

INVISIBLE PLACES SOUNDING CITIES

Sound, Urbanism and Sense of Place.

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Proceedings



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Foreword

The book you are about to read is the result of an enthusiastic response from researchers and artists from all over the world to the open call for Invisible Places Sounding Cities, which took place in Portugal in 2014. We received over 220 proposals for papers and audioworks, which were selected by double-peer review to form a symposium programme of 54 paper presentations, 11 artist talks and 54 audioworks. Over three days, 140 participants from 25 different countries were joined together by one common interest: sound.

Hearing and listening are completely different processes. If the first is physical, the second is a psychological act that implies a connection to what we are hearing. Once a sound disappears, we retain only a memory. The term soundscape relates precisely to this, to an active listening of the unique features of a place. This active listening is what gives meaning to a particular space and assigns qualities and characteristics that go beyond walls or other physical limitations.

There is no doubt that since the twentieth century the soundscape of our cities has been deeply transformed through industrial machinery, highways, airplanes, cars, telephones, radios, televisions, computers, game consoles and the ubiquity of music in either commercial or leisure spaces. In a word - technology, a force that continually creates new sonic worlds. Nevertheless, society continues unconscious of the auditory implications caused by its own evolution. All too often we notice a general lack of critical demand with regards to audible devices and public spaces. We rarely demand more quality from the sonic world and remain conformed with the cacophony of modern life, unaware of how to change this state of affairs.

If the effect of the environment on human behaviour is significant, a good design has the potential to induce a better behaviour. On the other hand, sound art in public spaces may create more appealing acoustic environments, creating new sonic places to be experienced and lived by its inhabitants.

The Invisible Cities Sounding Places program was created to integrate the IVth edition of Jardins Efémeros (Ephemeral Gardens), in Viseu, a festival that crosses several art practices with streets and public buildings, thinking the city for those who live in it. These gardens occupy the public space across the city for 10 days, ephemeral as the evanescent sound

world, but like sound, they have the ability to modulate our sense of place. In addition to the symposium, the program included sound installations, concerts, soundwalks, performances and workshops created from the perspective of sonic fruition, but also of listening education. Because thinking the city considering only its physical attributes, is to deny our role in its space and to refuse our role in shaping the world in which we live.

It is with great pleasure that we welcome you to the proceedings of the first edition of Invisible Places Sounding Cities - Sound, Urbanism and Sense of Place.

Raquel Castro

Stream 1

Architecture and urban planning

Year	Project	Location	Role
2010	City of London	London, UK	Urban Planning
2011	City of London	London, UK	Urban Planning
2012	City of London	London, UK	Urban Planning
2013	City of London	London, UK	Urban Planning
2014	City of London	London, UK	Urban Planning
2015	City of London	London, UK	Urban Planning
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2049	City of London	London, UK	Urban Planning
2050	City of London	London, UK	Urban Planning

KEYNOTE

The Sonic Existence of Urban Ambiances

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Abstract

How can we listen to the atmospheric existence of the contemporary world? In asking such question I intend to introduce the notion of ambiance in the field of sonic studies. My aim is to focus on the overall salience of ambient sound and to better understand how it infuses and pervades everyday urban experience. The world of social sciences increasingly enters into resonance with the art world to contribute to a socio-aesthetic of the sonic world which is still in its very early stages. By listening to social life we may in fact unveil a whole sensory atmosphere, just waiting to be heard, with its rhythms and intensities, vibrations and pulsations, resonance and discordance. The aim is not so much to categorize attitudes or represent phenomena as to describe atmospheres and allow sensations to emerge. Sound sets the tone for situations and territories, without contenting itself with focused listening. If the aim is to develop our faculty for listening to ambient sonorities the price to pay is de-focusing. What is therefore at stake are the fringes and margins of the sonic world, and what lends it consistency.



Keynote link: <http://livestre.am/4Udaa>. Photography: Diana Almeida & Joana Ferreira.

The City Soundscape and the Brain

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Abstract

In this paper we explore the possibilities that portable Electroencephalography (EEG) technology offers in order to understand the behaviour of pedestrians in a specific nocturnal urban aural environment. Previous EEG research conducted in urban design has shown links between environmental cues and mood-enhancement (Aspinall et al., 2013). In the current pre-pilot project we recorded EEG data of stationary participants while they were exposed to urban soundscapes along a chosen pathway. Our intention was to investigate links between these soundscapes and the impact they have on the listeners' emotional state. Analysis of the data revealed probable evidence that the distance between the sound source and the listener generates feelings of discomfort. More particularly proximity of the sound source showed rise in frustration. Based on our findings we propose the design of a responsive brain interface. The interface calibrates the listeners' aural habitat in real time attempting to reduce the pedestrians' frustration levels, thus enhancing their aural experience. The paper finally discusses theories of environmental psychology, neuroscience, sound perception and affective computing.

Keywords: EEG, urban design, urban sounds, emotions, affective design, responsive design

1. Introduction

The emergence of brain representation technologies helps us relate observed behaviours to specific brain activity (Damasio 1999, p.12). Previous studies have shown the implications of electroencephalography (EEG) technology for spatial analysis, revealing evidence on the benefits of moving through parkland (Aspinall et al 2013). On a more speculative level we were involved with the creation of a reactive arts installation, employing mobile EEG technology to explore links between sound-generating electronic devices and a performer's emotions (Kalogianni and Coyne 2014).

Emotions are coupled with the body and its biological processes, which are briefly summarized in happiness, sadness, fear, anger, surprise, disgust, calm and tension. These biological processes include the regulation of the physiological responses of the body, in other words the body's homeostasis (Damasio 1999, p.28). Damasio (1999) defines emotions as classifiers of body and brain responses.

Affect also relates to the body activity of emotions (Wetherell 2012, p.12). This allows us to use the terms "affective" and "emotional" interchangeably (Picard 1997, p. 24).

Architectural phenomenologist Juhani Pallasmaa (2005) has pointed out the importance of the aural qualities of space. Embracing his ideas, we emphasize on the sound qualities of urban spaces, an element frequently neglected by designers. We focus on "acousmatic hearing" running our tests during night hours and obliging our participants to have their eyes closed. As psychologist Ian P. Howard (2012) suggests sounds are more audible during nighttime (Howard 2012). In addition acousmatic hearing shifts the experimentees' attention from any visual stimuli to the aural qualities of space only (Schaeffer 1966 in Kane, 2007).

The study presented here investigates the impact of sounds on stationary pedestrians in a specific urban environment. A location with rich variations in sound qualities and interesting pedestrian networks was chosen, in the center of Edinburgh. Our goal was twofold; we firstly intended to reveal links between sound environments and the emotions they elicit and secondly we used that knowledge towards the development of a responsive, affective computing application which attempts to improve in real-time the aural experience of users in urban spaces. According to Professor of Architectural Computing Richard Coyne (2010), users calibrate and re-calibrate digital devices under different contexts. It is through this dynamic calibration that users tune spaces so that they meet the users' emotional circumstances and needs (Coyne 2010). We adopt Coyne's theory approaching our proposed affective computing application as a calibration device. This calibration device adapts the aural

conditions of the environment in real-time to the users' frustration levels thus, aiming at enhancing the users' experience.

2. Calibrating sound and emotions

Contemporary developments in neuroimaging technologies offer further insight into ways that different environments have an impact on people's brain activity (Lengen and Kistemann 2012). These new techniques provide us with detailed examination of the structure and the function of the brain. Specific brain activities can then be correlated with observed behaviours (Damasio 1999, p.12).

People perceive their environment through its physical aspects and through the emotional responses it evokes (Lengen and Kistemann, 2012). Certain physiological processes are involved in the generation of an emotional response, explains Neuroscientist Antonio Damasio (1999). Such physiological processes include communication among different regions of the brain but also communication between the brain and the rest of the body. This physiological activity is responsible for the production of one's affective state (Damasio 1999, p.46).

The field of environmental psychology is concerned with the emotional responses that physical environments elicit. Psychologists Mehrabian and Russel (1974) claim that any emotional human response can be described by 3 variables; pleasure, arousal, dominance and their variations, regardless of the type of environment or the sense triggered (p.14). Boredom for example can be described as a response, which is low on pleasure, arousal and dominance. On the contrary, excitement registers high levels of pleasure, arousal and dominance. Anxiety is classified as low on pleasure and dominance while high on arousal. Finally relaxation shows low arousal levels but rates high on pleasure and dominance (Thayer 1967; 1970, in Mehrabian and Russell, 1974, p.83). Pleasure, arousal and dominance are also closely associated with the physiological response mechanism of the body (Mehrabian and Russell 1974, p.17).

Physiological signals carry affective information from which we can infer emotional responses. Nowadays wearable EEG technology offers the possibility for physiological signals to be inputted to a computer system (Picard 1997). Aspinall et al (2012) at the University of Edinburgh have conducted one of the first studies that register emotional responses in an

outdoor environment, using low-cost mobile electroencephalography (EEG) technology, the Emotiv EPOC EEG headset. Together with the headset they used Emotiv's Affective Suite application which filters and translates raw EEG signals to 4 affective states: engagement, frustration, meditation and excitement (long-term and short-term). Their research revealed evidence, which supports reduction in frustration levels for walkers that shift from busy urban environments to green spaces.

Using the same portable EEG technology in the current project, we discover links between urban sounds and the frustration levels that stationary pedestrians exhibit. More specifically close proximity to sound sources indicated higher frustration levels. Proximity, distance and territoriality are considered important factors in the examination of the effects of the environment on human emotions (Mehrabian and Russell 1974, p.4).

Anthropologist Edward T. Hall (1969, p.40) explains that people have distance receptors – eyes, ears, nose – and immediate receptors – touch, sensations from skin, membranes and muscles. He specifically differentiates between sound and vision. Visual information, he explains, is more focused and precise while sound information is more vague especially when the stimulus source is at a distance (Hall 1969). In general the larger the distance between the stimulus object and the person, the bigger the decrease in the object's details and the information it carries. Inversely when the distance is minimized the information rate increases (Mehrabian and Russel 1974, p.83).

Hall introduced the theory of proxemics to explain “man's use of space” (1969, p.95). He distinguishes among 3 categories within proxemics one of which, the pre-cultural, relates to physiological responses (Hall 1969, p.95). Men like animals, have a territorial perception of space that defines a range of distances from one another (Hall 1969). According to Hall, there are 4 types of distances observed in people: intimate distance, personal distance, social distance and public distance. Intimate distance describes the closest distance between 2 people; the 2 human bodies can be overwhelmed from the heightened sensory inputs. Personal distance is defined as the distance of “non-contact”; it is a protective boundary, like a sphere, surrounding the organism and protecting her from others (Hall 1969, p.112). Social distance defines the “limit of domination”; it is the boundary, which ranges between the personal distance and the social distance (Hall 1969, p.114). Finally, the public distance is outside of any boundary of interaction. When shifting from one mode of distance to the other, significant sensory transitions take place (Hall 1969).

Spatiality and distance are also important elements in hearing and sound localization. Factors that help us locate sound are head tracking, the first-arriving sound waves or the direct sound waves when being in a reverberant environment. We localize moving

sound sources more successfully than stationary ones (Rumsey and McCormick 2013, p.38). Sound localization entails perception of distance. Distance perception in hearing refers to the distance between the listener and an individual sound source (Rumsey and McCormick 2013, p.39).

The participants during our experiments were obliged to have their eyes closed while listening to the urban soundscapes. This way they experienced acousmatic hearing. Schaeffer describes the acousmatic hearing as a purely auditory experience (1966). Acousmatic sounds shift the attention from any visible or tactile cues of space to hearing only, ignoring the source of the sounds (Schaeffer, 1966). According to French Composer Michel Chion (1994, p.11) acousmatic “indicates a noise which is heard without the causes from which it originates being seen”. When vision is involved in hearing, “much of what we thought we were hearing, was in reality only seen, and explained by the context” (Schaeffer 1966 in Kane 2007). In reflective environments, such as urban environments, the size of the space and the distance between the listener and the surfaces can be determined quite successfully even when using the auditory sense alone (Rumsey and McCormick 2013).

Sound stimuli generate various physiological reactions. When sounds are characterized as sudden, loud, dissonant, or fast in tempo, they cause sensations of unpleasantness or arousal (e.g., Berlyne 1971; Burt et al. 1995; Foss et al. 1989; Halpern et al. 1986, in Juslin et al., 2008). Our perceptual system constantly observes for changes or events in our surrounding environments. Sudden, loud, fast sounds are perceived as auditory changes. These auditory changes evoke high levels of arousal urging the listener to direct their attention to these particular sound stimuli. Finally sensory dissonance initiates a sense of danger (Ploog 1992 in Juslin et al. 2008).

Studies have shown that listeners prefer music stimuli that induce optimal arousal levels (Berlyne 1971 in Juslin et al. 2008). We can infer from that, that the same would apply for sounds in general. Of course, what is considered optimal is not the same for all listeners (McNamara & Ballard 1999 in Juslin et al. 2008) and does not apply to all contexts (North & Hargreaves 1997 in Juslin et al. 2008).

This paper suggests the creation of a responsive, affective computing application, which intends to reduce the pedestrians' level of frustration. Frustration in terms of physiology relates to high levels of arousal (Hokanson 1964). Practically we could say that our application attempts an optimization of the pedestrians' arousal levels, therefore enhancing their aural experience (Juslin et al. 2008). The application runs on a laptop and it communicates via Open Sound Control Protocol (OSC) with the portable EEG headset. When digital devices or portable computers relate to or influence emotions Professor of Media Arts and Sciences,

Rosalind W. Picard refers to them as a type of affective computing (1997, p.3). The affective application we propose calibrates in real-time the sound environment surrounding the pedestrians (Juslin et al. 2008). We think of this application as a digital device, which adapts to the users' corresponding needs in a particular context (Coyne 2010). Professor of Architectural Computing Richard Coyne (2010, p.26) identifies calibration as an on-going dynamic process, which depends on different contexts each time and requires re-calibration when these contexts change. When the tuning involves digital devices, such as our affective brain control interface, then tuning becomes electronic, even automatic. According to hardware hacker Nicolas Collins (2006 in Coyne 2010, p.35) tuning then includes "multiple Stages of amplification, filtering and frequency shifting".

3. Method

In the current project we tested pedestrians' emotional responses to particular urban night-time soundscapes. We chose an urban path in the center of Edinburgh city, the Middle Meadow Walk. The Middle Meadow Walk crosses one of the central parks in the city. It links the University of Edinburgh and the Old Town with quiet south residential areas. The path is surrounded with buildings of the University of Edinburgh, a renovated and newly built high class housing quarter, "The Quarter Mile", with coffee shops, a big supermarket and a hotel. At the bottom of the path a wide green park area spreads. The environment selected combines a variety of different pedestrians such as students, tourists, locals, residents, and shop owners. It is also important to mention that alongside the pedestrian pathway is a long cyclist's lane. We particularly selected this path because of the high variety of the emerging sound qualities and the highly interesting transitions in the aural environments along its way. We focused on 5 nodal locations along the path, which portray these transitions.



Figure 1. Map of the Sound Locations of the study, The Meadows, Google map, Access: 6.6.2014

In the map above you can see the 5 Sound Locations marked on the map. The locations are:

1. Lauriston Place, facing the beginning of the Middle Meadow Walk (MMW)
2. In front of Sainsbury's, a little further down the MMW
3. At the beginning of the Meadows area, near the University of Edinburgh Main Library
4. In the middle of the Meadows
5. At the southern end of the MMW, facing Melville Drive

We did binaural recordings of 2 minutes duration each¹, on these 5 locations. All five recordings were done on March the 30th, 2014 between 8pm and 9pm. Equipment used was a pair of DPA microphones with a windshield and a homemade separator – the microphones were spaced to simulate a binaural recording 'head' – and a Sound Devices 744.

1. Apart from the recording for Sound Location 4 which lasts for 2'30".



Figure 2. Sound Location 1.



Figure 3. Sound Location 2.



Figure 4. Sound Location 3.



Figure 5. Sound Location 4.



Figure 6. Sound Location 5.

3.1. A description of the sound recordings

Sound Location 1

This location is on the top of the path, on Lauriston Place, which is a very central road. The sound environment there is quite noisy with loud cars and buses passing by, people dragging their suitcases to close hotels, others coming out from the local bars and walking their way

home down the Meadow Walk. This location proved to be quite exhilarating in a situation of intentional, concentrated listening. During the recording the amount of traffic noise was quite astounding, amplified by the reflections off house walls, which surround the area. In the spectrogram below, the fairly massive noise floor up to about 1.8kHz is clearly visible, representing the constant rumble of street traffic. Most of the low-revving engine sounds (due to traffic lights nearby, where cars would stop and start) take place at the very bottom end of the frequency spectrum, which display the high sound pressure levels in that range. Generally, thicker broadband peaks (vertical lines) stand for passing cars. The much extended frequency range is due to wheel on road surface noise, and possibly higher engine revolutions. Thinner vertical lines represent the sounds of people walking by closely.

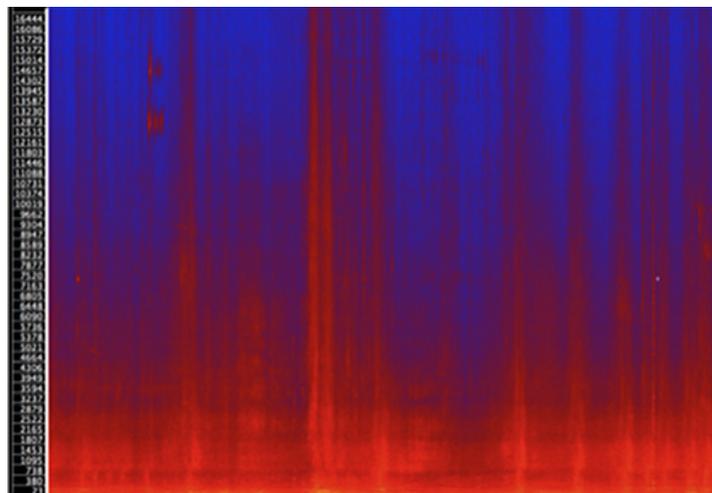


Figure 7. Spectrogram of Sound Location 1.

A closer look illustrates the low-range frequency behaviour of an accelerating engine close by. At the opposite end of the spectrum, we can find some incredibly high-pitched sounds that as well stem from street traffic, such as screeching brake discs, further illustrating how this type of sound occupies considerable amounts of the overall sound space.

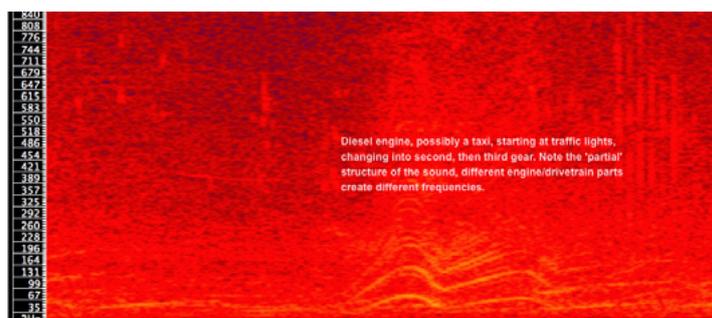


Figure 8. Accelerating engine.

Sound Location 2

Moving further down, from Lauriston Place, just in front of the Quarter Mile residential block and the “Sainsbury’s” supermarket is where our second recording was made. The place consists of a resting point for pedestrians and a small crossroad. The crossroad leads to George square. A square which is surrounded by a complex of buildings that accommodate Schools and administrative offices of the University of Edinburgh, including the Main Library. Mainly students and bikers pass by. In comparison to the previous Sound Location, here we see a distinctly reduced low-end and low-mid noise floor, as roadside traffic sounds become slightly more distant (both in terms of engine and road surface sounds). At the same time, passers-by, either on foot or on bikes stand out much more discretely generating at the same time a broadband frequency range.

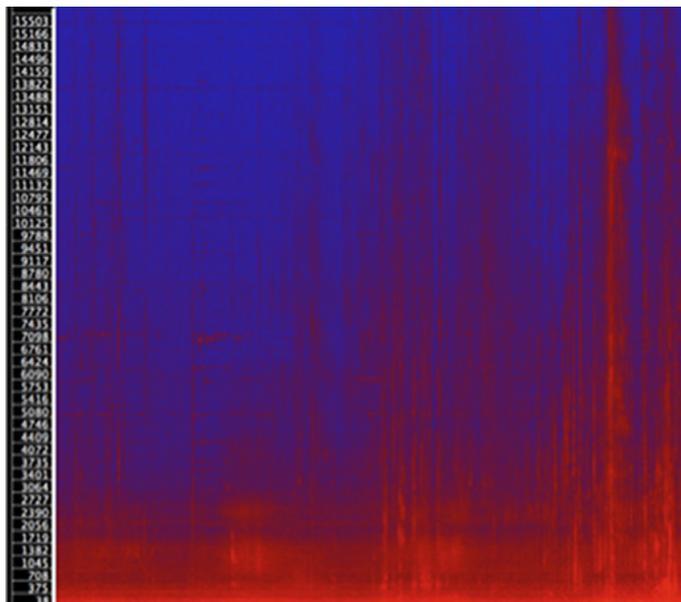


Figure 9. Spectrogram of Sound Location 2.

