listened and discussed. At this point, the idea of Figure-Ground-Field was brought in to the discussion. The conversation offered a possibility to share and reflect each one's perspectives to sounds and auditory perception.

The workshop method changed and developed during the project. After each workshop, all participants filled a feedback form that consisted multiple-choice questions about the functionality of the software and the emotions end experiences the workshop gave them (figure 3). After every workshop, the feedback data was evaluated and the results were implemented in the next workshop.

Soudscape Query

What mobile phone do you use?

How would you grade SoundSpace application?

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
	1	2	3	4	5
Pleasant to use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Worked well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Was fitting to the task	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How did you feel using SoundSpace application?

	A lot	Somewhat	Neutral	Very Little	Not at All
	1	2	3	4	5
Evoked emotions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provided experiences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Evoked memories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Have you used similar application before? Yes No

Would you use the app elsewhere than in this workshop? Yes No

Did you know what the icons meant? Yes No

Did you succeed in making soundscapes? Yes No

Did you record own sounds? Yes No

What else comes to you mind related to workshop?

Figure 3

We also used both active participation and passive participatory observation as a research method. In the active participation, Mr. Kari Salo and I acted as leaders of the workshop. We gave the communicative lecture, explained how the application works, helped the participants to use the application and conducted the joint conversation. In the passive participatory observation, we were present in the workshop and were presented as the developers of the tool and the method. Either both or one of us gave a short speech and explained the history of the project. The task was then explained by the personnel of each location and they also conducted the discussion. We participated in the conversation if it was possible. One workshop was held in German and one in Polish so it was not possible for us to join in or understand the conversation. All workshops were also filmed.

The objective of the observation was to find out how the workshop enhances the participation and activates the individuals of the group, how it maintains the attention of the participants and how they react to the tasks given to them. We discussed our observations after each workshop. We concentrated on the atmosphere in the workshop (emotional expression), the level of participation (the activity of discussion) and the focusing to the task (time spent with the task, content of the end result). These topics were also added to the questionnaire after two workshops to confirm the results of the observations.

The task given to the participants of the workshops changed a little in every workshop. The reason for this change was the fact that every workshop was part of a different kind of occasion or event. The given task was changed also as a result of the analysis and the development process of the workshop. These differences are described in the following analysis section. Due to these changes in the given task, it is not possible to compare or analyze more specifically the sonic pieces the participants created with the mobile tools or interpret their opinions about soundscapes.

5. Workshops and feedback

The workshop method and the application were tested in six different locations, groups and events. Four of them are presented in this article. These four have been chosen for evaluation of the workshop method because of their different structure and location. The two other workshops were duplicates of these workshops but had fewer participants than the others so they did not give comparable feedback data. The four workshops introduced here were arranged in Helsinki Museum of Technology with secondary school children from Helsinki, Public Urban Lab Bremen with invited locals, Gdańska Galeria Güntera Grassa with local high school students and Helsinki Metropolia University of Applied Sciences with Media production students. The workshops were arranged between November 2015 and September 2017. Each workshop lasted for 1–1.5 hours and had 12-24 participants.

Workshop 1 with school children

The first workshop was arranged at the Helsinki Museum of Technology in November 2015 for local secondary school children. It was designed together with the staff of the museum and it reflected the topics presented at the museum. This workshop was the first public situation where the mobile tool was tested so the focus of the workshop at this point was in the development of the application. The outline of the workshop was as follows:

1. The museum personnel welcomed the young people and explained the idea of the workshop. Sound design students explained what a soundscape is, after which the application was introduced. Finally, the task was given to the user group (20 min).
2. The task was to create a soundscape to an image that reflected the exhibition topics of the Museum of Technology. For creating the soundscape the users were given an image and an adjective that exemplified an atmosphere to be added to the selected image. The students created the soundscapes in groups composed of 2-3 users (30 min).
3. In the end, all the soundscapes were listened and discussed. Feedback from the workshop was provided collectively by the users. Each user group (11 groups) filled an online questionnaire after creating their final soundscape. Each user group filled one questionnaire (20 min).