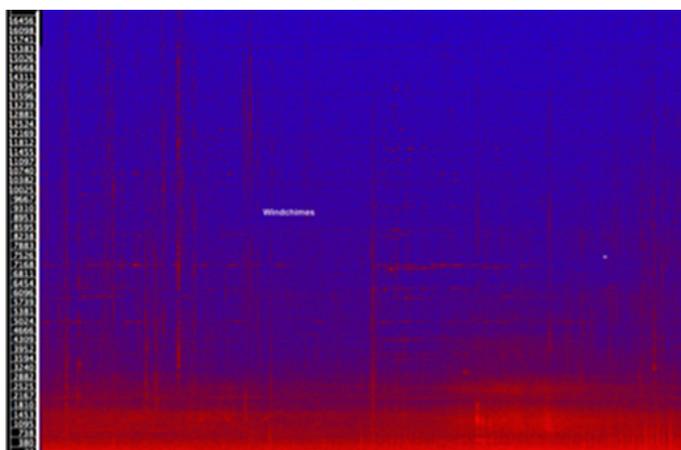


Figure 10. The Wind chimes.

Noteworthy is the sound of wind chimes present in the area, likely coming from someone's balcony. Naturally, they populate the high-frequency range, and while they are not being perceived as an incredibly loud sound source, they do provide a discernible, ever-present background (due to their frequency area not being very populated by other sounds, and their discrete onsets), and they become the 'theme' of the soundscape.

Sound Location 3

This recording was made on the big cross section of the Middle Meadow Walk and the North Meadow Walk, which is adjacent to the back side of the Main Library. As we move further and further lower on our selected path, the ambient environment becomes quieter. The sound of passers-by becomes more discrete over the backdrop of distant traffic noise. While close-up engine sounds are less of a factor here, we now get to hear more wind, as the area is more open and there are less buildings at close proximity. Due to the same reasons the road on the southern end of The Meadows also becomes audible – thus, the noise floor in the spectrogram is quite similar to the previous recording. From this point further, the green park area spreads. Quite dominant is the constant hum of a nearby generator, its fundamental frequency suggesting a pitch between F-sharp and G, which would tally with the European standard 50 Hz AC hum that equates to a G (possibly, the actual fundamental lies here. The other partials indicate (roughly) the pitches D (a fifth above) and G.

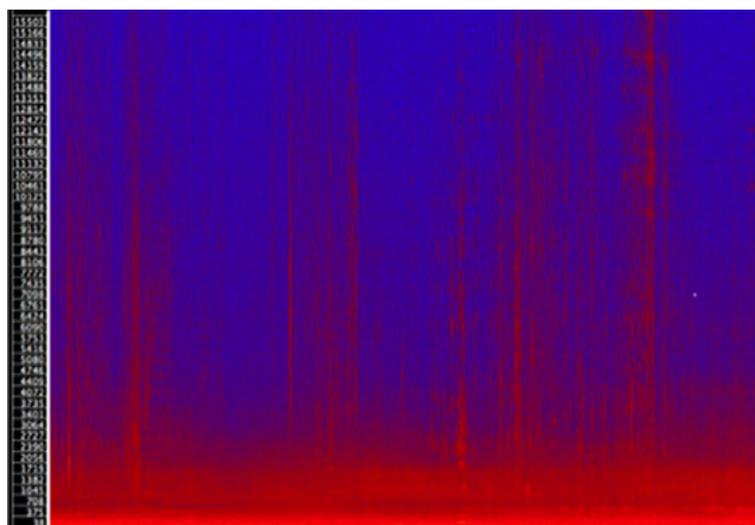


Figure 11. Full frequency spectrogram of Sound Location 3.

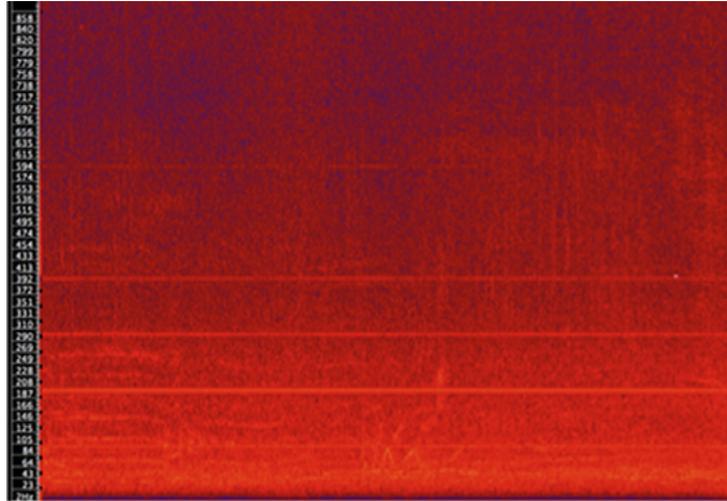


Figure 12. Spectrogram of the humming sound.

Sound Location 4

This sound recording was made in the park zone. This spot is isolated from any near buildings and the number of people that walk by or cycle by is reduced. Here again the spectrogram is less crowded than before. We have again a fairly dense low end and low mid range. That still stems from traffic noise from Melville Road but at a distance. The wind noise is more dominant in this sound file which becomes visible in the upper mid frequencies. With fewer passers-by we get less of the full frequency discreet sound events (thin vertical lines) except for two people fairly near the end of the recording, whose frequency spectra, due to the altogether less crowded soundscape, stand out much more profoundly.

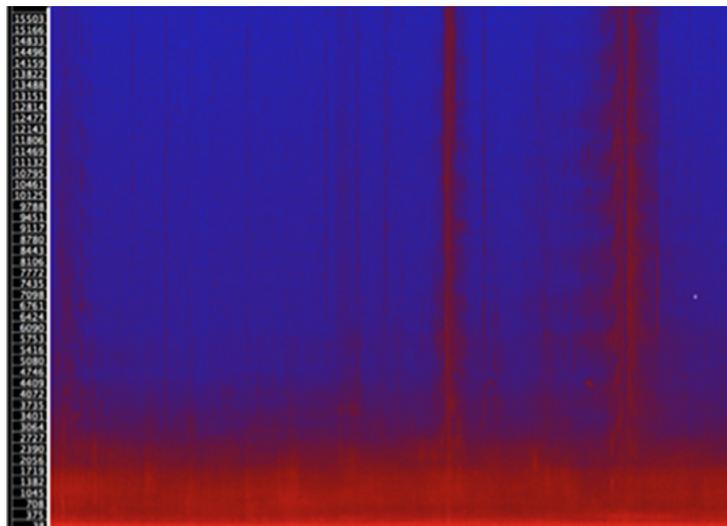


Figure 13. Full frequency spectrogram of Sound Location 4.

Sound Location 5

Our final recorded urban soundscape is on Melville Drive, at the far bottom of the Middle Meadow Walk. Melville Drive is a street, less central than Lauriston place, and with a higher speed limit during the night as the traffic lights adapt to the pedestrians' flow. To us, Melville Drive felt louder than the more crowded Lauriston Place where the generally higher noise floor is likely to lead to some amount of desensitization. Cars pass by speeding and it is worth mentioning that there is a Child Hospital near by, so ambulances are quite common to drive on that road as well. The spectrogram resembles that of Lauriston Place more closely as we're once again near a fairly busy street once again. As there are fewer cars and fewer buildings that would reflect the traffic rumble it's a bit less dense than the Lauriston Place spectrogram. Very few passers-by were present, so we get a fairly pure image of traffic sound here.

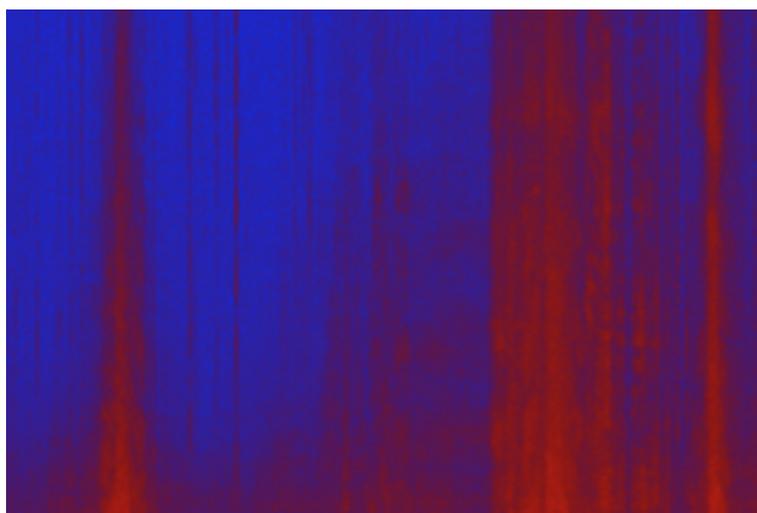


Figure 14. Full frequency spectrogram of Sound Location 5.

3.2. The experiment

Our experimentation consisted of two Stages. During the first Stage we recorded EEG data while participants were exposed to the 5 sound recordings. We then analyzed the recorded data in order to find correlations between the sound characteristics and sound events and the participants' emotional state. During the second Stage of the experimentation we tried to implement our findings and conclusions from Stage one, in order to process the recorded sounds in real-time so that the sound environment calibrates according to the emotional state of the participants.



Figure 15. Emotiv EPOC headset.

More specifically, in Stage one we used the sound recordings and ran pre-piloting experiments in order to test the physiological reactions of the participants to the sounds. Our experiments took place on location –the Middle Meadow Walk– and between 8:00pm and 9:00pm. We measured the physiological responses of the participants using a novel, low-cost commercial portable EEG (electroencephalography) headset, the EPOC EEG headset. The headset has been successfully validated against a medical grade headset (Badcock et al 2013, Aspinall et al 2012, Debener et al 2012).The headset consists of 16 sensors (14 plus 2 reference points), which record the EEG data from the participant’s brain.

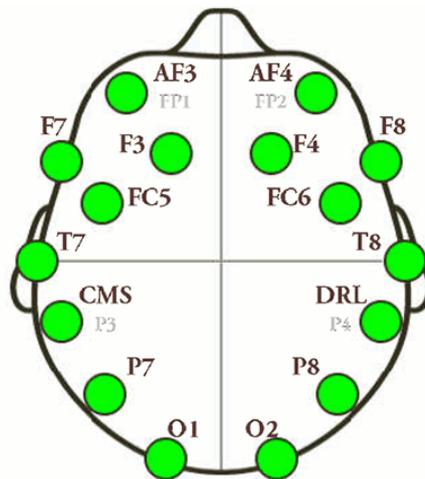


Figure 16. Positions of the Emotiv EPOC sensors².

2. Emotiv EPOC headset sensor map”, last modified December 17, 2009, <https://www.emotiv.com/forum/forum4/topic1232/messages>.

The Research team of Emotiv EPOC has developed the Emotiv EPOC control panel, an application that among other suites includes the Affective suite, which we used for the purposes of our experiments. The Emotiv's Affective suite filters and translates raw EEG signals to four variables indicating 4 affective states: excitement (long-term and short-term), frustration, engagement and meditation. The values range from 0 (minimum) to 1 (maximum).

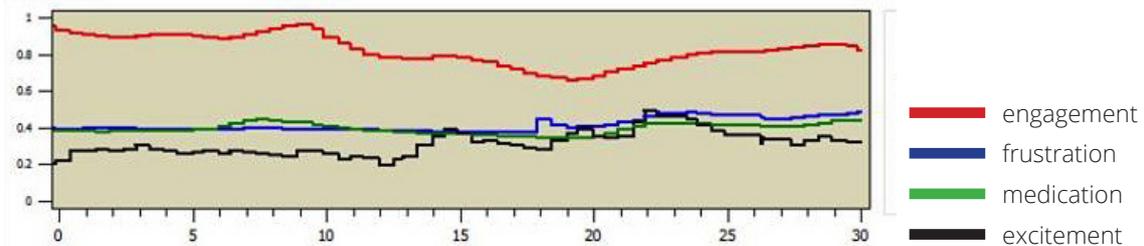


Figure 15. Representation of the affective suite variables.

A USB wireless receiver links the EEG headset to the Emotiv EPOC control panel application. Another application available from the Emotiv EPOC Company, entitled “Mind your OSCs”, sends out the affective suite values for each of the affective parameters, mapped in a range between 0 and 1 via Open Sound Control (OSC) communication protocol. We sent out the OSC messages to a custom application we developed in the visual programming language Processing³ in order to save the affective suite parameters in a txt file.⁴

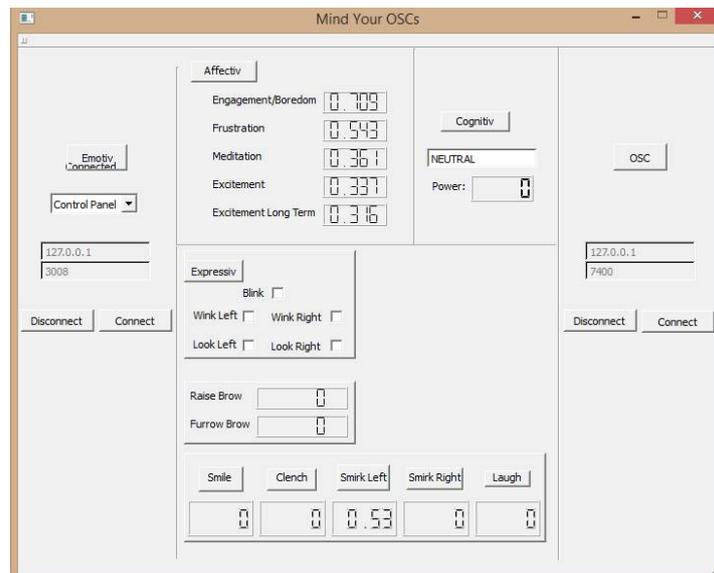


Figure 16. Mind your OSCs reading the affective suite parameters in values between 0 and 1.

3. Open source visual programming language Processing, available at www.processing.org

4. We also recorded raw EEG data using the Research Edition software of Emotiv EPOC, Testbench. However we did not use for the purposes of this paper.

We tested 10 participants for Stage 1 and 4 of them also continued with Stage 2. All participants had their eyes closed. At this point we should note that we accompanied the participants during the experimentation process in order to avoid any health and safety risks.

Our experiments included a laptop, a wireless EEG headset, a pair of earphones and a pair of ear defenders. The users of the experiments listened to the sound recordings and they wore ear defenders to avoid any interference with external sounds.

Below you can see a visual description of the setup that we used.

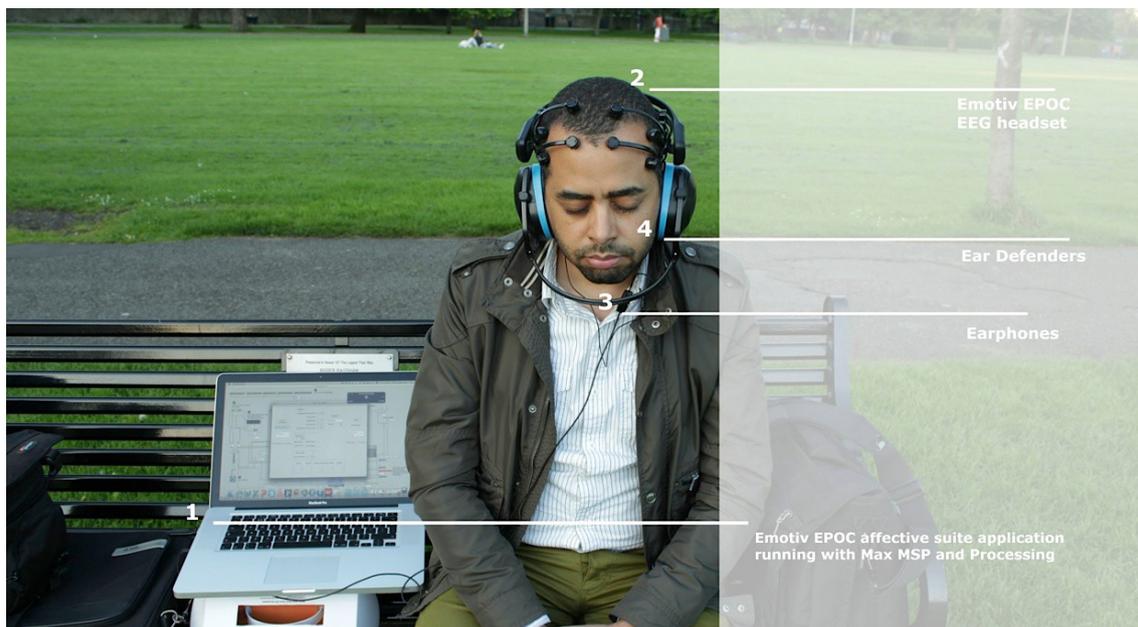


Figure 17. The setup of our experiment.

Running the Stage 1 experimentation sessions and analyzing the data that we retrieved we noticed that frustration levels would rise when sound sources approached the participants. This piece of information formed our hypothesis.

In Stage 2 we decided to focus on the creation of an application that would in real-time adjust the proximity of the sound sources. Our intention was to create a brain interface, which would calibrate the aural environment of the user in real-time, according to the levels of frustration that the user experienced. When the frustration levels would rise, the sound sources would become more distant, in an attempt to reduce frustration. For the purposes of this paper the application processes the pre-recorded sounds in a real-time mode. We then ran a second set of experiments trying to prove our hypothesis.

In terms of the signal flow, two channels of binaurally recorded sound files run through a pair of parallel high-shelving filters (one for each channel) with a variable cutoff frequency starting at 18Hz for the 'dry' signal, into an equal power cross fader and the master output gain control. Parallel to this, the signals of the same two channels run through a stereo convolution reverb, into a single low-shelving filter whose cutoff frequency is fixed at around 450Hz, with a Q of 0.71, into the cross fader, and then into the master output gain control. Regarding the distancing effects, a progressive reduction of high-frequency content – and to a lesser degree low to low-mid frequency content – is implemented as the sound moves further away from the listener (Farnell 2010; Rumsey and McCormick 2013). While high-frequency attenuation is commonly used to create a sense of distance to sound sources in audio engineering, in line with natural frequency behaviour in similar scenarios, the reduction in low and low-mid frequency content alludes to the ground effect where Stage cancellations between direct signals and those reflected from the ground can result in losses in that area of the spectrum (Rumsey and McCormick 2013). At the same time an increase in reflections is employed in order to represent sound distancing in an urban environment (Rumsey and McCormick 2013). The stereo image is progressively narrowing, as precise directional information of sound sources becomes blurred with increasing distance (Raffaseder 2010, p.125). Finally, the overall loudness is reduced, as sound pressure decreases over distance (Farnell 2010, p.80).

Generally, the patch has been designed to work with a variety of (often unpredictable) source material from urban sound environments, and could also work with real-time audio input. The latter has yet to be tested. To achieve as much flexibility as possible, certain compromises had to be made where the fine-tuning of the parameters is concerned; the goal being to strike a good balance in sound behavior for different scenarios.

4. Discussion

The current project investigates links between urban sounds and pedestrians' affective states. In order to pursue our research we set up an experimentation process, which involved 2 Stages. Firstly we ran experiments where participants' EEG data were registered while they listened to pre-recorded sounds from a specific urban path. After the first session of experiments ended we inferred from the results that the proximity of the sound sources

to the listener could be a potential factor for the configuration of the listener's frustration levels. In order to investigate our hypothesis we created at a second stage a responsive brain application, which adjusts the proximity of the sound sources according to the listener's frustration levels. More particularly the sounds distance from the user as the frustration levels of the user increase.

We should underline that our research is currently at a pre-piloting Stage. The number of experiments we ran is limited and the method of data registration is still being formulated in order to become more efficient. So far we have been recording data both directly from the EEG headset in a txt file – which proved to be inaccurate and requires further development – and via an observation method.

4.1. Experiments: Stage 1.

In Stage 1 for every sound recording we marked the EEG affective values first at equal time intervals– at 30", 1', 1'30", 2' for the recordings at Sound Location 1,2,3 5 and at 30", 1', 1'30", 2', 2'30" for the recording at Sound Location 4-.We decided to focus on the affective parameter of frustration, as we were interested in investigating probable factors in the sound environment that cause negative feelings to pedestrians. We also observed that the affective parameter of frustration showed interesting fluctuations in the recorded values when the sound sources proximity oscillated. We then marked the frustration values at time instants, for which we estimated that sound sources were at close proximity to the listener. These instants are as follows:

- a. Sound Location 1: 25", 36", 48", 56" and 1'15",
- b. Sound Location 2: 1' 06", 1'15", 1'45", 1'51", 1'58",
- c. Sound Location 3: 8", 14", 1'12", 1'20", 1'45",
- d. Sound Location 4: 2", 1'09", 1'32", 2'15",
- e. Sound Location 5: 6", 10", 30", 1'18", 1'34", 1'45", 2'

For every participant we calculated their average frustration levels for every sound recording and the total average frustration level for all 5 recordings together, both at equal intervals and at close sound proximity instances. We also calculated the overall total average deriving from all participants for all 5 recordings together again at equal intervals and at close sound proximity instances. We then compared the EEG results between the two different time intervals. The results showed that the frustration levels recorded at close proximity instances were slightly higher than the frustration levels recorded at equal time intervals, reinforcing our initial assumption.