The images were from Helsinki from different eras. Because the workshop was conducted by sound design students and the museum staff, the observation conducted was in passive participatory mode.

Workshop 1 - feedback and evaluation

The main result received from the feedback was that the application worked smoothly and it suited the task well. Three groups recorded their own sounds. None of the participants had used a similar

application as The Soundspace before but in the feedback they reported that they had succeeded in creating the soundscape as instructed.

The school children seemingly enjoyed the workshop and they worked actively. The indicators this conclusion was based on were vivid discussion, laughter and fooling around with the mobile tools. The students discussed the pictures and adjectives they were given, collaboratively searched and listened to the different sounds and tried to find exactly the sound they had in mind. Because the pictures were historical the students had to guess what sounds some exteriors could have contained and what was actually happening in the picture.

The adjective given to add to the soundscape made the task more difficult to accomplish. The participants talked about different emotions and discussed the associations the sounds created. They created soundscapes that contained ambient sounds, signals and even sound marks from Helsinki. In the feedback, the students criticized the number of sounds (142 in total). The experience was that this was not enough and they were not always able to find the exact sound they were looking for.

The final discussion was at the same time the most interesting and the most challenging part of the workshop. Presenting 11 soundscapes and conducting a conversation with over 20 participants took a lot of time and challenged the students' capability to concentrate. The soundscapes that the students created were interesting and created a lively debate. During the listening session, students reacted spontaneously to the sounds they heard and expressed thoughts about them. The conclusion was that the shared listening of actual lifelike soundscapes made it easier to present opinions about them.

The pedagogical method worked well. The students followed the workshop structure carefully and understood the instructions easily. We had prepared a slideshow to teach the functionalities of the mobile tool but the students did not need it. Because the group was fairly large working in pairs made it possible for each one to actively participate in the workshop and express their opinions. The joint discussion brought up the differences in sonic experiences as expected.

In the feedback the level of emotional experience was not very high although the participants felt that the workshop provided an experience (figure 4). This was the most interesting outcome of the feedback. It is notable that the participants were 12-14-year-old children and the task was to create sounds of city spaces they have not probably visited and in situations that took place in a time they had not lived. Therefore it is quite understandable that the soundscapes did not evoke emotions or memories because the students did not have an equivalent sonic experience. This was taken into consideration when planning the next workshop.

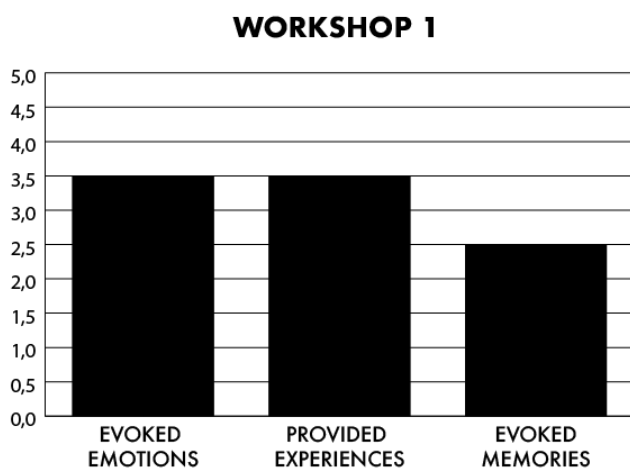


Figure 4

Workshop 2 in Public Urban Lab Bremen

The second workshop was arranged in Germany at an event called "Public Urban Lab Bremen" in June 2016. Hochschule Bremen and the M2C Institute arranged this event where they transformed the square in front of the Bremen main station into a media lab for participative urban development. As part of the event, visitors were invited to take part in workshops and discuss the sound of their city. In this workshop, we wanted to test the application and the workshop method in an open workshop and involve topics related to the participants' own sonic environment in the actual location. The workshop outline was:

1. The participants gathered in a conference room near the main station. We welcomed the participants and explained the idea of the workshop. A former student of the Hochschule Bremen explained what a soundscape is, after which the application was introduced (20 min).
2. The task was to create a soundscape that they would like to have in their own city. The participants created the soundscapes in groups composed of 2-4 users (20 min).
3. In the end, the group walked to the Urban Lab and listened to the city on their way. At the outdoor Urban Lab, the lecture and panel conversation about the soundscapes continued. Each participant (15) filled a questionnaire after the panel (40 min).

Because parts of the workshop were held in German the observation took place in passive participatory mode.

Workshop 2 - feedback and evaluation

The feedback from the workshop was positive. Participants found the tools easy to use and suitable for the task. Half of the participants used the recording function. Workshop with the soundscape tools was a fun and new experience. Four participants did not succeed in creating a soundscape due to network problems. This issue is one of the technical challenges for arranging these kind of workshops. In order to keep the schedule and produce positive learning outcomes, the mobile tools have to work fluently (Salo et al., 2016). According to the feedback creating a soundscape with the mobile tool provided an experience but only half of the participants felt that it strongly evoked memories (figure 5).

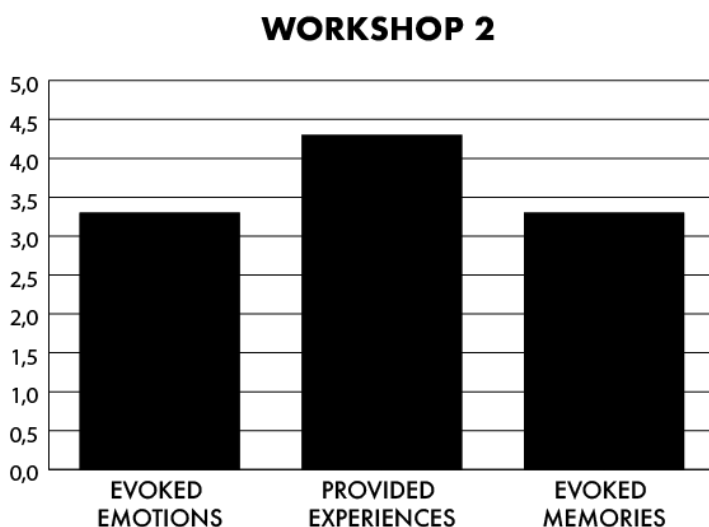


Figure 5

This workshop was different from the first one because the participants were adults and their orientation was more academic. They had voluntarily chosen to participate an event with this topic which shows interest towards sounds, soundscapes or participatory methods in general. The participants were more interested in discussing and learning about the topic from an academic point of view. This could be seen from their intensive participation to expert lecture and panel discussion parts of the workshop. The participants spent only a short while with the tool and were not interested in sharing their work. The Think-Pair-Share strategy did not seem to work and was more of a curiosity and interesting experiment than a base for their discussion.

This workshop showed how important the leading of the workshop and the orientation of the participants are. If the participants are oriented to listen to an expert lecture or they do not have experience in problem-based learning methods the use of playful mobile tools is not justified. The task of creating a soundscape has to be introduced so that the participants are motivated to put their effort to it. In this workshop, the participants were very much interested in joining the theoretical discussion and to express their opinions about the city soundscape. Arranging the workshop in an open-air event in location was beneficial, but without the carefully created soundscapes the group did not leave any exact data for future analysis or other developmental work to enhance the soundscape.