Chart 1. Average frustration levels of each participant for all 5 sound recordings registered at equal intervals and at close proximity time instants.

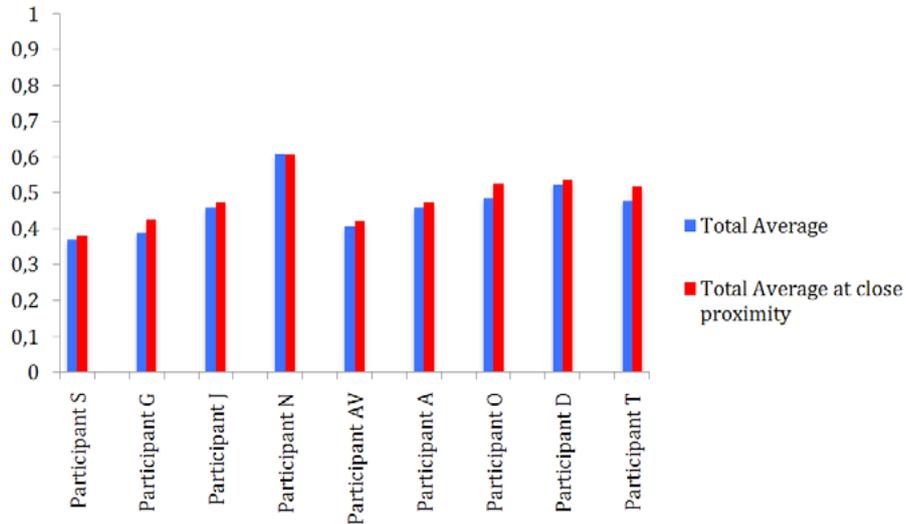
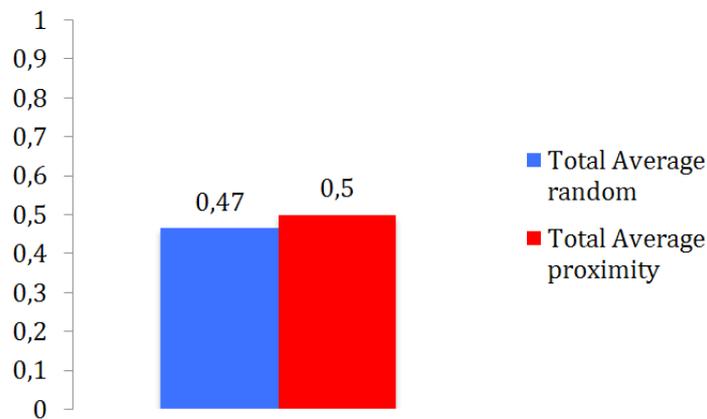


Chart 2. Average frustration levels of all participants for all 5 sound recordings registered at equal intervals and at close proximity time instants.



4.2. Experiments: Stage 2.

We then incorporated this inference regarding links between proximity of sounds and frustration in the development of a responsive brain-controlled application. The application adjusts the proximity of the sounds according to the frustration levels of the experimentee. More specifically, when frustration rises the distance between the listener and the sound sources becomes larger. We then proceeded with testing the application with 4 participants from Stage 1. The setup conditions of the experiments were exactly the same only now the pre-recorded sounds adjusted in real-time to the users' frustration levels. We wanted to see whether distancing the sound scene would reduce the levels of frustration that the experimentees experienced.

We recorded the EEG frustration levels at the same close proximity time instants that we used in Stage 1- Sound Location 1: 25", 36", 48", 56", 1.15", Sound Location 2: 1.06", 1.15", 1.45", 1.51", 1.58", Sound Location 3: 8", 14", 1.12", 1.20", 1.45", Sound Location 4: 1.09", 1.32", 2.15", Sound Location 5: 6", 10", 30", 1.18", 1.34", 1.45", 2'-.

4.3. Comparing frustration levels between Stage 1 and Stage 2

We then compared the EEG frustration values recorded at close proximity instances between Stage1 and Stage 2.

Chart 3. Comparing the average frustration levels of all 4 participants for every sound recording between Stage 1 and Stage 2.

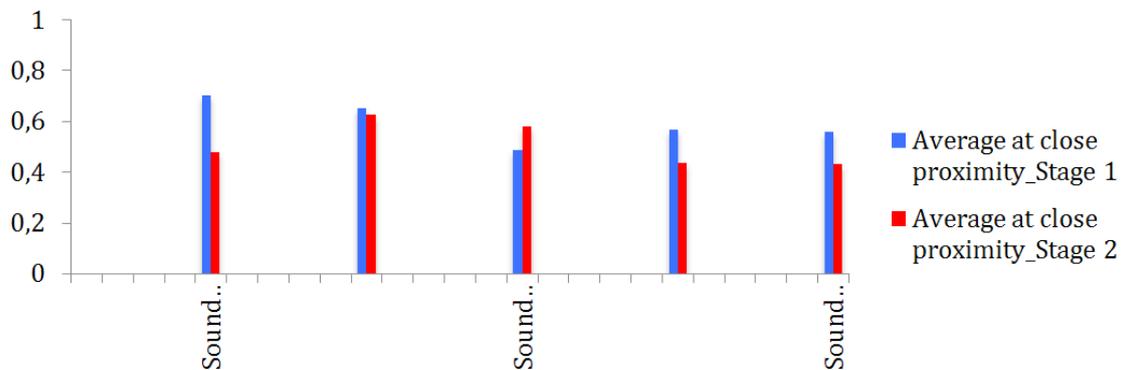
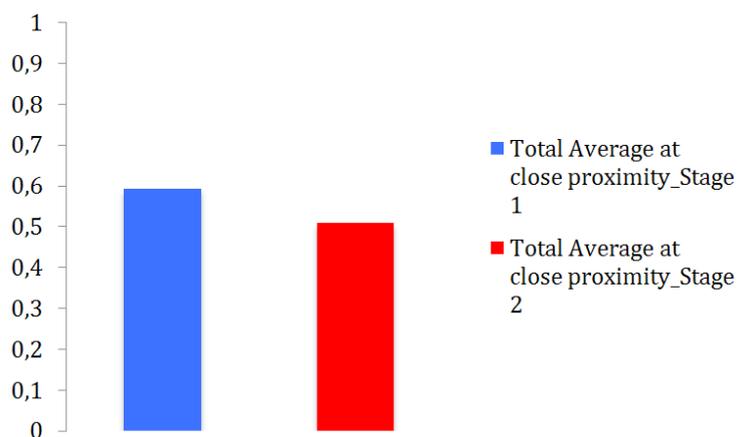


Chart 4. Comparing the total average frustration levels of all 4 participants for all sound recordings between Stage 1 and Stage 2



The results show that on average our application manages to decrease the frustration levels of the participants from a total average of 0.6 to a total average of 0.51. When looking

analytically at each sound recording, we see that the frustration levels for all participants drop when using our application, except for sound location 3 for which the frustration levels increase.

Table 1. Comparing the frustration levels of each of the 4 participants for every sound recording between Stage 1 and Stage 2.

Sound location 1	Stage 1	Stage 2	Change	Sign	Standard Deviation
Participant G	0.402	0.384	Reduction	(-)	
Participant A	0.569	0.391	Reduction	(-)	
Participant O	0.832	0.286	Reduction	(-)	
Participant AV	1	0.849	Reduction	(-)	0.25
Sound location 2					
Participant G	0.519	0.311	Reduction	(-)	
Participant A	0.476	0.793	Increase	(+)	
Participant O	0.604	0.465	Reduction	(-)	
Participant AV	1	0.928	Reduction	(-)	0.29
Sound location 3					
Participant G	0.396	0.325	Reduction	(-)	
Participant A	0.239	0.672	Increase	(+)	
Participant O	0.342	0.563	Increase	(+)	
Participant AV	0.966	0.758	Reduction	(-)	0.19
Sound location 4					
Participant G	0.375	0.361	Reduction	(-)	
Participant A	0.67	0.476	Reduction	(-)	
Participant O	0.371	0.363	Reduction	(-)	
Participant AV	0.86	0.548	Reduction	(-)	0.09
Sound location 5					
Participant G	0.44	0.351	Reduction	(-)	
Participant A	0.416	0.447	Increase	(+)	
Participant O	0.488	0.404	Reduction	(-)	
Participant AV	0.886	0.529	Reduction	(-)	0.08

In table 1 we can see analytically for each of the 4 participants and for each of the 5 sound recordings, the levels of frustration in Stage 1 and Stage 2, whether a reduction or an increase was noted and the standard deviation for the frustration values in Stage 2. We notice that the frustration values drop in most cases for 3 out of the 4 participants. The

experimentation sessions during Stage 1 and Stage 2 were carried out on 2 different days. Thus the discrepancy detected could be interpreted as a random event; participant A could have had high levels of arousal on the day of the experiment, prior to our actual testing. Since the experiments take place on location and taking into account the fact that Edinburgh has cold temperatures during springtime and especially during night hours, this could have been another reason that arousal was high for that specific participant.

Our findings underpin our hypothesis; proximity of the sound sources to the listener affects her levels of frustration. This outcome encourages us to continue our investigation with more participants. However we ran a Wilcoxon signed rank test but the conclusions were inconclusive. A bigger sample size would give us more valid statistical results.

Moreover we would like to note that the EPOC EEG headset would at times not stream data, which then led to repeating the experiment or having a partial data set. Additionally in terms of future improvements, our recording methods were not very accurate when it came to the synchronization of the sound files with the EEG recordings with a divergence of a couple of seconds.

We are also considering improving our Max/MSP proximity adjusting application. Customization of the processing parameters for each sound file separately and application of different urban reverberation settings to the audio signal could improve the proximity and distancing effect that we aimed for.

Most importantly though we should take into account some aspects of “distance hearing” that we missed in our analysis. In order for a listener to determine correctly the distance between the sound source and the auditory event, familiarity with the audio signals is necessary. For example the distance of human speech, which is a sound familiar to us, can be perceived successfully regardless of its loudness. On the contrary when unfamiliar sound sources are away more than 3m from the listener the auditory distance perception depends on the loudness only, generating discrepancies at the identification of the distance of the sound source (Blauert 1997, p.45). This could have led into a misinterpretation of the sound scene and our hypothesis, as proximity might have been confused with loudness.

When people, such as our participants, listen to binaural recordings while deprived of any visual cues they usually “localize the sound scene behind them”, which is an automatic assumption the brain does when not able to see the sound sources (Rumsey and McCormick 2013, p.38). It is also possible that the signal processing applied in our application instead of altering the distance perception, it might have yielded a sense of unfamiliarity to the participants, as the sound scene would suddenly distance from the user’s ears.

5. Conclusion

The current project investigates links between urban sound environments and pedestrians' emotions. We recorded 5 specific locations along a pathway, which crosses a central park of Edinburgh. Participants listened to the 5 sound recordings with their eyes closed while we were tracking their affective state with the aid of portable EEG technology. Our findings showed that frustration levels increased when the proximity of the sound sources was close to the listeners. We used this information for the purpose of creating an affective brain application, which would calibrate the sound environment according to the pedestrian's emotional state. Our aim was to enhance the aural experience of pedestrians in urban environments, by reducing their frustration. Higher frustration levels would cause the recorded sound scene to distance further from the listener. The results indicated that the average level of frustration could be reduced when using our proximity adjustable application. Effectively our application manages to calibrate the aural environment of the stationary pedestrians successfully, enhancing their experience.

We should underline at this point that the experimentation we described in this paper was only a pre-pilot, which we used to get an initial understanding firstly of urban sound perception in relation to emotional response and secondly to gain technical experience for further research. Thus further development and improvement of the experimentation process and the data gathering methodology needs to be considered. A bigger sample of participants would also be crucial for proper statistical analysis.

Understanding how pedestrians respond emotionally to their urban sound environment gives us useful information regarding spatial behavior. As Mehrabian and Russell (1974) wrote, physical stimuli, which relate to feeling pleasurable and aroused, generate behaviours of preference and avoidance in the environment. We could assume then that negative feelings, such as frustration would produce behaviours of avoidance. Predicting and understanding such spatial behaviours could play an important role in the urban design process.

For future work, as Picard mentions in her book on *Affective Computing* (1997), it is important to customize an affective interface to the specific metrics of a person, as it is difficult to assume that all people react emotionally exactly the same way. At this point the use of questionnaires and the implementation of a machine-learning algorithm could help us understand in future developments understand the precise aspects of the urban sounds that reduce or increase frustration. A machine-learning algorithm could also help us calibrate our application to the needs of a particular individual.

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REFERENCES

- Aspinall, Peter, Mavros, Panagiotis, Coyne, Richard and Jenny Roe.** “The urban brain: analysing outdoor physical activity with mobile EEG” *British Journal of Sports Medicine* (2013): accessed June 5, 2014, doi: <http://dx.doi.org/10.1136/bjsports-2012-091877>
- Badcock, Nicholas, Mousikou, Petroula, Mahajan, Yatin, de Lissa, Peter, Johnson, Thie and Genevieve McArthur.** “Validation of the Emotiv EPOC(®) EEG gaming system for measuring research quality auditory ERPs”, *PeerJ* (2013): e38, accessed 10 May 2014, doi: 10.7717/peerj.38.
- Blauert, Jens,** *Spatial hearing: the psychophysics of human sound localization*, (Massachusetts: MIT Press, 1997), 45.
- “Brain Drain”, last modified April 25, 2014, <https://dmsp.digital.eca.ed.ac.uk/blog/braindrain2014/>.
- Chion, Michel,** *Audio-Vision: Sound on Screen*, (New York: Columbia University Press, 1994), 11.
- Collins, Nicolas,** *Handmade Electronic Music The Art of Hardware Hacking*, (New York, London: Routledge, 2010)
- Coyne, Richard,** *The tuning of place: sociable spaces and pervasive digital media*, (Cambridge, Massachusetts: MIT Press, 2010), 20–35.
- Damasio, Antonio,** *The feeling of what happens: Body and Emotion in the Making of Consciousness*, (Florida: Ecco Press, 1999), 12–46.
- Debener, Stefan, Minow, Falk, Emkes, Reiner, Gandras, Katharina and Maarten de Vos,** “How about taking a low-cost, small, and wireless EEG for a walk?”, *Psychophysiology* 49 (2012): 1617–1621, accessed April 2014, 2014, doi:10.1111/j.1469-8986.2012.01471.x
- Emotiv.** “Emotiv EPOC headset sensor map”. Last modified December 17, 2009. <https://www.emotiv.com/forum/forum4/topic1232/messages>.
- Farnell, Andy,** *Designing Sound* (Cambridge: The MIT Press, 2010), 80.
- Hokanson, Jack E., and Michael Burgess.** “Effects of physiological arousal level, frustration, and task complexity on performance.” *The Journal Of Abnormal And Social Psychology* 68 (1964): 698–702, accessed June 2, 2014. doi:10.1037/h0049340.

- Hall, Edward T.**, *The Hidden dimension of space* (New York: Anchor books Edition, 1966), 40–116.
- Howard, Ian Porteus**, *Perceiving in Depth, Volume 3: Other Mechanisms of Depth Perception*. (New York: Oxford University Press, 2012), 281.
- Hyperritual**. “Saving the Emotiv EPOC affective suite data in a text file using OSC”. Last modified January 5, 2011. <http://hyperritual.com/blog/processing-epoc-osc/>.
- Jusling, Patrick N. and Daniel Västfjäll**. “Emotional responses to music: The need to consider underlying mechanisms”, *Behavioural and Brain Sciences* 31 (2008): 559–575, accessed May 20, 2014, doi: <http://dx.doi.org.ezproxy.is.ed.ac.uk/10.1017/S0140525X08005293>.
- Kalogianni, Dorothea and Richard Coyne**. “Thinking about sound and space: Recording people’s emotional responses to spaces. “ In the 32nd eCAADe (Education & research in Computer Aided Architectural Design in Europe) Conference: Fusion - Data Integration at its best, ed. EMine Thompson, 185-194. Newcastle: Northumbria University, 2014.
- Kane, Brian**. “L’Objet Sonore Maintenant: Pierre Schaeffer, sound objects and the phenomenological reduction”, *Organized Sound* 12(2007): 15–24, accessed April 15, 2014, doi: <http://dx.doi.org/10.1017/S135577180700163X>.
- Lengen, Charis and Thomas Kistemann**, “Sense of place and place identity: Review of neuroscientific evidence”, *Health and Place* 18 (2012): 1162–1171, accessed June 6, 2014, <http://www.science-direct.com/science/article/pii/S1353829212000275>
- Mehrabian, Albert and James A. Russell**, *An Approach to Environmental Psychology* (Cambridge: The MIT Press. 1974), 3–83.
- Pallasmaa, Juhani**, *The Eyes of the Skin. Architecture and the Senses*. (New York: John Wiley, 2005).
- Picard, Rosalind W.**, *Affective Computing* (Cambridge Massachusetts: MIT Press, 1997)
- Rumsey, Francis and Tim McCormick**, *Sound and Recording: An introduction* (Abingdon, UK: Focal Press, 2013), 38–39.
- Raffaseder, Hannes**, *Audiodesign* (München: Carl Hanser Verlag, 2010), 125.
- Schaeffer, Pierre**, *Traité des objets musicaux*, (Paris: Le Seuil, 1966)
- Simon Fraser University**. “Sound Propagation”. Last modified 1999. http://www.sfu.ca/sonic-studio/handbook/Sound_Propagation.html.
- Wetherell, Margaret**, *Affect and Emotion: A New Social Science Understanding* (London: SAGE, 2012), 12.

Third-party externals used in the Max/MSP patch

University of Applied Sciences and Arts Northwestern Switzerland, University of Music Basel,

Electronic Studio. “ESB-Objects for Max/MSP, vb.cheby”, <http://www.esbasel.ch/Downloads/MaxMSP-Objects.htm>.

University of Huddersfield Repository, “The HISSTools Impulse Response Toolbox: Convolution for the Masses”, last modified 2012, <http://eprints.hud.ac.uk/14897/>.

University of California at Berkeley Department of Music, “OSC-route”, last modified 2014, <http://cnmat.berkeley.edu/patch/4029>.

“74objects, TapTools”, <http://74objects.com/taptools/>.

```
//Code used during Stage 1 of the experiments in order to register the responses of
//the participants to the original recorded soundscapes
import oscP5.*;
import netP5.*;
float excitement;
float boredom;
float engagement;
float frustration;
float meditation;
OscP5 oscP5;
PrintWriter output;
void setup() {
oscP5 = new OscP5(this, 7400);
// Create a new file in the sketch directory
output = createWriter("testing.txt");
}
void draw() {
int m = millis();
//output.print(m,"excitement="+ " " + " ");
output.println("time=" + hour()+":"+minute()+":"+second() + " " + " ");
output.println("excitement=" + excitement + " " + " ");
output.println("engagement=" + engagement + " " + " ");
output.println("frustration=" + frustration + " " + " ");
```

```

output.println("meditation=" + meditation + " " + ",");
output.println("boredom=" + meditation + " " + ",");
}
void oscEvent(OscMessage theOscMessage) {
// check if theOscMessage has an address pattern we are looking for
if(theOscMessage.checkAddrPattern("/AFF/Excitement") == true) {
// parse theOscMessage and extract the values from the OSC message arguments
//excitement = ceil(theOscMessage.get(0).floatValue()*255);
excitement = theOscMessage.get(0).floatValue();
} else if (theOscMessage.checkAddrPattern("/AFF/Meditation") == true) {
meditation =theOscMessage.get(0).floatValue();
}
if(theOscMessage.checkAddrPattern("/AFF/Engaged/Bored") == true) {
// parse theOscMessage and extract the values from the OSC message arguments
engagement = theOscMessage.get(0).floatValue();
boredom = 1-engagement; //to seperate boredom from engagement
} else if (theOscMessage.checkAddrPattern("/AFF/Frustration") == true) {
frustration = theOscMessage.get(0).floatValue();
}
}
void keyPressed() {
output.flush(); // Writes the remaining data to the file
output.close(); // Finishes the file
exit(); // Stops the program
}

```

Saving the Emotiv EPOC affective suite data in a text file using OSC

Based on the ProcessingEpocOsc1 example by Joshua Madara, available at hyperritual.com/blog/processing-epoc-osc/

[com/blog/processing-epoc-osc/](http://hyperritual.com/blog/processing-epoc-osc/)

Adjusted by Dorothea Kalogianni and Zechao Li for the purposes of Brain Drain (Digital Media Studio Project 2014, University of Edinburgh)

An Introductory Study of the Maltese Soundscape

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Abstract

This is an introductory study of the Maltese Soundscape and is part of an even bigger project. It introduces a soundscape dived with traditional sounds which still echo in the present and mutate and conflict with the modern sounds that are becoming part of the Maltese Sound field. This paper shows the study that has taken place, the results that have been obtained so far and the patterns in the soundscape that are beginning to form. From this initial analysis a number of possible solutions to noise problems have been presented. Further in depth investigations will be carried out and reported.