Workshop 3 in Gdańska Galeria Güntera Grassa

Gdańska Galeria Güntera Grassa is part of the Gdańsk City Gallery and located downtown in Gdansk, Poland. The third workshop introduced there was arranged in the gallery in February 2017 for local teenagers aged 13 to 16. The workshop outline was a combination of the two previous workshops. Parts of the discussion were held in English, parts were translated. The students had good multilingual skills but we wanted to have the workshop in Polish to enhance the participation and free verbal expression of the participants. The beginning of the workshop was passive observation but the end discussion was active participation. The outline of the workshop was:

1. The participants gathered in the galleries' workshop room. We welcomed the participants with the help of the curator of the gallery and explained the idea of the workshop. The curator explained the concept of soundscape after which applications were introduced (20 min).
2. The task was to create a soundscape to an image from Gdansk. For creating the soundscape the users were provided a photo and an adjective that exemplified an atmosphere into the selected image. The students created the soundscapes in groups composed of 2-3 users (30 min).
3. In the end, all the soundscapes were listened and discussed. Feedback from the workshop was provided collectively by the users. Each user group (13 groups) filled an online questionnaire after creating their final soundscape (20 min).

Workshop 3 - feedback and evaluation

The overall observation of the workshop was that the students concentrated extremely well and put a real effort in creating a soundscape. None of them used the recording possibility. This group looked at the mobile tool instructions but did not need any help with it later. The mobile tool worked very well and the students found it pleasant and fun to use (figure 6).

WORKSHOP 3



Figure 6

The students followed the workshop structure extremely well. Even though the group was larger than the previous ones it did not cause any problems with schedules or concentration. The workshop room was fairly small but the students managed to find some space from the gallery to discuss with their pairs. The pairs worked very intensively and had vivid discussions and seemed to have fun. The soundscapes they produced were creative, structured carefully, sounded natural and expressed the adjectives very well. The students recognized all the locations presented in the pictures and were able to describe their soundscapes. The shared listening session was active and the students expressed their opinions about different locations in the city and how they experience the soundscape in them. The conversation started as a school like-situation similar to the first workshop but developed into a real dialogue between us (the researchers) and them (the citizens). These observations encouraged us to develop the workshop towards modeling a sonic experience.

Workshop 4 with Media production students

In the fourth workshop, we wanted to test how the participants could reproduce earlier sonic experiences with the mobile tool. The idea was to create a situation where young people could be connected to their sonic surroundings, they would improve their sonological competence and express their sonic experience using the mobile tool. The workshop was held at the Metropolia University of Applied Sciences in September 2017 with 1st year Media production students. The outline of the workshop was as follows:

1. The students were given a preliminary assignment to go to a location in Helsinki, sit down and listen to the soundscape for 20 minutes.
2. The next day the students gathered in a classroom and we explained the idea of the workshop. I explained what a soundscape is, after which applications were introduced (20 min). The task was to create a soundscape that would sound as similar as possible like the one they had experienced the day before. The participants created the soundscapes in pairs (20 min).
3. In the end, all the soundscapes were listened and discussed. Feedback from the workshop was provided collectively by the users. Each user group (12 groups) filled an online questionnaire after creating their final soundscape (20 min).

In this workshop, we added more questions to the questionnaire to get feedback about reproducing a soundscape. Because we led the workshop the observation was active participatory.

Workshop 4 feedback and evaluation

In this workshop, it is notable that the Media production students have basically better sonological competences due to their interest in audiovisual production. Nevertheless, the concept of soundscape was not familiar to them and they enjoyed the first part of the workshop very much. One student said that it was a surprise to him how much you can hear when you stop to listen. Another student found it very pleasant and relaxing to sit still and concentrate on listening. Many expressed that they noticed they do not listen as concentrated like this in everyday life.

The students understood and followed the workshop structure very well. Because the students were working in pairs they had to explain their sonic experience first to their partner and then start to create a reproduction of it. The effect of this pair work part was that they had long discussions before they started to create the soundscapes. All the teams recorded sounds in addition to the 142 that were available in the library. Once again in the feedback, the size of the sound library was found insufficient. The students participated very actively when creating the soundscapes and enjoyed it a lot. There was laughter and vivid discussion and they put a lot of effort in creating the sounds they could not find from the library. Yet they concluded that they were able to reproduce a soundscape that was very similar to the original one. They also succeeded in modifying the mood of the soundscape so that it felt like the original one and created a similar experience (figure 7).