Keywords: Malta, soundscape, planning, urban, pilot, investigation, results, sound, noise, possibilities

1. Introduction

Looking down at Malta from the bastion walls of the so called 'Silent City' of Mdina the first thing that anyone will notice is that there is one big building sprawl along the east coast of the island. Stretching all the way from the furthest point in the North all across the coast to the very tips of the South of the island visually it looks like one big city fused together. Seeing all this from the heights of these bastions it is hard to imagine that within that urban sprawl exist so many towns and villages, which were once separated from one another. Many of these towns have very distinct characteristics, and it is common for a Maltese person to be proud that they come from their town of birth. Within some of these towns one can still see a strong tie with the past, and at the same time one can also observe the way that towns are shifting towards becoming more modern. This study of the Maltese soundscape is a pilot study to an ongoing bigger project. This paper introduces this work and reports the initial findings in relation to people's perception of their soundscape and how this reflects upon the overall Maltese Sound Field.

The Maltese islands, collectively known as 'Malta', are located in the central Mediterranean region. The Islands are 80km south of Sicily and over 300km north of Libya and almost 300km East from Tunisia. According to the 2011 population census the population of Malta is approximately 418,000 and is the smallest population in the EU. In terms of population density it is the most densely populated country in Europe with approximately 1300 people per square kilometre (Population & Housing Census 2011). The islands of Malta and Gozo are considered, by the European Urban Audit, to be two cities or Larger Urban Zone's (LUZ) which are 'Valletta' which refers to the Island of Malta and 'Gozo' which refers to the island of Gozo (ESPON, Urban Audit, LUZ Specifications, P.54, 2004).

If we go back to the earliest traces of historical sound in Malta then we would have to go back to Neolithic times. There are a number of temples that were built during this period and which are among the oldest built structures in the world. One of these structures is an underground temple now known as the Hypogeum of Hal Saflieni. It is believed that this temple has an ancient acoustic marvel known as the chamber of the oracle. This is a dome like structure carved in limestone which amplifies sound quite radically and can be compared to the acoustic equivalents of Gothic Cathedrals (Blessner & Salter, 2007). Sound is ancient in Malta and the echoes of this underground temple can still be experienced up until this day.

The idea of worship always remained strong on these islands and the echoes and reverberations of praise are replicated in the numerous churches that populate the country.

The traditions of praise extend out onto the village or town feast where the veneration of the town's patron saint is celebrated on a yearly basis. The brass bands march through the streets surrounding the church. Fireworks and the intricate engineering of Catherine Wheels add to the sounds of celebration and shout out praise across the Maltese Skies heralding this important event to the rest of the island. The church bells are the daily keepers of time that linearly follow the passage of the days and nights and mark the times of worship at the different times of the day. The traditional sounds do not all revolve around the religious for we also find that in the older villages certain old practises are still alive with regards to sound signatures that are a demarcation of the past. The narrow, winding streets of the old towns once again sustain an element of echo and reverberation due to their narrowness and the high walls that trap the sounds and give them an ethereal tone due to their long decay times. All signals are amplified and transmitted just like the oracles chamber in the Hypogeum. It preserves the march of time and the signature of all the cultures that have lived on Malta and left their mark. Their physical legacy is evident. Their sonic legacy is invisible yet it is etched in the walls of the caves, the narrow streets, the underground labyrinths of the Catacombs where St Paul spent his time during his stay on Malta. The vector of sound continues through the echo and the original sound source slaps back reshaped or refigured as a spatial object (Labelle, 2010).

The emphasis on the past is essential when describing the Maltese soundscape because this is a country which is strong in its traditions and these traditions do have a strong impact on the way that the place sounds. One clear example of this is reflected in the Maltese language. This is a language that has survived foreign occupation for hundreds of years. Even though Maltese is said to have originated from Arabic, it is also believed that Maltese people spoke Punic during the times when the island was a Phoenician trading port. The similarities between Punic and Arabic meant that it was almost natural for the people of the island to take on this Arabic dialect as their language. Still the exact origins of the Maltese language are unclear and scholars still debate whether Maltese comes from Punic or from Arabic (<http://www.thinksite.eu>). Over the years the language took on many Romantic words from Italian which was the official language for a long time and it also took a lot of words from English and it still is integrating many English words into the language up until this day. English is the second language spoken on the island and is also an official language of Malta along with Maltese. Italian is also spoken by at least 40% of the population (Population and Housing Census, 2011). Maltese is now recognised as an official language of the European Union (<http://www.kunsilltalmalti.gov.mt/legislation>).

There are even parts of Malta where Maltese people do not speak Maltese but speak English instead. This is done intentionally in order to distinguish one's class as being superior to the common, Maltese speaking class. This occurrence is more likely to be found around the North Harbour area and in certain towns in the Central parts of Malta. There are also the different dialects of Maltese that are spoken in different towns. These dialects are more likely to be heard in the older towns. A person from Gozo speaks a different dialect to the person in Siggiewi. For a country of such a small size it is surprising to see how different dialects exist with such little distances between different towns. The dialects exist because in the past the different towns were separated from each other and people worked the land. Malta was mainly an agricultural society (Malta Structure Plan, 1990).

The invention of the motor car brought about many changes to the building and development of the island but it also brought about many changes to people's movement, their levels of interaction and in turn this affected the soundscape. Over time the towns of Malta all started to blend into one big town and the physical boundaries between different places no longer existed except of course in the case of the fortified cities of Valletta, the three cities, Mdina and La Citadella in Gozo. Even though the physical boundaries disappeared but the distinctions between certain towns is still evident in the way that certain old traditions are still prominent in these places whereas in others they no longer exist.

When sitting in a typical town or village square it is easy to listen to all the different characteristics that have become commonplace in the 21st century Maltese soundscape. The town square or 'Piazza' has always been the central place of activity and if a person had to describe the sounds that they could hear while occupying one of the benches situated somewhere along the square then a mixed palate of sounds could be described indicating a mixture of eras. Traditional sounds compete against modern ones, and together they can either please the ears of the listener or irritate. Eliciting these impressions provides a clear indication and definition of the sound of Malta and how its people perceive it. A listener may easily notice the church bells, the conversations of old men occupying benches who discuss and argue for hours, the sounds of music from bars with loud music, the African languages in their plenty in the refugee congregations that now populate many a Maltese town square. The noise of traffic that moans across the space and some cars add further pollution with their booming sound systems whacking out the four on the floor of a 909 kick drum. In summer the Cicada's sing when it is hot and in winter it is the howling wind and the rustling of leaves. The blaring television coming from an open window once a common characteristic but dying out since air conditioning calls for windows to be closed even in summer time.

These are just a few of the examples of the sounds of a typical square but different towns in Malta have different characteristics.

It is also important to note that Malta is a touristic place which attracts about 1 million tourists each year. In 2012 approximately 1,400,000 tourists visited the island when calculated using tourist departures as a form of measurement (MTA Statistical Report, 2013). This shows that Malta's sound field changes on a season basis and that this change is determined by the tourist activity going on the island. Tourism is mainly centred around the central harbour of Valletta, Sliema, Gzira and St Julians and in the north in St Pauls Bay and Mellieha. Places like Mdina and Rabat are visited by many tourists both during the day and at night. The Designation of 'Silent City' attributed to Mdina is questionable when its streets are populated by hundreds of parading tourists on a daily level.

Sound is an ever elusive phenomenon ever changing and yet it occupies space and takes up moments of time. It gives us location, a space for interaction. It gives us a sense of place and a sense of community. It creates a space that belongs to everyone and yet it also imparts a feeling of intimacy (Labelle, 2010). The ever changing soundscape is forever under construction and can be seen as having more to do with civilisation than with nature (Thompson, 2002). The new sounds of the Maltese sound field still share the echoes of the past but are prominent in their own right and influence in their own way. People perceive the soundscape. They audibly interact with their ethno environment in an auditory space. This is sonic construct where dynamic mediation takes place (Chattopadhyay, 2012). They hear and what they hear determines their outlook of their world. What people hear influences their actions (Muller, 2012). Even the native language of a people determines their outlook on the world and determines their perception of space and time (Boroditsky, 2011). That is why in order to study the soundscape one must investigate what it is that people hear. In the case of noise pollution, noise abatement is not the only solution. It would be best to take the positive approach to the nature of the sounds that we perceive and to see whether or not these sounds should be preserved or encouraged (Schafer, 1994). The investigation of sound rests on the perception of what people are hearing.

In order to measure the Maltese soundscape an investigative approach was taken that would look at the memory of sounds that could be recalled, sounds that were still existent and sounds that were new in the persons environment. Classification of these sounds was also important in order to determine how people relate to the sounds of the past and current environment. Hellstrom (2002) describes Amphoux's approach to sonic investigation which also looks at the personal perception of the sonic identity in relation to sonic memory, sonic perception and sonic interpretation.

The sonic memory was needed in order to form a picture of the soundscape of the past. Memory was also required in order to recall the sounds that are being heard now in the present. The meaning of these sounds to the person was essential because it is through that meaning that the participant would be able to classify these sounds. The investigation had to include past and present elements because the Maltese soundscape is made up of both and in order to achieve a good representation of both ages it would also be important to find people who had always lived in their current towns. A participant from Valletta would definitely be needed in this analysis. We refer to Valletta here as the actual fortified city and not as the island of Malta as designated by the ESPON Urban Audit mentioned above. Valletta is the capital city of Malta and the comparison with other towns in the urban sprawl would show significant differences. One may also note from Map 1 that the other towns investigated in this survey are situated around the Valletta centre.

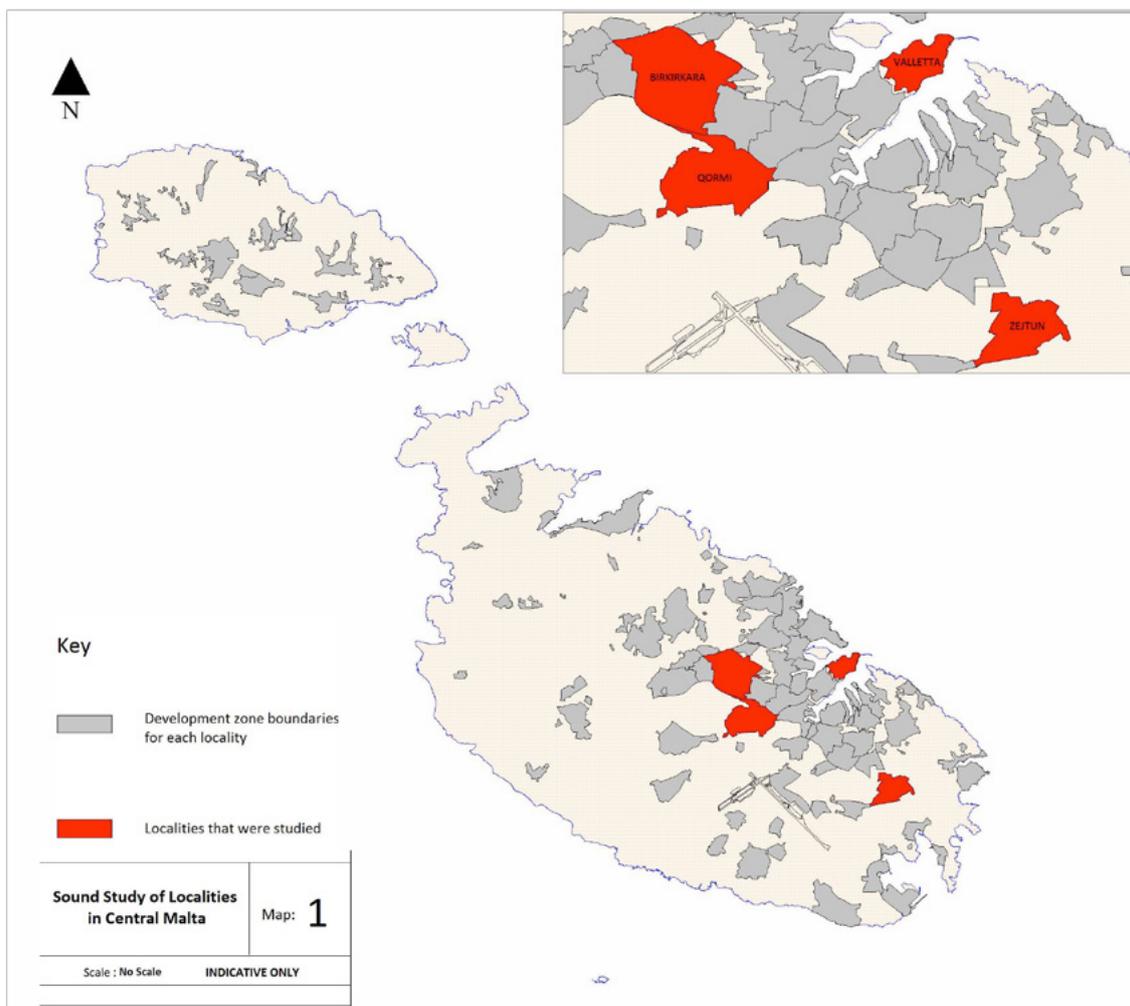


Figure 1. Map 1.

From Map 1 when looking at the island of Gozo (the smaller island) we see a difference in landscape. The urban sprawl of Malta is not replicated on this smaller island. There are still evident boundaries between most of the towns. Gozo is often referred to as ‘the island where time stood still’. This analogy comes from the fact that Gozo has been referred to as Homers island of Calypso where Ulysses stayed for forty years with the nymph Calypso. The reference of Gozo being the island where time stood still also refers to the fact that Gozo is much more traditional than Malta which would also mean that its soundscape will probably sound older than Malta’s. Again, Gozo is a tourist attraction and again we find a seasonal change in the soundscape. There is also local tourism when at certain times of the year thousands of Maltese people go up to Gozo for a ‘weekend break’ and the mass Maltese invasion of Gozo leaves a definite mark on the Gozitan soundscape. Gozo has a population of around 27,000 people (Population & Housing Census, 2011). It is a much quieter and less active island than Malta in the quieter times of the year when tourism is low. Investigations into Gozo’s soundscape will be carried out for the larger study of the Maltese Soundscape which this paper is related to.

2. Method

This is a pilot study to a more extensive study that is currently taking place, only four participants and four localities in Malta have been covered for this paper. In order to gather information with regards to the Maltese Soundscape a number of people were interviewed. Four participants, all from different localities in Malta, took part in these interviews. Towns were chosen according to the availability of people who could be interviewed. All the participants were chosen on the criteria of having grown up and are still living in their respective towns. Participant’s ages ranged from 39 to 54 years of age. The analysis investigated what changes in sound had occurred during this time and what sounds still existed up until this day.

The interview was split into three parts:

- Part one was related to memories of sounds from the past. Participants were asked about memories of sounds from their childhood; the relationship in terms of memories of sounds from their local town square; they were then asked to talk about whether there were any sonic changes that they noticed while they were growing up and that they could recall.

- Part two was about sounds that are heard in the present, were there still sounds from their childhood which currently makes up part of the locality's soundscape? What were the new sounds that they heard in their towns? And finally they were asked which sounds they would preserve, revive, eliminate or reduce in their current town's soundscape.

In parts one and two participants were asked to write down their replies to the various questions that they were asked.

In part three the interviewer asked the participants to categorise each and every sound that they had mentioned in the two previous sections. Table 1 shows how the classifications were made. Repertory Grid Technique was used for the analysis of the findings. This technique introduced by Fransella and Banister (1997) has been used in a number of sound studies. RGT is often broken down into stages of element elicitation, construct elicitation, rating and analysis. For this study the sounds i.e. the elements, have been described by the participants. The constructs used were based on classifications used by Turner and McGregor, 2012.

Elements were rated using the constructs typically on a 3, 5 or 7 point scale (Fransella & Banister, 2004). In this study the elements were rated using a three point scale with the two opposing factors being 1 and 3 for example high pitch and low pitch and the centre scale of two represented the mid range or neutrality in the context of the two opposing definitions.

- The interviews took place at café's, people's homes and even in their offices at their working places. Each interview roughly took between 45 to 50 minutes in duration. Participant's identities were anonymised and ethical consent was requested since they were recounting personal information.

Table 1. Categorising Sound for Analysis

1	2	3
Speech	Neither Speech nor Sound Effect	Sound Effect
Gas	Neither Gas no Solid	Solid
Impulsive	Neither Impulsive nor Continuous	Continuous
Short	Neither Short nor Long	Long
High Pitch	Neither High Pitch nor Low Pitch	Low Pitch
Loud	Neither Loud nor Soft	Soft
Informative	Neither informative nor Uninformative	Uninformative
Pleasing	Neither Pleasing nor Displeasing	Displeasing
Clear	Neither Clear nor Unclear	Unclear

The four participants will be referred to as PT1-4. Each of them is from four different localities (see table 2).

Table 2. Participants & Localities

Participant	Locality
PT1	Valletta
PT2	Qormi
PT3	Birkirkara
PT4	Zejtun

3. Results

3.2. General observations

For the purpose of this paper the two sounds mentioned by all four participants are highlighted in the tables and figures below:

Traffic

Table 3. Traffic.

	Speech / sound effect	Gas / solid	Impulsive / continuous	Short / long	High / low	Loud / soft	Informative / uninformative	Pleasant / displeasing	Clear / unclear
Valletta	3	1	1	3	3	1	2	3	1
Qormi	3	1	3	3	1	2	3	3	3
Birkirkara	3	3	2	3	2	1	1	3	1
Zejtun	3	1	3	3	2	2	3	3	1

The results from the table are represented in figure 1 below:

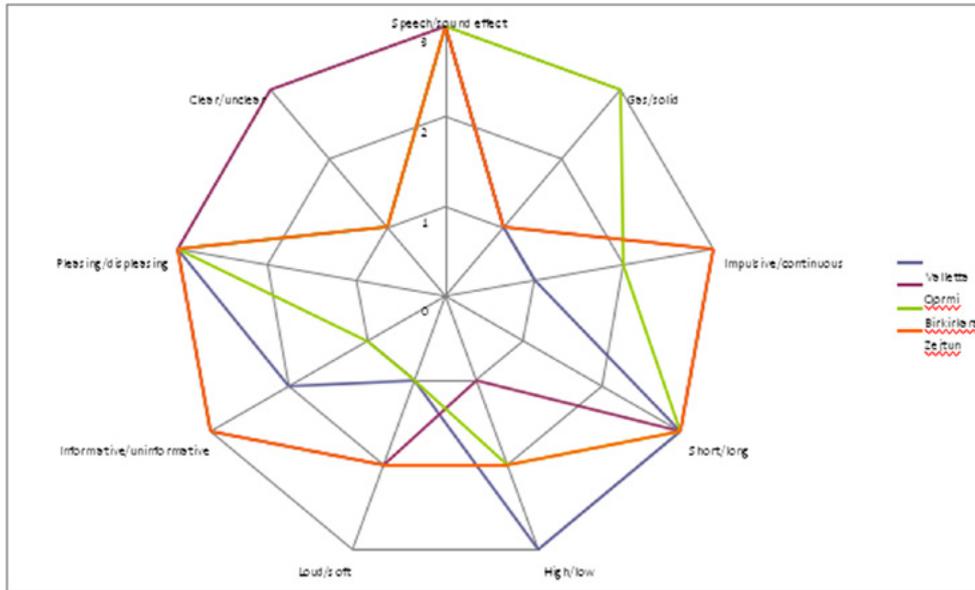


Figure 1. Traffic.

People Talking on the Streets

Table 4. People Talking on the Streets.

	Speech / sound effect	Gas / solid	Impulsive / continuous	Short / long	High / low	Loud / soft	Informative / uninformative	Pleasing / displeasing	Clear / unclear
Valletta	1	3	3	3	2	2	1	1	1
Qormi	1	1	2	1	2	1	3	2	3
Birkirkara	1	1	1	2	2	2	1	2	3
Zejtun	1	2	2	1	2	2	2	3	3

The Results from the table are represented graphically below:

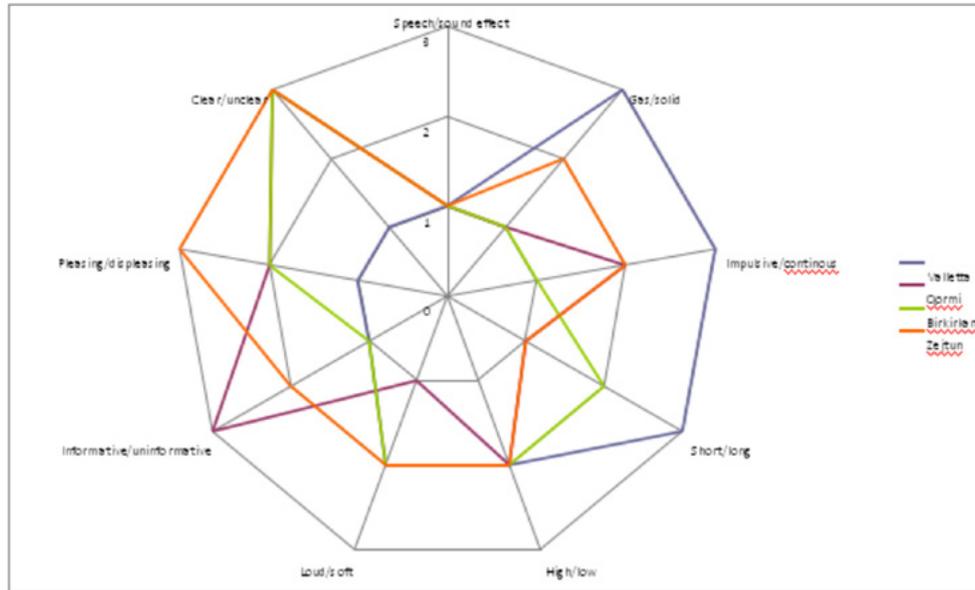


Figure 2 People Talking on the Streets.

The modes for this section were calculated by taking the most frequent classifications of the sounds described by the participants with regards to the sound categories used for the interview.

Three participants categorised most of their sounds as sound effects and gaseous whereas PT2 related most of the sounds as having a speech-like characteristic and PT1 described the Valletta soundscape to be solid in texture.

Sound in Valletta and Qormi were described as being more continuous and in Birkirkara and Zejtun they were seen to be more impulsive. PT3 and 4 seem to perceive sound in instances rather than listening to a continuous soundscape.

In terms of pitch three participants generally categorised sound in their localities as being high pitched whereas PT3 heard them as being more mid range in characteristic. PT3 also attributed the local sounds to be of mid loudness being neither loud nor soft and the other three participants found their sounds to be loud. PT 1 and 3 found their general soundscape to be informative as opposed to PT 2 and 4 who relate to their soundscape as being uninformative. PT1 finds the overall soundscape in Valletta as being pleasing; PT2 and 3 have a neutral attitude with regards to their respective soundscapes and PT4 reflects a more displeasing attitude towards Zejtun's soundscape.

Valletta is a touristic city and a centre for commerce and thousands of people visit the place on a daily basis therefore certain levels of sound are normal for the inhabitant of this

place which PT1 describes positively. The other three participants come from much less active localities that are not touristic. The Fleur de Lys part of Birkirkara is just a residential suburb of a bigger and active town centre. So social activity is much less in this part of the town and this is reflected in PT3's neutral attitude towards the local soundscape. This is once again highlighted when we see how three of the participants related to their soundscape as being clear with the exception of PT 3 who found it to be unclear which makes the soundscape more of a background detail. The residential characteristic of Fleur de Lys means that most activity takes place at home since there are no social attractions or activities in the area.

Table 5. Participant's relation to the sound categories.

	Speech / sound effect	Gas / solid	Impulsive / continuous	Short / long	High / low	Loud / soft	Informative / uninformative	Pleasing / displeasing	Clear / unclear
Valletta	3	3	3	3	1	1	1	1	1
Qormi	1	1	3	3	1	1	3	2	1
Birkirkara	3	1	1	2	2	2	1	2	3
Zejtun	3	1	1	1	1	1	3	3	1

The above table is representing graphically in Figure 3:

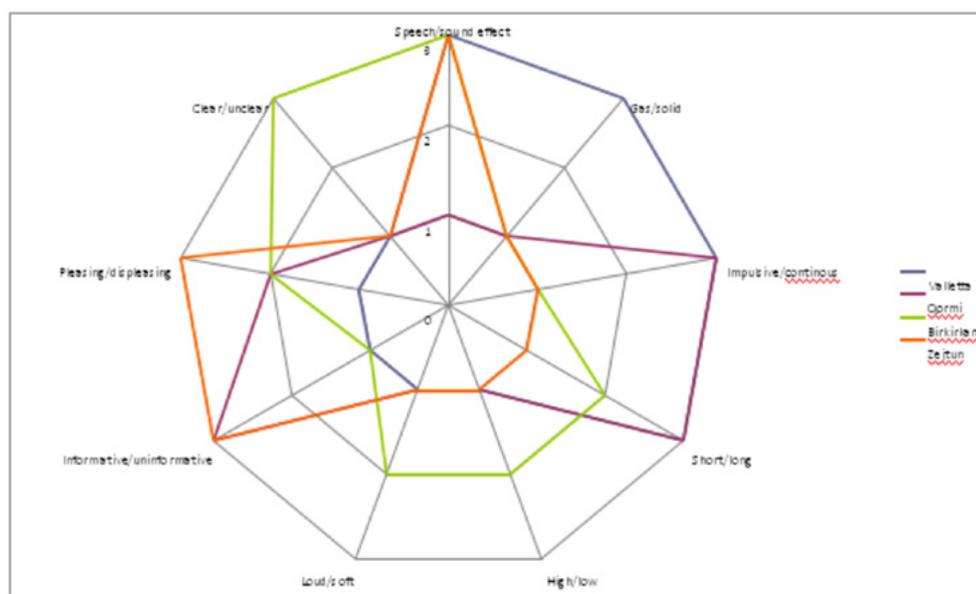


Figure 3. Participant's relation to the sound categories.

3.3. Valletta

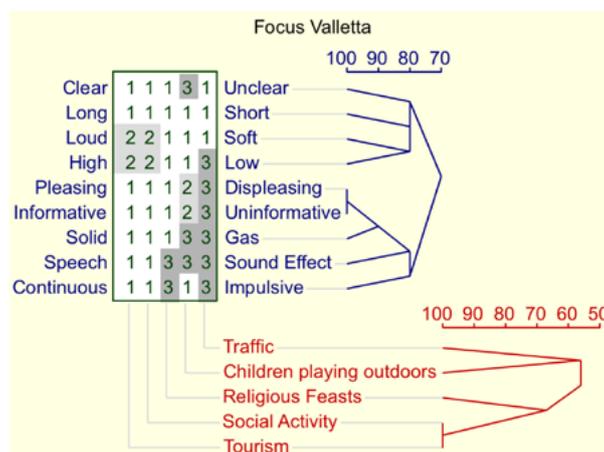
PT1 described how Valletta was a city where people spent a lot of time outdoors and how the city was alive and throbbing with social activity in the past. This all started to change when technology such as television became more widespread and people started to stay in a lot more. Later, the internet and the introduction of air conditioning easily enticed people to stay in doors. PT1, said that whenever there are social activities taking place the majority of attendees are foreigners. PT1 mentioned how Cruise liner tourism has increased over the years and on many days during the week the city is populated by thousands of tourists that come off their cruise ships in order to tour the city. PT1 describes that it is interesting to hear all the different languages from tourists and from the many foreigners that are moving to Valletta.

The commercial, central part of Valletta had become pedestrianised through a gradual process which reduced traffic in these parts of the city. A lot of the traffic in Valletta is related to commercial vehicles and vans working on diesel engines causing low frequencies that go right through windows and walls without difficulty.

The city hosts a number of churches belonging to different patron saints so religious feasts in Valletta are plentiful and well attended. Each feast has its brass band, its array of fireworks and the noise of people who follow the march and who later fill the numerous eating and drinking places in order to socialise. PT1 described how feasts have remained popular and that the attendance has hardly changed since 35 years ago.

PT1 commented that the sounds of the past cannot be relived in this day and age. The dynamic of the city has changed and life and peoples expectations have also changed drastically. With it the traditional sounds that have survived will continue to do so since these sounds belong to Maltese identity but the new sounds will obviously leave their influence.

Table 6. Valletta.



From table 6 we can see that PT1 does not make a distinction between Tourism and Social Activity. These two characteristics are given equal importance and attention. In fact PT1's recount of the Valletta soundscape puts more emphasis and highlighted more positivity on the sounds related to social activity. Even Religious feasts are closely tied to the social activity and tourism where all three elements range at around 65 to 70%. PT1 does not distinguish between Pleasing, displeasing, informative and uninformative sounds. If the sounds are pleasing they are also informative, if the sounds are neither informative nor uninformative then they are neither pleasing nor displeasing.

3.4. Qormi

Qormi is an old locality built by the knights of St John and is situated in central Malta. It is rich in traditional sounds. Like Valletta the people's outdoor activities, especially children playing outside have decreased heavily over the years. PT2 describes playing with about 50 other children on a daily basis on a summer evening. Traffic was a lot less of a hindrance at the time so it was safe for children to play outside. PT2 described how nowadays children are no longer seen playing on the streets. Another factor which has contributed to the demise of this activity is the fact that all the surrounding areas have been built up. 35 years ago the area surrounding PT2's habitat was undeveloped so many of the children could play in the big fields that separated Qormi from the neighbouring town of Zebbug. Nowadays that divide between the two places has disappeared and along with it traffic has increased substantially and children's outdoor play activity has completely disappeared from the towns streets. Again, as in the case of Valletta, PT2 described how modern technology has also contributed towards children staying in nowadays.

PT2 describes how street vendors used to visit the town in order to sell all sorts of goods and that each vendor had his own call or shout and that each one of them could be recognised due to this distinct articulation. This activity has decreased over the years and in certain cases the vendors no longer use their signature calls but have converted to using more modern techniques and have installed loudspeakers on their car roofs and come blazing down the street heralding their arrival and the goods that they are selling. PT2 described the traditional vendor's calls as being of a pleasant nature and stated how these sounds should be revived.

Qormi is close to the national horse racing grounds and due to this the city has a popular tradition related to horse racing and horse ownership. Qormi is one of the few towns where many people still trek down the main roads of the town with their horse and cart. The fre-

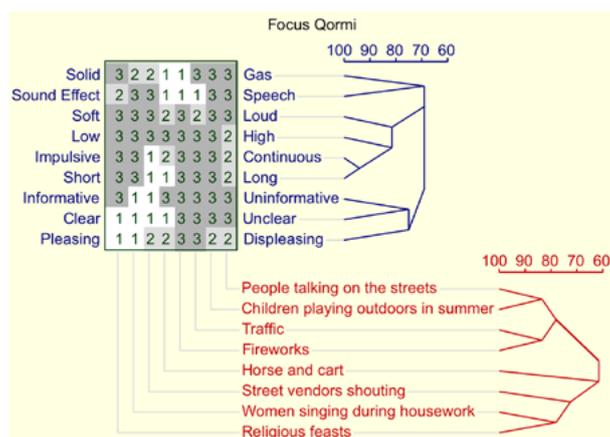
quency of this activity has reduced due to the increase in traffic but PT2 described how this activity is mostly popular on a Sunday morning.

In the past when the women of Qormi carried out their cleaning and housework chores they often sang. PT2 described how it was very common to hear women singing in the alley ways and that they would join in with each others song and how they used to respond each other with verses. The style of singing was described as being the folkloristic style of music known as ‘Ghana’ (Pronounced as ‘Ana’) where the verses are made up spontaneously. This practise has completely died out.

The religious feasts of Qormi are very well attended. PT2 describes the feasts as remaining popular. Fireworks are a major component in the celebrations. PT2 described this as being displeasing and that something should be done with regards to the noise and the exaggerated loudness of such an activity.

The final sound characteristic described by PT2 was related to people talking on the streets. The participants described how the people of Qormi are very loud when they talk and that it was common to hear people from outside and one could follow the conversation from inside ones house. The loudness of the conversation would lead many an outsider to believe that the two people were arguing but in most cases the people hosting the conversation would be pleasantly conversing with each other.

Table 7. Qormi.



According to table 7 PT2 shows a level of displeasure towards artificial sounds such as traffic and fireworks. In the case of the more social activities like PT2 has a neutral attitude towards these sounds as to whether they are pleasing or not. In fact most of the sounds

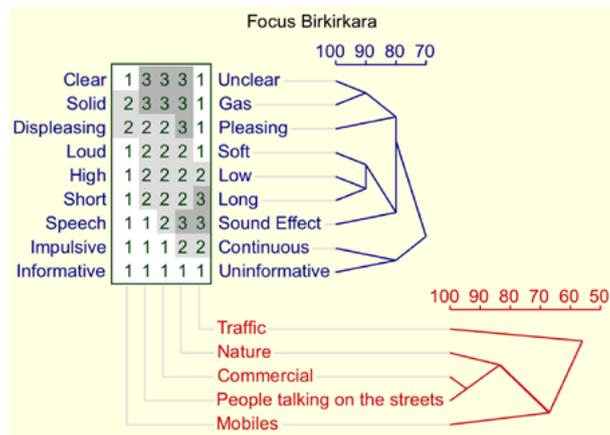
described by PT2 are also seen as uninformative. It is only in the case Street Vendors calling and the no longer heard sound of women singing during housework that PT2 finds or found these sounds to be informative and liquid in nature. It is the more traditional sounds that PT2 finds.

3.5. Birkirkara

Birkirkara has the largest population in Malta at approximately 21,800 people (Population Census 2011). It also has many small towns that are actually a part of it. PT3 comes from one of these smaller towns within Birkirkara known as 'Fleur de Lys'. It has its own Parish church but does not have a town square or a main hub of activity since these are to be found in the main centre of Birkirkara. Fleur de Lys is mainly a residential area and was mostly developed in the late eighties and early nineties. Therefore PT3 describes how prominent nature sounds were in the area 35 years ago. There were very few people living there so there weren't many children playing outside. The noise of traffic was also quite insignificant at the time. The town square was far from PT3's residence so the usual activities described in the other Maltese towns of Qormi and Zejtun did not go on in Fleur de Lys. In the late eighties the area became built up bit by bit and with it increased traffic, social and commercial activity. Still, as an area Fleur de Lys is relatively quiet up until this day. Even though there is a girl's catholic school hosting both junior and secondary students in the area and generates particular noise at particular times of the day, this noise is periodic and mainly concentrated in the early morning and the mid afternoon when the students arrive and leave school. An interesting observation highlighted by PT3 was attributed to the sound of mobile phones and how the environment is populated by the different ring tones of different phone models and how these sounds have become so common place in our present day soundscape. With regards to the religious feast of Fleur de Lys, PT3 described it as being a small parish with a small and low attended feast. The brass band still plays and the odd firework is still lit up and fired into the sky but it is not a proper fireworks display.

PT3 did insist that the lack of nature sounds in the area was displeasing and that something had to be done in order to revive these sounds. It would be difficult since the area has been completely built up and there are no longer any fields or places to plant trees or other vegetation. These sounds were described by PT3 as being pleasing in nature and that they helped a person to relax and to break away from the usual hurly burly of every day life.

Table 8. Birkirkara.



According to table 8, PT3 finds all the sounds to be informative. It is interesting to see that with most sounds PT3 is indifferent as to whether the sounds are actually pleasing or not. This could reflect that PT3 relates to urban sounds in a more factual way. It is then interesting to notice that 90% of the sounds described by PT3 are then perceived as being Unclear. Sounds are mostly perceived impulsively by the participant. It is only in the case of nature that we find pleasing reaction from PT3. With regards to the loudness, pitch or length of the sounds PT3 classifies most of the sounds (between 90 and 95%) in the middle range; it is only in the case of traffic that there are differences in the length and loudness of the sound when compared to the other three categories.

3.6. Zejtun

Zejtun is another old town built in the times of the Knights of St John. It is situated in the Southern parts of the island of Malta and is also an industrial town since the large industrial park of 'Bulebel' is situated just outside the town's limits.

Zejtun's soundscape shares many similarities with the Qormi Soundscape and again we find the calls of the street vendors being a prominent sound characteristic belonging to Zejtun. The outside sound of people talking loudly on the streets is also a shared sound between Qormi and Zejtun and PT4 also describes how loud their conversations are. Again we find a strong traditional following of the local religious feast, well attended and housing the usual activities that have been described with respect to the other towns but PT4 mentions one difference. In the past people used to light up hand held fireworks which used to make a very loud whistling sound, in fact the name in Maltese for these particular fireworks was 'Sufarell' which comes from the word 'sufara' which means 'Whistle'. These fireworks were

dangerous and health and safety legislation faded them out and they are no longer used around the whole of Malta and Gozo.

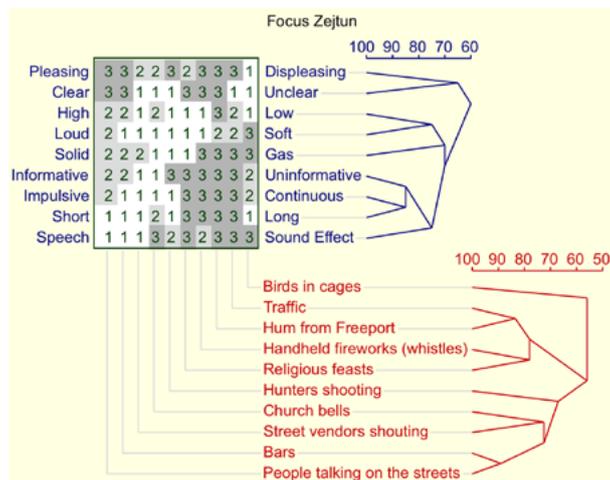
Living next to a church PT4 described the sounds of church bells and how these were heard at different times of the day and how the tunes changed according to the use of the bell. It is interesting how there was a time when the bell was damaged and it took a long time for the bell to be repaired and PT4 describes how one would still hear the church bells even though they were not ringing. A similar case is mentioned in Kanda in Japan by K.Torigoe (P.54, 2002) where she describes that people still heard the town bell after 22 years that it stopped ringing.

Living close to the town square PT4 described the numerous bars and how the sound of these places buzzes around the town square. Again, the level of dialogue is loud and could be quite a disturbance for people living around the area. One interesting characteristic is that some men who frequent these bar take birds in little cages with them and one can hear birds singing amidst the noise of the bar activity. People attending these bars spend most of their time outside due to the 'no indoor smoking' laws. Malta's climate is often pleasant and it is more of a pleasure to stay outside than spend time inside the bar.

Zejtun is also surrounded by country side so it is very common to hear the shots of hunters shooting at birds at various times of the year.

A unique sound described by PT4 in relation to the soundscape of Zejtun comes from the humming of the Freeport which is across from the town of Zejtun in the town of Birzebbugia. PT4 describes how at a younger age this sound could not be heard at the participants, parents place but since moving to another home which is in line with the Freeport that is when the hum was noticed.

Table 9. Zejtun.



4. Discussion

The characteristics of the typical Maltese towns still possess many of the traditional components of their soundscapes. Technological advancements have changed attitudes over time. There is a level of social interaction which is still stronger in the older towns. These narrow streets gave these towns a sense of place (Malta Structure Plan P. 33, 1990).

Both PT2 and 4 spoke about the local dialect that is spoken in their respective towns. PT4 spoke about the fact that with members of family the local dialect is used between them but with Maltese people who lived outside of Zejtun the participant spoke standard Maltese. PT2 affirmed to hearing the local dialect being spoken outside in the street and how most locals used this dialect in their daily speech.

The change in the soundscape of these towns is related to the building and development of the surrounding countryside that was built up to such an extent that these towns now touch their neighbouring towns. Zejtun does still have a particular green belt around it. The outskirts of these towns are now enveloped within major roads with large volumes of traffic. The towns are now connected to the rest of the country and are part of the conveyor belt of modern day activity. It was similar practise in the EU to reduce traffic in city centres around Europe but this has only transferred the problem to the outskirts (Raimbault & Dubois, 2005).

In newer areas like Fleur de Lys in Birkirkara we do not find the traditional aspects of the previously described sounds of the old localities. This is a more sterile environment in terms of traditional sound culture. These are the areas that were built in the post war period where practicality mattered, especially when the population was growing substantially. The focus was no longer the church, it had now become industry. The intriguing and the mysterious winding roads of the old village cores were not practical now that the motor car was becoming a more prominent factor in society (Malta Structure Plan P.33, 1990).

Social activities, places of gathering and the sense of community was not planned and again we see the intervention of the motor vehicle no longer restraining ones social activities to the town centre. The sound of time (Schafer PP. 56 & 56, 1994) with regards to the collective clock of the town centre is missing. This also breaks the ties with the past and breaks the clockwork of the society dancing around the rhythmical pulses of the town clock and the indicating church bells.

The sounds described by PT3 were unclear which means that the perception of the outdoor soundscape was only perceived from indoors. It is a muffled soundscape. The outside world is kept "outside". The inside world becomes a haven, a point where the life of an indi-

vidual or family proceeds from and returns to on a daily basis. It is the centre piece, the fulcrum of their existence (Labelle PP.49 & 50, 2010). The unclear soundscape is still a detail for PT3 pertains to the information that the soundscape relates. The soundscape is a practical detail, a measurement of the outside world and its broader dimensions.

Valletta is different to the other towns that have been studied. Traditionally Valletta is considered to be focal point of activity on the island (Malta Structure Plan, P.62, 1990). During the day it buzzes with the sound of people on the streets. Valletta is a World Heritage City (Grand Harbour Local Plan, P.3, 2002). It is a living museum since a lot of the old buildings still adorn the cities visage and it is also a functioning place as it still carries out its role as the administrative fulcrum.

It has always been a European City housing the many different nations of the Knights of the order of St John in their different Auberge's. Like the home of the person who lives in the suburb whose home is centre point, Valletta reflects the same dimensions to the people of Malta. It is the place where Maltese come together in national events, concerts and activities related to Maltese identity.

Ironically, this busy and bustling city becomes quiet at night. It is only over the past few years that night time activity is starting to pick up and is being encouraged. This is such a change compared to the past where Valletta was even alive at night. During the Second World War Valletta was badly bombarded and many people left the city. Its population continued to decrease after the war, by 1967 the population of Valletta went down by more than a third (Malta Structure Plan, P.46, 1990). In 2011 the population of the city is now approximately 5,700 whereas in 1901 the population was around 22, 800 (National Statistics Office Malta, 2011). This decrease in population has also brought about the decrease in social activity at night because few people are living in the city.