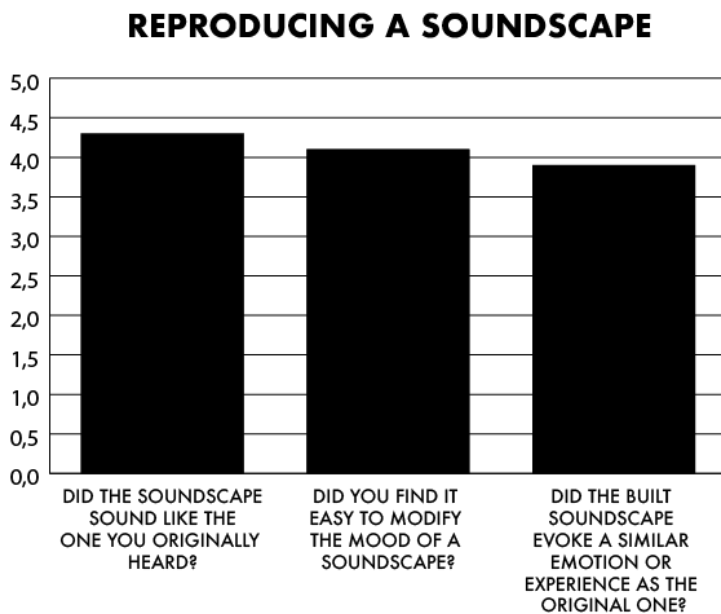


Figure 7

This group felt that the soundscapes evoked emotions and memories and provided an experience stronger than the other workshops' participants (figure 8). The dispersion was largest in evoking memories (figure 9). This group verbally analyzed the individual sounds of the soundscapes in the joint conversation very carefully. They also gave suggestions what could have been added or taken away from the soundscape to achieve a certain kind of atmosphere.