There is also the problem that the residents of Valletta have now become accustomed to having a quiet city at night and are resisting the new music and social activities that are being hosted in the city at night. PT1 spoke about the number of events that have been stopped by the police because of local residents complaining about the noise. PT1 specified how local people didn't complain about the noise of brass bands parading in the streets whenever there was one feast or another in the different parts of the city. They never complained about the exaggerated noise of fireworks. They hardly ever complained when Valletta city football club celebrated a football win and stayed up until 3am singing and dancing in the streets. Yet whenever there is a Jazz or a Rock band playing or some other form of live performance then the residents are up in arms. This reflects the fact that the residents are very much tied to

their traditional sounds or their cultural identity sounds in the case of the football club. Any sounds which do not belong within the soundscape of Valletta are considered to be noise!

The local council, according to PT1, is looking into forming some kind of sound policy for the city that will allow and tolerate musical activities in certain parts of the place until certain times of the night without being hindered by police stopping the activity. The revival of the city at night has been a case of concern for many years and now that something is being done in order to arrange this situation there is much resistance and hostility towards such changes.

Another problem with Valletta is that the city lacks open spaces (Grand Harbour Local Plan, 2002) and they are not potentially utilised. The idea of having a central town square in Valletta does not apply. St. George's Square might be considered to be a main square. This square was renovated some years ago and was no longer used as a car park. A musical fountain was installed in this square and now people can enjoy the benefits of a wide open space.

Malta has the highest per capita car ownership levels in the EU. It amounts to 3 or more cars per household, equivalent to 19.4% (Transport Malta, 2013). Initiatives such as 'Cityhush' (<http://www.cityhush.org>) which is all about creating areas which only allow vehicles of low noise emissions to enter these designated areas. 'Hosannah' (<http://www.greener-cities.eu>) is a holistic and sustainable abatement of noise optimizing both natural and artificial means. Its main aim is to reduce road and rail traffic noise in the outdoor environment. There is no railway system in Malta. These are just two current research programs in relation to traffic noise control that are being carried out by the EU and taken from the EEA technical report No4/2014 on the good practice guide on quiet areas.

Malta is currently trying to arrange its public transport services. Hybrid buses would be worth considering. When running on electric engine these buses would be quieter. Apart from changing the buses it would be worth considering a change in the design of bus stop shelters. Instead of glass, Perspex can be used. It is often used in recording studios in order to create a barrier around drum kits. The positioning of how people are sat down in a shelter can also act as an absorption technique.

The planting of certain trees, the use of certain plants and even the use of barriers can actually be introduced in order to reduce noise from these main roads. Effective sound barriers have to be made out of non porous material and having a minimum density of about 20Kg/m² (4 lb/ ft²). Materials used would include pre-cast concrete, steel, composition boards and wood (Paige, n.d.).

Products like 'Acoustifence' (http://www.acoustiblok.com/acoustical_fence.php) actually vibrate at frequencies ranging from 50Hz and below which turns the sound energy into

mechanical movement and internal friction energy. Mounds of land can be created in order to absorb traffic noise and at the same time have a pleasing appearance.

In the narrower streets of Maltese localities other techniques of sound deflection can be put into effect. The angle of shop shutters can be slightly diagonal in order to push sound upwards away from the street. This can also be done with windows, balconies and shutters. Irregular surfaces can be integrated into design and aesthetically pleasing diffusers can be made and placed on walls.

In the case of traffic noise in wider areas like town squares or public open spaces water fountains are effective for reducing traffic sound and the sound of water is a positive quality. Gentle water sounds of low frequency content and low flow rates that sound like natural streams are the most preferred (Galbrun & Ali, 2012). Fountains can also be aesthetically pleasing. Local councils might even want to consider reducing the speed limit in town squares and in roads leading to it. This will not only reduce sound levels of traffic but will also be a safety measure that will protect the people using the town square. Street furniture, plants and outdoor barriers can be used in order to absorb or diffuse sound.

Tree planting and the introduction of various plants could also encourage birds to flock in the town centres creating a particular sound field of bird song. It would be especially encouraging to use bird boxes in order to attract local bird life. Birds such as the 'Blue Rock Thrush', known in Maltese as 'Il - Merill' which is the national bird of Malta is a cavity nester and so bird boxes are more practical at attracting such birds. There is an extensive list of birds that have been recorded in Malta, where about 392 species of birds have been recorded (<http://www.birdinginmalta.com/birdspecies.htm>).

The installation of certain sculptures (not sound sculptures) can also be used in order to absorb or diffuse sound.

The town square can be tuned in a particular way in order to give it a particular sound signature and it is with these above mentioned techniques that this can be achieved. There is also the option of using soundscape recordings in order to create a particular ambience or sense of place. In a study conducted by Turner & McGregor et al, (2003) it was proven how a sense of place can be favourably replicated when they reconstructed the sound of a computer centre elsewhere and obtained positive results. It would be interesting to create intimate sub spaces within the public space (Hellstrom et al. 2008), to create a particular ambience which immerses people into a soundscape consisting of sounds of nature for example. This would be more enhanced if visual cues, related to the soundscape, are introduced within the space since visual stimulus makes auditory perception more credible (Marry, 2011).

Local Culture Authorities and local councils could help fund Sound Sculptures. Sound Sculptures and overall enhancement of worn down areas could be utilised in alley ways too. In the Tongsul Alley in Odong-dong in Masan Hapcho district, Changwon City Korea has been turned into a 'Sound Alley'. Walls were painted, paving was replaced, lighting was enhanced and sensors were installed so that when people enter the alley they trigger off popular Korean songs (The Changwon Times, December 2013). These initiatives act as a platform for artists.

In Urban areas the sound of Air Conditioning units has become common place in Malta and this noise can easily be reduced by putting diffusers on them.

The tuning of a place is also something that needs to be taken into consideration by Urban Planners and architects, especially when planning whole areas for development. In order to do this Urban Planners have to add another dimension to the measurement of sound which is currently only being investigated by looking at maximum weighted noise levels. The Urban Planner has to take a more holistic approach and has to study the human experience and perception of noise (Raimbault & Dubious, 2005). The semantic meaning of sounds plays an important role in soundscape studies. The Urban Planner must also consider that there are no practical solutions which comply with the varied preference towards noise for all residents (De Ruiter P.32, 2005), sound tolerance is subjective. The difference between sound and noise is emotional (Davies et al. 2012). The practise of planning and design is only emphasising the visual aspect and is not taking the other senses into consideration especially with regards to sound (Hedfors, 2003). Cogger & Marshall (2013), Hall et al. (2011) and Raimbault & Dubois (2005) all criticize the approach taken by Urban Planners to only tackle the noise problem by applying noise abatement and by only measuring noise using the A weighted Sound Pressure Level. This approach is too narrow. The semantic properties of sound and how they are perceived by people is an essential ingredient in designing an area with ecological sound tuning that will improve the quality of life of the people using that area for whatever purposes. Education is essential and does not only appeal to Urban Planners and architects. The general public has to be taught about the way they listen to their environment. That is why certain awareness campaigns have to be established. Sound walks around towns, the country side and other places of interest are an effective way of making people more aware of their sonic environment. Sonic Art, Sound Sculptures and workshops about different sonic environments all help in making people more aware of the sound field that they experience around them.

It would also be significant if traditional Maltese sounds are actually sponsored and preserved. Sponsorships would also be beneficial when it comes to fixing old church bells for

example. Sponsorship also helps in the case of re-enactment of historical periods of Maltese history, for example, on a daily basis the re-enactment of the firing of the cannons at mid-day in the Grand Harbour from the 'Upper Barrakka' gardens in Valletta, which was a ritual performed during the times of British colonial rule in Malta has now become commonplace.

5. Conclusion

From this pilot study a picture of the Maltese Soundscape is already starting to form. Information obtained from the four participants, from the four different localities on Malta, sound characteristics pertaining to the traditional and the modern are becoming more evident and certain patterns are starting to show. It will be interesting to see how the results from further studies on the Maltese Soundscape will evolve in the future.

REFERENCES

- National Statistics Office Malta**, 'Census of Population and Housing 2011', (Valletta: National Statistic Office Malta), 2014, xiii
- Anne Bretagnoll et al.** 'Luz Specifications (Urban Audit 2004) Technical Report, (Europe: ES-PON, 2013), 54
- Barry Blesser and Linda-Ruth Salter**, 'Spaces Speak Are You Listening? Experiencing Aural Architecture', (Cambridge: MIT Press, 2007) 82–93. 'The Sound Studies Reader' Edited by Jonathan Stern, 186–196, (New York: Routledge, 2012)
- Brandon Labelle**, 'Acoustic Territories/ Sound Culture and Everyday Life', (New York: Bloomsbury, 2010)
- 'The Language Question', last modified June 6, 2014, http://www.thinksite.eu/userfiles/file/Content-PDFs/4_The_Language_Question.pdf
- 'The National Council for the Maltese Language', last modified June 6, 2014, <http://www.kunsilltalmalti.gov.mt/legislation>
- Planning Services Division**, 'Malta Structure Plan' 1990, (Valletta: Planning Services Division, 1990)
- Malta Tourism Authority**, 'Tourism in Malta', 2013, (Valletta: Malta Tourism Authority, 2013)
- Emily Thompson**, 'The Soundscape of Modernity: Architectural Acoustics & the Culture of Listening in America 1900 – 1930', (Cam-

- bridge: MIT Press) 1–12. ‘The Sound Studies Reader’ Edited by Jonathan Stern, 186–196, (New York: Routledge, 2012)
- Chattopadhyay, Budhaditya.** 2012. “Sonic Menageries: Composing the Sound of Place.” *Organised Sound* 17 (03) (January 11): 223–229.
- Muller, J.** 2012. “The Sound of History and Acoustic Memory: Where Psychology and History Converge.” *Culture & Psychology* 18 (4) (December 11): 443–464.
- Boroditsky, L.** (2011). “How language shapes thought.” *Scientific American*, 304(2), 62–65.
- R. Murray, Schafer.** 1994. ‘Our Sonic Environment and the Soundscape. The Tuning of the World’, (New York: Destiny Books, 1994)
- Bjorn Hellstrom,** 2002, “The Sonic Identity of European Cities.” (Finnish Society for Ethnomusicology, Dep. Of Art, Literature and Music)
- Fransella, F., & Bannister, D.** (1977). *A manual for repertory grid technique*. New York: Academic Press.
- McGregor I, Turner P** (2012) “Soundscapes and Repertory Grids: comparing listeners’ and a designer’s experiences.” In: P Turner, S Turner I McGregor (Eds) *Proceedings of the European Conference on Cognitive Ergonomics* (ECCE 2012). Edinburgh
- Fransella, F., Bell, R., & Bannister, D.** (2004). *A Manual for Repertory Grid Technique* (2nd ed.). Chichester, UK: John Wiley & Sons.
- K Torigoe,** 2002, ‘A city traced by soundscape – Soundscape Studies and Methods’. (The Finnish Society ..., 2002) 54
- Raimbault, Manon, and Danièle Dubois.** 2005. “Urban Soundscapes: Experiences and Knowledge.” *Cities* 22 (5) (October): 339–350.
- Planning Authority,** 2002, ‘Grand Harbour Local Plan’, (Valletta: Planning Authority, 2002)
- European Environmental Agency,** 2014, ‘Good Practice Guide on Quiet Areas’, (Copenhagen: European Environmental Agency, 2014)
- Paige, Tom, and P Eng.,** last modified June 6, 2014, ‘Outdoor Noise Barriers: Design and Applications Design Considerations Structural Issues Case Studies.’ http://www.enoisecontrol.com/related_articles/outdoor_noise_barrier_wall.pdf.
- Acoustifence, last modified June 6, 2014 http://www.acoustiblok.com/acoustical_fence.php
- Galbrun, L, and T T Ali.** 2012. “Perceptual Assessment of Water Sounds for Road Traffic Noise Masking” (April): 2153–2158.
- ‘Birding in Malta’, last modified June 6, 2014, <http://www.birdinginmalta.com/birdspecies.htm>
- Turner, Phil. McGregor, Iain. Turner, Susan. Carroll, Fiona.,** 2003. “Evaluating Soundscapes as a Means of Creating a Sense of Place” (July): 6–9.
- Hellstrom, Bjorn, Nilsson, Mats, and Peter Becker.** 2008. “Acoustic Design Artifacts and Methods for Urban” (July): 422–429.
- Marry, Solène.** 2011. “Assessment of Urban Soundscapes.” *Organised Sound* 16 (03) (November 15): 245–255.
- The Chang Wong Times,** 2013, ‘Odong-dong Tongsul Alley transformed into Sound Alley’

- (Changwon City: The Chang Wong Times, 2013)
- Ruiter, E Ph J De.** "Urban Traffic Noise Impact Zones as Brown Fields" 84: 951-958.
- Davies, William J., Mags D. Adams, Neil S. Bruce, Rebecca Cain, Angus Carlyle, Peter Cusack, Deborah a. Hall, et al.** 2013. "Perception of Soundscapes: An Interdisciplinary Approach." *Applied Acoustics* 74 (2) (February): 224-231.
- Hedfors, Per.** 2003. "Sonic Tools for Landscape Architecture."
- Cogger, Rachel, and Nancy Marshall.** 2013. "Listen Up Planners!" (Cogger 2011): 1-10.
- Hall, Deborah a., Amy Irwin, Mark Edmondson-Jones, Scott Phillips, and John E.W. Poxon.** 2013. "An Exploratory Evaluation of Perceptual, Psychoacoustic and Acoustical Properties of Urban Soundscapes." *Applied Acoustics* 74 (2) (February): 248-254.

Cairo, a Possible Aural Comfort: Factors Affecting the Cairene Perception of Soundscape

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Abstract

An urban open public space represents the most complex element of any city, due to its multitude of embedded sounds, and noises. Public spaces impose a great influence on people's comfort and consequently the general well being. During planning and design process, Architects generally and especially in Egypt cast more attention to the visual aspects rather than the sensual dimensions of public spaces. Since Cairo represents one of the most overcrowded and largest capitals worldwide; its soundscape resembles the richest and most diverse that could be experienced. Its importance is fueled up by the multitude of activities, and the cultural demographic diversity. An analysis of the Cairo soundscape was conducted; a questionnaire targeting Cairene inhabitants was carried out revealing factors affecting their soundscape and aural experience, as well as psychological and physical parameters affecting the perceptual experience. The paper outlines a mitigation matrix and measures that are not only physical but also related to the spiritual perception of the soundscape for Cairene inhabitants.

Keywords: Cairo Soundscape, Aural comfort, Noise

1. Introduction

Life in the city can be a very stressful experience. Urban soundscape is one of many aspects of a city's urban environment that affect the lives of citizens. The problem is, urban planners and urban designers seldom take into consideration the aural aspect of a city planning and design, which leads to the creation of uncomfortable urban open public spaces that hinder the well-being of the inhabitants.

There are various factors that affect soundscape perception in urban settings. P. Jennings and R. Cain defined four factors that affect soundscape perception, which are 'Activity', carried out by the listener, 'Demographics', 'Time' and 'Space' (Jennings & Cain, 2012). These four factors will be used for general guidance upon analyzing the case studies presented in this paper. Moreover, D. Glass and J. Singer defined seven factors that effect soundscape perception and the degree of annoyance caused by the heard soundscape. These factors are (Glass & Singer, 1972):

- Volume: sounds that are higher than 90dB psychologically disturbing (long-term exposure might lead to hearing loss).
- Predictability: sounds that have low predictability levels are frustrating.
- Perceived Control: if a person feels that he/she can control a specific sound, it becomes less irritating.
- Necessity: if a sound is perceived as unnecessary, annoyance level increases
- Concern: annoyance is increases if a person believes that the people generating the sound are not concerned about the well being of others.
- Perceived Health Risks: the fear of the occurrence of damage to one's health due to the generated noise increases annoyance.
- Satisfaction: a general discontent with the neighborhood or place will increase noise annoyance.

These seven factors are the base upon which a questionnaire study is built to assess the Cairene soundscape quality and perception.

In an old metropolitan city like Cairo the soundscape problem has become increasingly annoying and its negative effects on the lives of Cairenes have become prominent. Consequently, a Soundwalk exercise and an online questionnaire have been carried out to assess the quality and the degree of annoyance of the Cairene soundscape from the perspective of Cairo's residents, and to establish rules and mitigation strategies to enhance the soundscape of the city.

2. Methodology and Analysis

The assessment of Cairo's soundscape was carried out in two parts. First, a pilot case study, which consists of a Soundwalk exercise, carried out by a group of 63 architecture students in four major squares in Cairo. Second, an online questionnaire that assesses the Cairene soundscape targeting the residents of Cairo.

2.1. Soundwalk Exercise

The students were divided into 18 groups of 3–4 students. The four squares are El-Tahrir Square, Talaat Harb Square, El-Gomhoreya Squares and El-Opera Squares (Figures 1 and 2). The selection of the squares was based on their location in Cairo's central business district (CBD), the diversity of noise levels present in the four squares and the fact that they are in close proximity to each other, which makes them suitable for a Soundwalk. The students were asked to fill a simple questionnaire after walking in the squares.

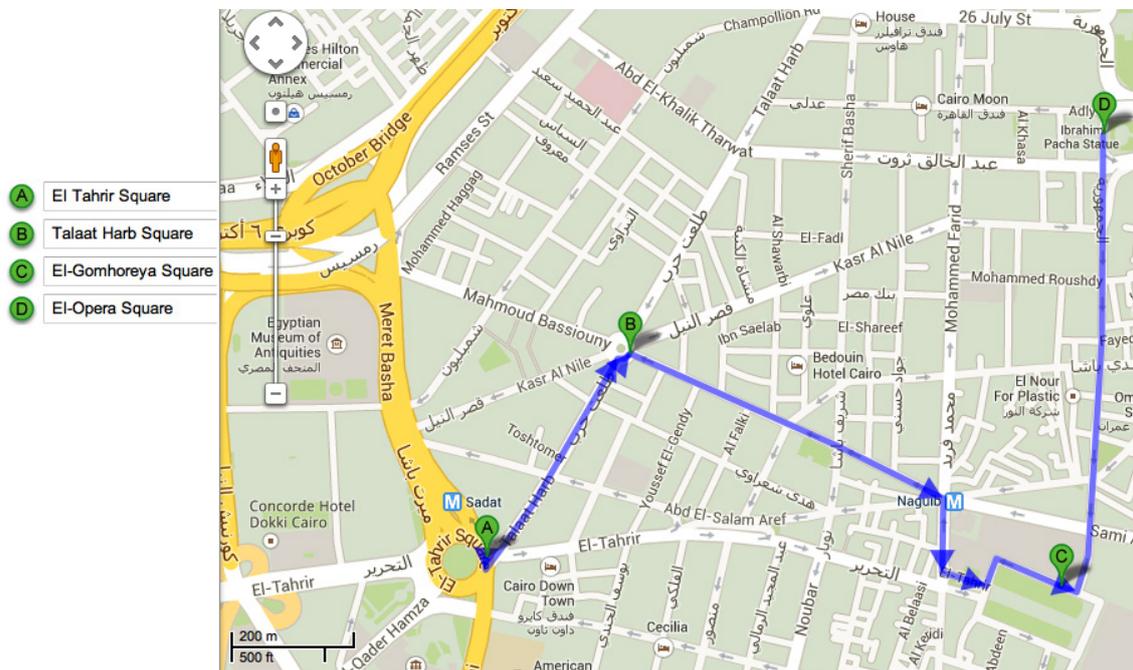


Figure 1. Soundwalk Route.



Figure 2. Soundwalk Squares.
a) El-Tahrir b) El-Opera c) EL-Gomhoreya d) Talaat Harb

According to the results of the Soundwalk, the soundscapes in three of the four Squares created a problem and hindered social activities. These three squares are El-Tahrir, Talaat Harb and El-Opera, which, are very busy squares characterized by heavy traffic and mixed use buildings. The only sound people can hear in three of the four Squares is 'noise', except in El-Gomhoreya Square where it is 'quite'. The term 'Overlapping Sounds' was also expressed several times. This clearly confirms that the setting of the soundscape is a low information lo-fi setting (Wrightson, 2000) where the user's experience of the space is hindered by its soundscape except in El Gomhoreya Square. Upon reflecting on the land use types in each square, it was found that:

- El-Tahrir Square (Fig. 3.) is a vital highly mixed-use square where very large crowds of pedestrians and vehicles navigate in and out of the square. The main buildings found there are El Tahrir Complex which is a very important governmental building that serves thousands of users daily and reached through underground transportation, The League of Arab Countries Headquarters, hotels, the Egyptian Museum, the old American University in Cairo Campus and some residential commercial building.

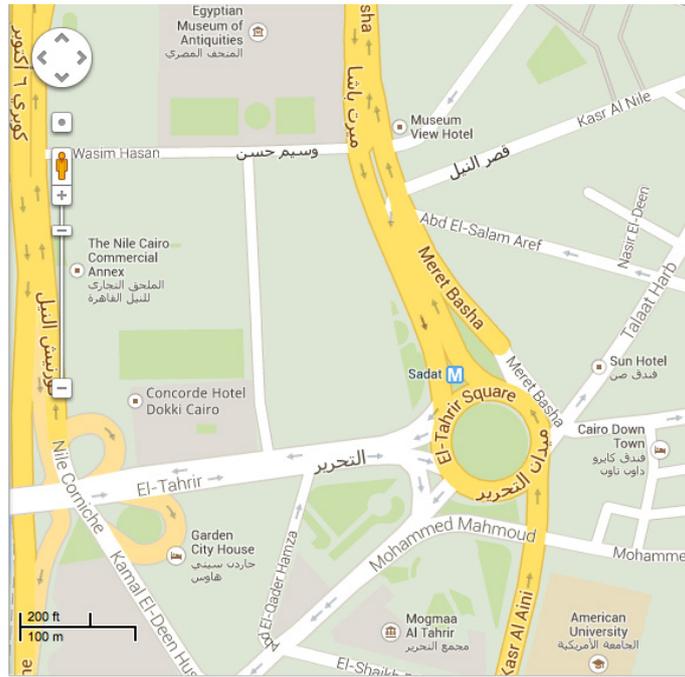


Figure 3. El-Tahrir Square Map.

- Talaat Harb Square (fig. 4.) is also a vital highly mixed-use squares where there are residential commercial buildings, hotels and motels, cafés, a library and a hospital. These buildings attract a lot of people in addition to those who merely navigate through the square.



Figure 4. Talaat Harb Square Map.

- In El-Gomhoreya Square (fig. 5.) there are governmental buildings such as the Cairo Governorate building, the Headquarters of the Presidential Guards which is an Armed Forces institute, Abdeen Palace and Museum which is currently closed and used as a governmental building, and mixed use residential commercial buildings (Figure 3.6). As compared to the previous Squares, fewer uses are present in the square yet they are important buildings and less traffic navigate through the square. Moreover, the presence of public gardens in front of the Palace encourages people and children to sit and play there and encourages social activities.



Figure 5. El-Gomhoreya Square Map.

- In El-Opera Square (Fig. 6.) there is a busy vertical parking building, an underground metro station, mixed use residential commercial buildings, a sports club and a garden. There is also an illegal microbus stop that causes high congestion. It is clear that this square contains fewer uses than El Tahrir and Talaat Harb yet most of the soundscape descriptions were 'Unbearable Loud Noise' and 'Overlapping Sounds'.



Figure 6. El-Opera Square Map.

There are various sounds that could be heard in each square as shown in figure 7. Upon relating these sounds to the general description of the soundscape in each square it was noticed that:

- In the three Squares where 'Loud Noise' and 'Unbearable Loud Noise' are heard (El-Tahrir, Talaat Harb and El-Opera), the most dominant sounds are 'Traffic' and 'Car Horns'.
- Upon Comparing 'Traffic' and 'Car Horns' in El Tahrir, Talaat Harb and El-Opera Squares, it is found that in El-Tahrir and Talaat Harb Squares 'Traffic' is mentioned more than 'Car Horns' where the opposite is found in El-Opera Square. This difference could be related to the different urban designs of the Squares where El-Tahrir and Talaat Harb are radial squares where traffic flow is easier while El Opera is a square shaped square where traffic does not flow as smooth as in a radial squares (Please refer to figures 3, 4 and 6).
- If the presence of 'Loud people, Children and Crowds' in El-Tahrir, Talaat Harb and El-Gomhoreya Squares is compared, it is noticed that in El-Tahrir and Talaat Harb it causes annoyance and in El-Gomhoreya it does not. This shows that the type of activity of the people present in the space affect the degree of annoyance. To make

it more clear, the types of activity in El-Tahrir and Talaat Harb would be people yelling over each other, people engaging in fights or people talking loudly so they could hear one another, while in El-Gomhoreya it would be people chatting while sitting in gardens and children running and playing.

- In El Opera Square the most mentioned sound is ‘public transportation drivers’ due to the presence of an illegal microbus stop.

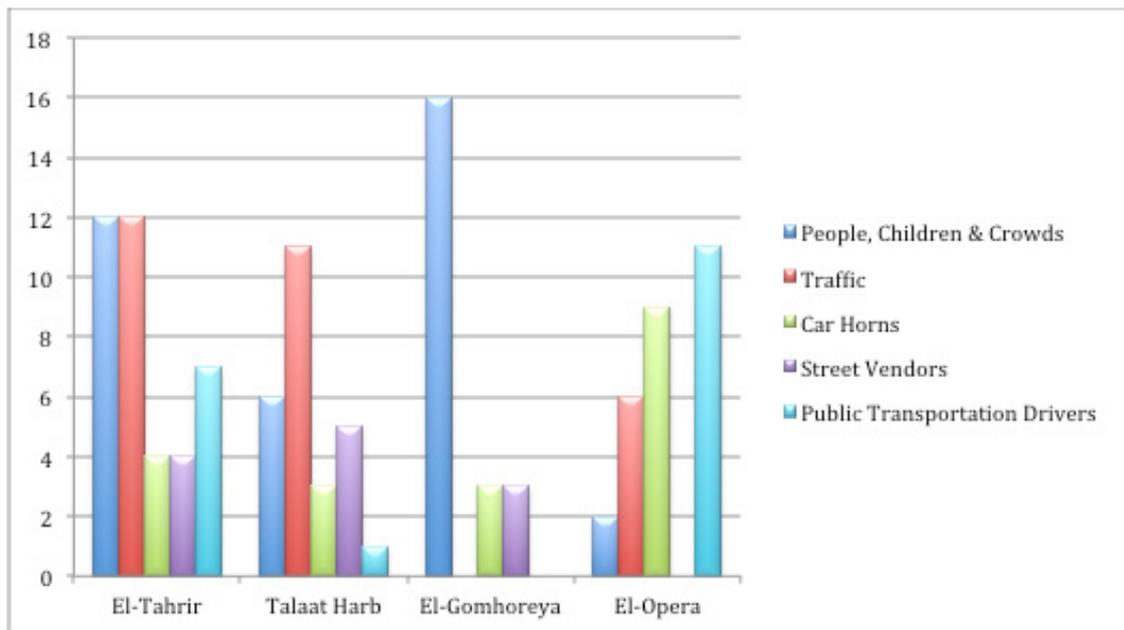


Figure 7. The specific sounds heard in each square.

Upon being asked about the sounds they like, the most mentioned sound were either natural sounds such as birds, wind and trees or religious sounds such as the call for Islamic prayer (Azan) or the sounds of people’s presence. However, some respondents did not find any sounds that they liked and responded by ‘None’,which shows that as noise levels and sound sources increase and overlap, the sounds of nature are masked and lost (Fig. 8).

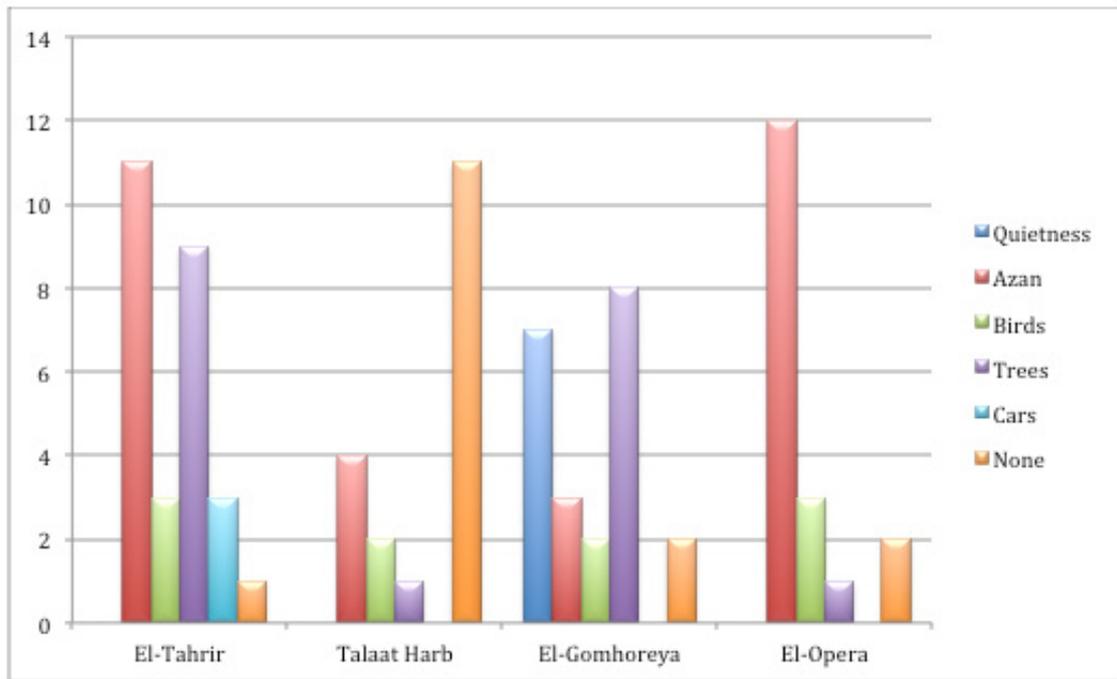


Figure 8. The liked sounds in each square.

The participants were asked about the sounds they dislike which were almost the same in all squares with minor differences (Fig. 9.). The most mentioned sounds in this exercise were employed in the second part of the assessment, which is the questionnaire design.



Figure 9. The disliked sounds in each square.

The results of the Soundscape exercise show the eclectic, noisy nature of the Cairene soundscape due to the presence of various overlapping sound sources with different sound levels. It is also found that the soundscapes in El Tahrir, Talaat Harb and El Opera Squares, create problems, hinder social activities and social communication and negatively affect the public health. Upon reflecting on the activities and sound sources found in each of these three squares it is found that they share similar descriptions, sound sources and activities. The soundscape in each of the three squares is described as 'Loud Noise' or 'Unbearable Loud Noise'. 'Traffic' is a dominant characteristic of the three squares with a significant rise in the sound of 'Car Horns' in El Opera Square and in 'People and Crowds' in El Tahrir Square. The most disliked sounds in the three squares are 'Car Horns', 'Traffic and Congestion' and 'Street Vendors'. El Opera Square has an exceptionally unacceptable soundscape if compared to El Tahrir and Talaat Harb Squares as participants were not able to hear each other, felt the urge to leave and would not want to go for a walk in this Square again. This result could be justified by the presence of an illegal microbus stop in El Opera Square, which causes unbearable noise and traffic congestion, the presence of a crowded vertical parking building and the rectangular shape of the Square. These results show that the most annoying sounds are either mechanical sounds of traffic and car horns or remarkably high sounds caused by crowds, street vendors or public transportation drivers.

The only acceptable soundscape was found in El Gomhoreya Square. The soundscape was described as being 'Quite and Relatively Quite' and the most dominant sounds were of 'People, Children and Crowds'. The participants enjoyed walking through this square as they felt 'Relaxed and Calm'. Upon comparing the presence of people and crowds in El Tahrir and El Gomhoreya Squares, it was found that in El Tahrir Square People's presence is annoying due to their loudness while it is calming in El Gomhoreya because people present there are enjoying their time in the gardens present in the Square. This result shows that different activities caused by people have different impacts on the soundscape generated. Moreover, the absence of traffic congestion in El Gomhoreya Square is an important feature of the Square's soundscape. Upon comparing the shape of the squares, it is found that El Gomhoreya Square and El Opera Square are both rectangular shaped squares yet both Squares have entirely different soundscapes. This difference could be traced back to the difference in traffic densities in both squares.

The participants were asked to give solutions for the soundscape problem and the most significant answers were better traffic regulation to avoid traffic congestion, enforcing laws on the use of car horns and noise generation above the acceptable limit and providing parking spaces. A significant number of participants suggested the dedication of a special place

for street vendors to stop them from wandering the streets and controlling the use of minibuses in the capital. Moreover, participants believe that awareness campaigns should be done to raise awareness about the negative effects of noise on the citizens of Cairo.

2.2. Questionnaire Study

An online questionnaire was conducted. The questionnaire was divided into four parts. The first part consists of general questions about the respondent such as age, gender and education. The second part consists of general questions about Cairo's soundscape such as the acceptability of the soundscape, the quietest and noisiest streets and squares in Cairo and the sounds they like or dislike. The third part consists of the assessment of seven annoying sounds found in Cairo's streets and squares based on the seven factors of annoyance perception discussed previously. The fourth and final part consists of questions that examine the reaction of Cairenes to Cairo's soundscape as well as giving them the opportunity to suggest solutions for the soundscape problem.

The questionnaire was answered by a reasonable number of Cairenes living in different districts in Cairo as well as in new cities outside the Capital, 48% males and 52% females. 87.5% of the respondents fall in the age range of 20–29 consequently the questionnaire will be assessing the perception of Cairo's young adults. 93% of respondents have completed or are pursuing their higher education level, which shows that they have the capabilities to understand and answer the questionnaire accurately. Moreover, 57% of the respondents are architects and architecture students who might have a fair background about urban design and soundscape. 64.9% of the respondents spend more than two hours per day on the streets and squares of Cairo, which is too much given the tight fabric of Cairo. However, the main activity carried out by the respondents is driving (42%) which justifies the long durations spent on the streets and squares since Cairo is a very crowded city with a lot of slow traffic.

When asked about the acceptability of Cairo's soundscape 80% responded that it is unacceptable which shows the poor quality of the soundscape. The respondents were asked to describe Cairo's soundscape in three words or less (Table 1), the most used words to describe Cairo's soundscape are negative words, which show the negative effect of the soundscape on Cairenes due to its poor quality and the mix of various overlapping sounds. Among the most remarkable answers were answers number 1, 2 and 3. Answer number 1 describes the soundscape as annoying and unbearable yet 'safe', which shows that an active soundscape, although intolerable, gives the inhabitants the feeling of safety. However, the Cairene soundscape is too active to the extent of becoming noisy and uncomfortable. Answer number 2

describes the soundscape as noisy and continuous yet 'remarkable', which shows that the Cairene soundscape has a certain identity, which is a positive aspect. However, it is a negative identity as it affects its inhabitants negatively. Answer number 3 describes the soundscape as being noisy and chaotic yet 'fun', which shows that the diversity of sounds is exciting from the point of view of some people.

Table 1. "Describe Cairo's soundscape in 3 words or less" Selected Answers.

Most Used Descriptive Words	Answer No.	Selected answers
Chaotic	1	Annoying, Unbearable and Safe.
Loud/Noisy	2	Noisy, Continuous and Remarkable
Irritating/Disturbing/Annoying/Uncomfortable	3	Noisy, Chaotic and Fun
Tiring/Unhealthy/Stressful/Negative	4	Noisy, Uncomfortable and Fast
Pollution	5	Noisy, Incoherent and Toxic
Provocative	6	Chaotic, Violent and Negative

Upon being asked about the liked and disliked sounds in Cairo's streets and squares the results were similar to that of the Soundwalk exercise with minor differences and new sounds were mentioned. The results of the liked and disliked sounds are illustrated in figure 10.

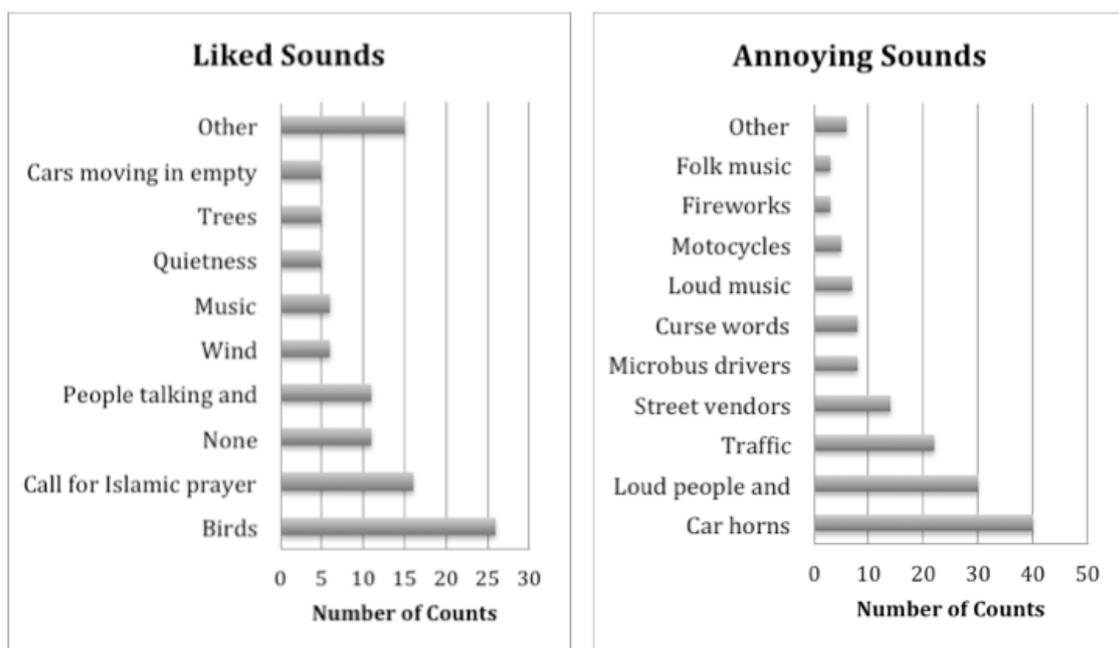


Figure 10. Liked and Annoying Sounds on Cairo's streets and squares.

The respondents were asked to name the streets and squares that they find noisy and others that they find quite in Cairo. In the question of noisy streets and squares several streets and squares were mentioned and are illustrated in table 2.

Table 2. Noisy Streets and Squares.

Street/Square Name	District	Street Width (m)/ Square Design	Number of Lanes
Salah Salem St.	Heliopolis	40	10
Gamet El Dowal St.	Mohandeseen	60	9
El Nasr St.	Nasr City	30	6
Ramsis St.	Qasr al Nile	30	8
Sudan St.	Mohandeseen	16	4
Roxy Sq.	Heliopolis	Quadrilateral	6
Abbasya Sq.	El-Zaher	Quadrilateral	5
Ramsees Sq.	Al-Azbakeyah	Radial	2
El Galaa' Sq.	Dokki	Radial	3

According to the information in table 2, two of the four squares are radial while two take the shape of a quadrilateral. Which shows that the shape of the square might not affect the intensity of noise if the squares have high traffic densities. Most of these squares are close to 6th of October Bridge or other main vital streets. Most of the mentioned streets are large streets with high traffic density except for Sudan Street, which is only 16 meters wide however it has a high traffic density. As for the quite streets and squares, respondents mentioned certain districts and new cities far away from Cairo where most of the streets and squares are quite, districts such as Zamalek and Maadi and new cities such as New Cairo and 6th of October city. Maadi is a district located east of the River Nile. The most dominant land uses are residential, commercial and leisure. The urban planning shape is a mix between radial and grid systems. Zamalek is an island in the middle of the River Nile. The most dominant land uses are residential, commercial, leisure and Embassies. The urban planning shape is an irregular grid system. Moreover, secondary streets in general are perceived as quite streets. One of the respondents answer was "All of Cairo late at night or very early in the morning" which are the times of day when there is no or very few traffic and very few people are present on the streets and squares. Another answer was "Any street without commercial activity or pure residential zone", which shows that a mixed-use area can be a very noisy area. However, mixed-use zones are known to give a feeling of safety to inhabitants.

In part 3 of the questionnaire seven different sounds that are found in the streets and squares of Cairo were assessed based on the seven factors that affect perception of annoyance of sounds discussed previously in the introduction(Glass & Singer, 1972). The seven sounds were chosen based on the results of the Soundwalk exercise and are: Car horns, Traffic, Street vendors, Loud people and crowds, Motorbikes, Construction/Renovation works and Microbus drivers. The data will be analyzed in two different ways. First, the total number of counts of each factor will be compared to the total number of counts of the seven factors. Second, each sound will be assessed based on the number of counts it scored for each factor of annoyance.

Table 3. Number of counts for each factor compared to the total number counts.

Perception Factor	Number of Counts	Percentage of Counts (%)
Volume	215	18.34
Predictability	137	11.69
Perceived Control	169	14.42
Necessity	169	14.42
Concern	218	18.60
Perceived Health Risks	121	10.32
Satisfaction	143	12.20

According to the data in table 3 and figure 11, all seven factors contribute to the general annoyance of negative sounds occurring in Cairo's soundscape. However the highest contributing factors are 'volume' and 'concern', which might indicate a problem in the sound level control in the streets and squares and a behavioral problem as people are not concerned with the public welfare. While the lowest contributing factors are 'predictability' and 'perceived health risks' which might shows that the soundscape has been a problem for quite a long time that it became part of the city experience, Cairenes got used to it and they no longer think of it as a threat to their health or well being. Moreover, 'necessity' and 'perceived control' scored equal number of counts, which might show that respondents believe that the assessed negative sounds are unnecessary yet they do not have the ability to control them which increases the level of annoyance.