WORKSHOP 4

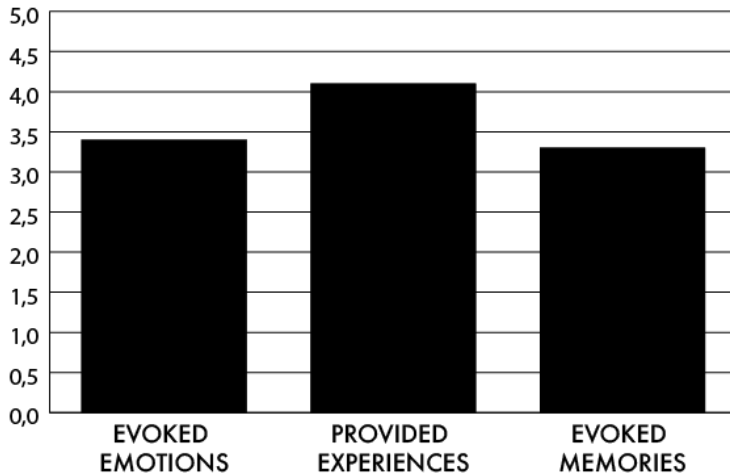


Figure 8

Time stamp GMT	What kind of grade you would give to the application?			What was it like to use the application?					
	Pleasant to use	Worked well	Was fitting to the task	Evoked emotions	Provided experiences	Evoked memories	Did the soundscape sound like the one you originally heard?	Did you find it easy to modify the mood of the soundscape?	Did the built soundscape evoke a similar emotion or experience as the original one?
13.9.2017 8:21	5	5	5	4	4	2	5	5	4
13.9.2017 8:21	5	5	5	4	5	5	4	5	5
13.9.2017 8:22	5	5	4	4	4	1	4	2	2
13.9.2017 8:22	5	5	5	5	5	3	5	5	5
13.9.2017 8:22	4	3	4	2	4	4	4	2	4
13.9.2017 8:23	4	4	5	4	4	4	4	4	2
13.9.2017 8:23	3	4	4	2	2	2	4	5	3
13.9.2017 8:24	5	5	5	2	4	4	4	4	4
13.9.2017 8:24	4	4	5	4	4	5	5	3	5
13.9.2017 8:24	5	5	5	4	4	4	5	5	5
13.9.2017 8:24	4	3	5	2	4	2	4	5	4
13.9.2017 8:25	4	4	2	4	5	4	4	4	4
	4,4	4,3	4,5	3,4	4,1	3,3	4,3	4,1	3,9
				I agree			5		
				I agree slightly			4		
				Neither agree nor disagree			3		
				Disagree slightly			2		
				I disagree			1		

Figure 9

The students liked the software and were interested in using it for some other purposes too. In the joint discussion, one student said that it is a fast and simple tool to express your sonic experience or idea. The Media production students have competences to use more sophisticated and advanced audio tools so they have competences to present this kind of opinion.

6. Conclusions

The soundscape is part of our environment as well as any other part of the scenery we live in. At its best, the soundscape is a living organism that includes us people and improves our well-being. If we don't design the soundscape appropriately, its quality deteriorates. The consumption of the city soundscape needs to be responsible in the same way as the consumption of any other part of the environment. If we can design the city for living, it can also be designed for listening. However, the idea of perceiving and verbalizing our sonic environment is an unknown concept to us. The sonic environment receives new dimensions when it is considered from a more experimental point of view.

In this article, I have proposed an approach of using a mobile tool for enhancing individuals' understanding of the meaning and importance of soundscape. R. Murray Schafer stated that *'To report one's impression of sound one must employ sound'* (Schafer, 1977). He suggested that in addition to mimicking sounds, tape recorder could also be a handy tool. Mobile mixing tool with an endlessly modifiable sound library is our answer to this challenge. In my opinion, the developed tools function as a suitable learning environment for sonic workshops.

The mobile tool alone is not a sufficient solution for raising interest towards these topics. In addition it requires participatory methods, conversation and interaction. In my opinion, activating the sound memory and the orientations to sound-emotion relations are critical. In the four workshops introduced in this article, it was notable that listening created conversation and conversation made visible how different kind of interpretations and emotions the sounds produced. Working with soundscapes raised interest towards sounds and sonic environment and made it possible to express hearable variations of our sonic environment.

In the workshop development process, it became clear that the Think-Share-Pair strategy worked well if the workshop structure was followed carefully. This structure seemed to work especially in school-like situations with younger participants. Creating a soundscape with the tool would be possible individually but when creating it together each participant was forced to share opinions and participate in the discussion. Working in pairs also created the positive interdependence since the pairs were expected to present the work in the joint hearing. The Figure-Ground-Field framework became relevant in the discussion and brought up the differences between participants' sonic experiences.

One of the most critical points in the workshop structure was the task given to the participants. With this research data, it is not possible to make definite conclusions about the different tasks given in the workshops. There are however indications that if the task was connected to an individual's previous sonic experiences the created soundscape was more detailed. In these cases, it seemed that the participants were more specific when verbalizing the sounds. This could be researched with a larger amount of comparable workshops.

In the feedback, many participants wrote that the number of sounds was insufficient. With 142 sounds it means that if the tools would be used for other purposes it would require even more sounds. With the current technology and application structure, it is not an easy task. Some kind of crowdsourcing could make this possible.

By objectifying and conceptualizing the environmental experience it is possible to aesthetically engage to it and appreciate it (Berleant 2008). Knowledge and tools create a possibility to have a public conversation and gather more accurate data. Our aim is to develop the application further so that it could serve as a tool for gathering data about sonic experiences. This data could be used for city planning or urban design etc. By representing sonic examples of the soundscape and changing its components both citizens and the decision makers can express their sonic ideas more specifically.

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