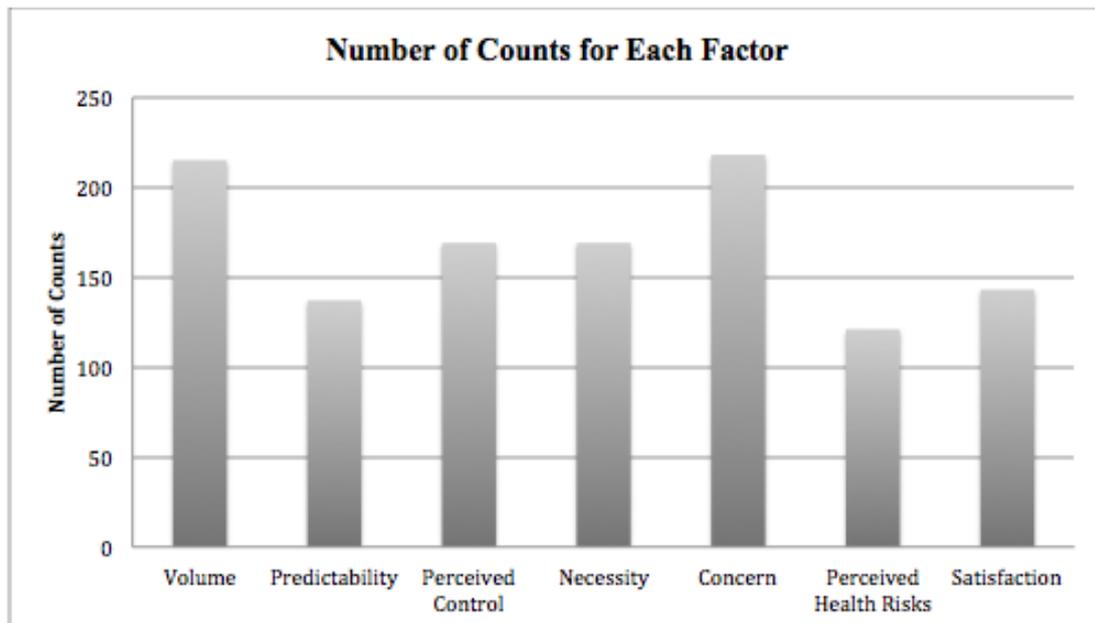


Figure 11. Number of counts for each factor.

Upon comparing the results of the scores of each annoying sound (Fig. 12.) it was noticed that some of the sounds have similar graph shapes. The graphs of 'Loud People and Crowds', 'Street Vendors' and 'Microbus Drivers' share similar topologies where there is a significant drop in the factor of 'Perceived Health Risks' and a rise in the factor of 'Concern'. The similarity between the three sounds could be related to the presence of the human factor. This might show that respondents believe that human sounds do not affect their health negatively and the main factor of annoyance is the unconcern of the individuals creating these sounds.

A noticeable similarity was found between the graphs of 'Car Horns', 'Motorbikes' and 'Microbus Drivers'. The similarity could be related to the presence of the mechanical factor in the generated sounds. The highest factors in all three sounds are 'Volume' and 'Concern', which shows the unconcern of the users of these vehicles and appliances in regards to the volume of the sound generated and the public well being. A similar drop in the score of the factors of 'Perceived Health Risks' and 'Satisfaction', which might show that respondents believe that the perceived health risks of the generated sounds are not the main cause of annoyance neither is the general satisfaction of the community. The similarity between the graphs of 'Motorbikes' and 'Microbus Drivers' is also visible in the score of the factors of 'Predictability', 'Perceived Control' and 'Necessity'. A connection could be made between the factors of 'Predictability' and 'Necessity' as respondents may believe that the sound is unpredictable due to its unnecessary. As for the factor of 'Perceived Control', respondents believe

that the sounds are annoying since they do not have the power to control them, which might show a problem in the enforcement of laws.

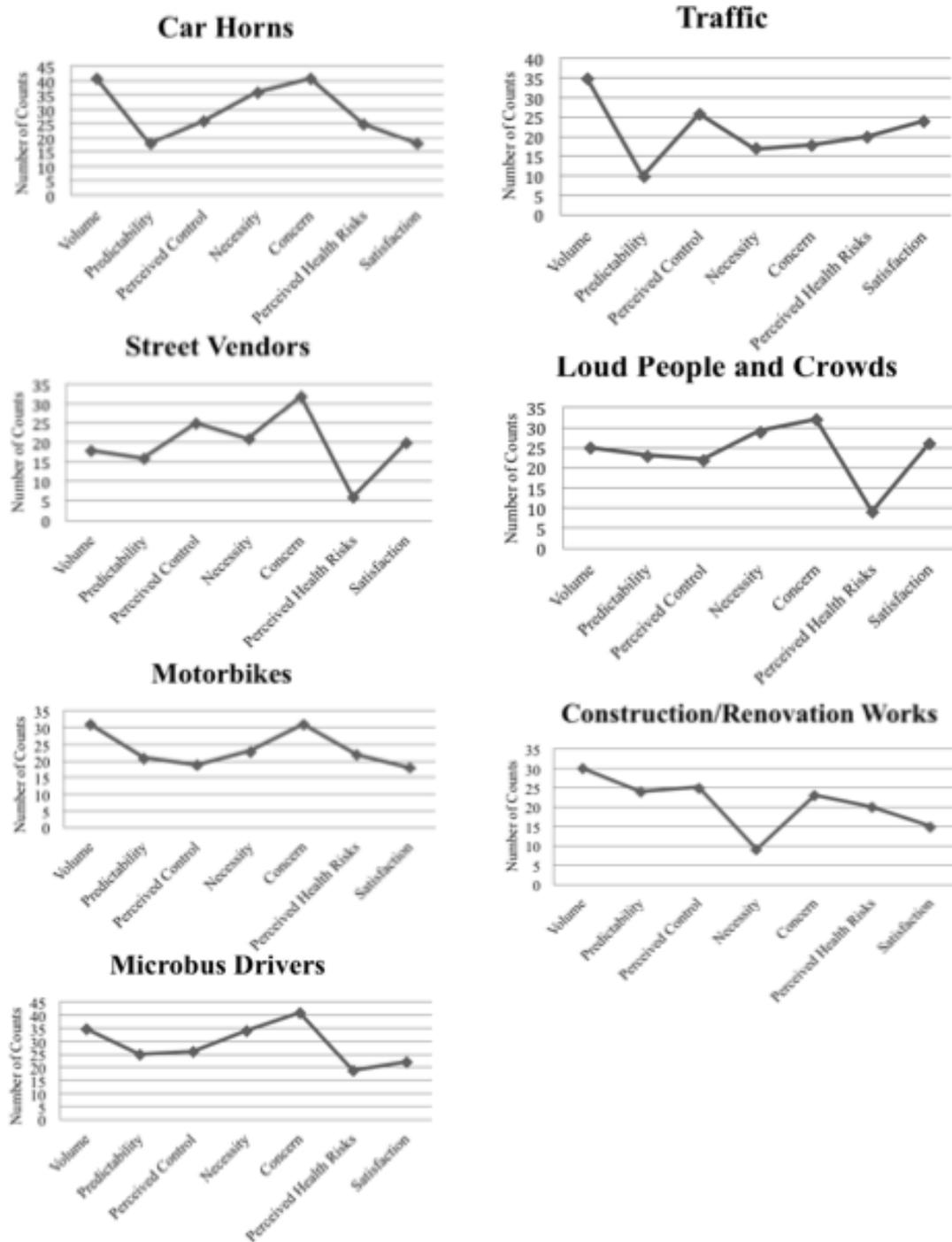


Figure 12. Comparison between the scores of the seven annoying sounds.

The results of part 4 show that 95% of respondents believe that Cairo's soundscape is a problem. 78% have thought about the soundscape problem before answering the questionnaire, which might show that the soundscape problem is noticeably affecting the lives of Cairenes. 76% believe that Cairenes are unaware of the high noise levels and the negative effects of the soundscape they are generating on their lives and the general public welfare. 50% of respondents would not go for a walk in Cairo's streets and squares while 35% would, both for various reasons illustrated in table 4.

Table 4. Reasons for going/not going for a walk in Cairo's Streets and Squares.

Yes	No
Shopping purposes.	Too polluted (Smoke, dust, garbage, bad smells).
Only in Zamalek or Compounds.	Unsafe and sexual harassment.
Got used to the Cairene Environment / There is no other place to go.	Uninviting atmosphere / Uninteresting / Not a good experience.
Late at night or very early in the morning.	Too noisy / Unbearably disturbing / Stressful.
In secondary streets.	Inadequate streetscape / No respect for pedestrians.
I like to walk.	Unpleasant sights.
Streets of Cairo are amusing.	Annoying people / Too crowded.

The reasons for walking in Cairo's streets and squares, stated in table 4, show that people would go for a walk in the streets for different reasons (shopping or enjoying the Cairene environment), during certain period of the day (late at night or very early in the morning) and in specific places (Zamalek or inside compounds / Secondary streets). Which shows that there are various restrictions on walking in the streets of the capital. Other people got used to the Cairene environment and are not bothered by it anymore while others have no option but to walk through the streets and squares. On the contrary, other respondents would never go for a walk in Cairo's streets and square due to the pollution, the social behavior of some Cairenes, the absence of adequate streetscape and the feeling of being unsafe which is a new characteristic of Cairo's streets introduced in the year 2010 after the revolution.

The respondents were asked to suggest solutions for the soundscape problem in Cairo and the results are illustrated in figure 13. The main two solutions suggested by the respondents are enforcing laws, regulations and punishment and Awareness campaigns, which shows a defect in the enforcement of laws and punishment and a lack of awareness among Cairenes regarding soundscape and its effect on human beings.

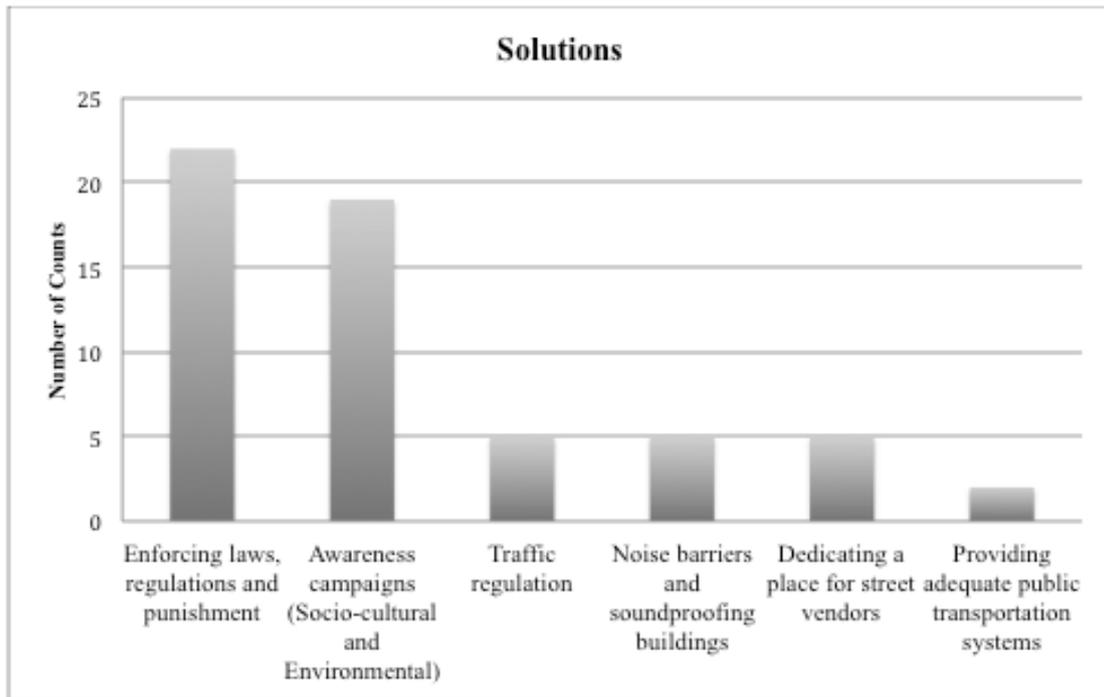


Figure 13. Solutions for the soundscape problem.

3. Conclusion

There are different factors that contribute to the soundscape problem however; the soundscape problem in Cairo is the result of other bigger problems that require solving so that the Cairene soundscape can be enhanced. According to the analysis of the case studies, the soundscape problem is a socio-cultural behavioral problem that requires active solutions and awareness campaigns that target different social levels in the community. Furthermore, a traffic problem also contributes to the soundscape problem, as traffic congestion is a significant problem in Cairo that needs to be solved. Moreover, the lack of law enforcement and governmental control on traffic and behavior of drivers in streets and squares are major contributors to the soundscape problem. Consequently solutions for the previously discussed problems are as follows:

- For the high traffic densities and congestion problem the following solutions are suggested:

1. Better public transportation quality and connectivity.
 2. Decrease the population of Cairo through new desert settlements.
 3. Decentralization of Governmental authorities. i.e. having other branches all over the country not just in the capital.
 4. Enforcement of laws, regulations and punishment.
 5. Changing activity distribution in noisy districts such as Downtown.
 6. Respecting pedestrians by providing adequate streetscape.
- For the Socio-cultural behaviour problem awareness campaigns targeting different social levels regarding soundscape and its effect on the public welfare are suggested.
 - For the poor soundscape quality the following solutions are suggested:
 7. More green urban public spaces in the city
 8. More pedestrian areas and plazas.

The perception of annoyance of urban soundscape is an essential aspect in urban soundscape design. Upon comparing the shapes of the graphs of the assessment of the seven annoying sounds using the factors that affect perception of annoyance, it was noticed that some sounds have similar shapes such as 'Loud People and Crowds' and 'Street Vendors'. This similarity might be a result of the presence of the human factor in the generated sound. Moreover, a similarity was noticed in the graphs of 'Car Horns', 'Motorbikes' and 'Microbus Drivers', which might be a result of the presence of the mechanical factor in the generated sounds. Soundscape designers in collaboration with Urban designer should focus on the factors that affect perception of annoyance of the soundscape as well as the different aspects of the sounds present in the urban soundscape such as human aspects, natural aspects and mechanical aspects of sounds. Based on the analysis, the presence of the natural aspect in the generated sounds is the most preferable while the presence of the mechanical aspect is the least preferable.

For further research it is recommended to study the urban planning and roads network of Cairo to try and find a more effective solution for the traffic problem. Furthermore, studies could be carried out on the soundscape quality inside Cairo's urban parks and gardens to investigate the acceptability of the soundscape. Moreover, comparative Soundwalk exercises could be carried out in different districts in Cairo that have different soundscape qualities and composition such as Zamalek, Maadi, Nasr City and Mohandeseen. Additionally, deeper analysis of the aspects of annoying urban sounds could be carried out to reach a mitigation technique to decrease annoyance.

REFERENCES

- Westerkamp, H. (2007).** *Soundwalking*. Retrieved April 9, 2014, from Simon Fraser University: <http://www.sfu.ca/~westerka/writings%20page/articles%20pages/soundwalking.html>
- Wrightson, K. (2000).** "An Introduction to Acoustic Ecology. Soundscape" - *The Journal of Acoustic Ecology*, 1, 1-7.
- Ahram Online. (2012, August 30).** "Egypt population reaches 91 million, grows 18 per cent in eight years." *Ahram Online* .
- Ali, S. A., & Tamura, A. (2003).** "Road traffic noise levels, restrictions and annoyance in Greater Cairo, Egypt." *Applied Acoustics* , 815-823.
- Blessner, B., & Salter, L. R. (2009).** "The Other Half of the Soundscape: Aural Architecture." *World Federation Acoustic Ecology Conference*. Mexico: Blessner Associates .
- Blessner, B., & Salter, L. R. (2007).** *Spaces speak, are you listening?* Cambridge: The MIT press.
- Glass, D. C., & Singer, J. E. (1972).** *Urban stress: experiments on noise and social stressors*. New York: Academic Press.
- Griger, J. (2009, September 01).** "Acoustic Ecology - A Case Study of the Soundscape of Loreta Square in Prague." *The Urban People* , pp. 20-37.
- Ismail, M. R. (2013).** "Sound Preference of the Dense Urban Environment: Soundscape of Cairo." *Frontiers of Architectural Research*.
- Jennings, P., & Cain, R. (2012, January).** "A Framework for Improving Urban Soundscape." *Applied Acoustics*, 293-299.
- Kang, J., & Zhang, M. (2010).** "Semantic Differential Analysis of Soundscape in urban open public spaces." *Elsevier* , 150-157.
- Ministry of State for Environmental Affairs. (2010).** "Egyptian Environmental Affairs Agency." Retrieved January 6, 2014, from <http://www.ecaa.gov.eg/english/main/about.asp>
- Pereira, M. (2003).** "Noise Perception in the Public Space: Indicators of Noise Tolerance in the City of Rio de Janeiro." *National Meeting of Comfort in the Built Environment* (pp. 779-786). Curitiba: National Meeting of Comfort in the Built Environment.
- Szeremeta, B., Henrique, P., & Zannin, T. (2009).** "Analysis and Evaluation of Soundscapes in Public Parks Through Interviews and Measurement of Noise." *Science of the Total Environment*, 407, 6143-6149.
- Said, N. G. (2014, January 27).** "Cairo behind the gates: studying the sensory configuration of Al-Rehab City." *Ambiances* .
- Schafer, R. M. (1994).** *The Soundscape: Our Sonic Environment and The Tuning of the World*. New York: Destiny Books.
- Schafer, R. M. (1977).** *The Tuning of the World*. Toronto.
- Rudi, J. (2000, November 6).** "Soundscape as Social Construct." Retrieved October 23, 2013, from *Norwegian Center for Technology in Music and the Arts (NOTAM)*: www.notam02.no/-jotanru

Raimbault, M., & Dubois, D. (2005). "Urban Soundscapes: Experiences and Knowledge." *Cities* , 339–350.

Truax, B. (1984). *Acoustic Communication*. New Jersey: Able Publishing.

Truax, B., Kallmann, H., Woog, A. P., & Westerkamp, H. (2006, July 02). "World Soundscape Project." Retrieved January 01, 2014, from *The Canadian Encyclopedia*: <http://www.thecanadianencyclopedia.com/en/article/world-soundscape-project/>

(City)–Noise. A Project about Noise, Urbanism and Politics

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Abstract

(City)–Noise is a project that critically studies the anti-noise regulations of various cities. To do so, it examines the press attention given to this issue and also noise maps and the regulations designed to control acoustic pollution; it then analyses this data in texts or reading groups.

Noise in the context of acoustic pollution is considered ‘refuse’ and so, with the excuse of auditory health and urban planning, governments tend to eliminate specific sources of sound that interfere with the city’s productive activity.

This project has attempted to analyse, through texts, workshops and sound walks, the ideology lying behind these measures and the social models that they represent. In this case the results of research conducted in Madrid and Donostia (San Sebastian) will be presented. The presentation consists of a brief description of the theoretical foundations on which the project is based, followed by some of the findings of the two projects.

Keywords: Noise abatement, City Soundscape, Urbanism, Politics

“The thing that is impeding Europe’s growth is that airports are locked up from 11 o’clock at night to 5.30 in the morning, which is a very, very critical time for east-west transfer. People [in Qatar] are not making as much fuss about noise as they are in Europe.”

Akbar al-Baker. Qatar Holdings ¹

Noise is prior to and larger than politics and the economy. Cities, as a driving force in the economy, are essentially noisy. Our day-to-day activity, organised into different timetables and zones, creates noise. The society in which we live, based on industrialization, is mechanical noise. Everything produces noise, including using public transportation, going into a building with air-conditioning, driving, listening to music or throwing out a rubbish bag that will be collected by a noisy lorry at a time of day incomprehensible to most.²

Although we can make decisions to produce less noise, by riding a bike, for example, the very fact of living in a city creates noise out of our control, such as the lorry that drops off the fruit at the shop or supermarket where we do our shopping, even if that shop sells organically-grown produce. And if we think on a global scale, it is quite likely that somewhere in China or Taiwan, the production of the computer keys we are typing on, or the parts of the light bulb that illuminates our book in a silent library, have produced terrible mining and industrial noises. Noise is a political and economic sound; it is intrinsically related to the value of things.

However, although living as we do involves noise, not all social strata are exposed to it in the same way. In fact, it is safe to say that depending on our social class and our position in this economic system, we will perceive the sounds we hear in different ways and even be able to choose which sounds we hear. This was true of the urban acoustic muddle even before the arrival of the industrial noise featured in the studies done by Murray Sachfer and Karin Bijsterveld, at the theoretical level, and in the fascination shown by Luigi Russolo and Walter Ruttmann, at the artistic level.

There are some studies that speak of different pre-industrial acoustic contexts distributed according to social class. One example is the study on the Aragonese town called Jaca, in *Sound and urban life in a small Spanish town during the Ancient Regime*, which shows that

1. *Heathrow board member says locals enjoy ‘excessive freedom’ over noise.* Gwyn Topham. <http://www.theguardian.com/business/2014/may/19/heathrow-board-member-airport-operate-24-hours>. Date viewed: May 23, 2014.

2. The artist Mikel R. Nieto has been recording rubbish collection vehicles for years. <http://www.soinumapa.net/?s=basura&submit=Bilatu&lang=es>.

the town was divided into two parts that were separated by the main street, Calle Mayor. On one side lived the clergy and the nobility – with the sound of processions and celebrations – and on the other side lived the rest of the population, amidst plagues and filth.³ Other examples can be found in the section *Escritos al oído* of the *Mapa de Sonidos de País Vasco*, especially *Donostia – Basque dissonance* (1761), which describes the language in terms of its sounds contrary to the commercial flow.⁴

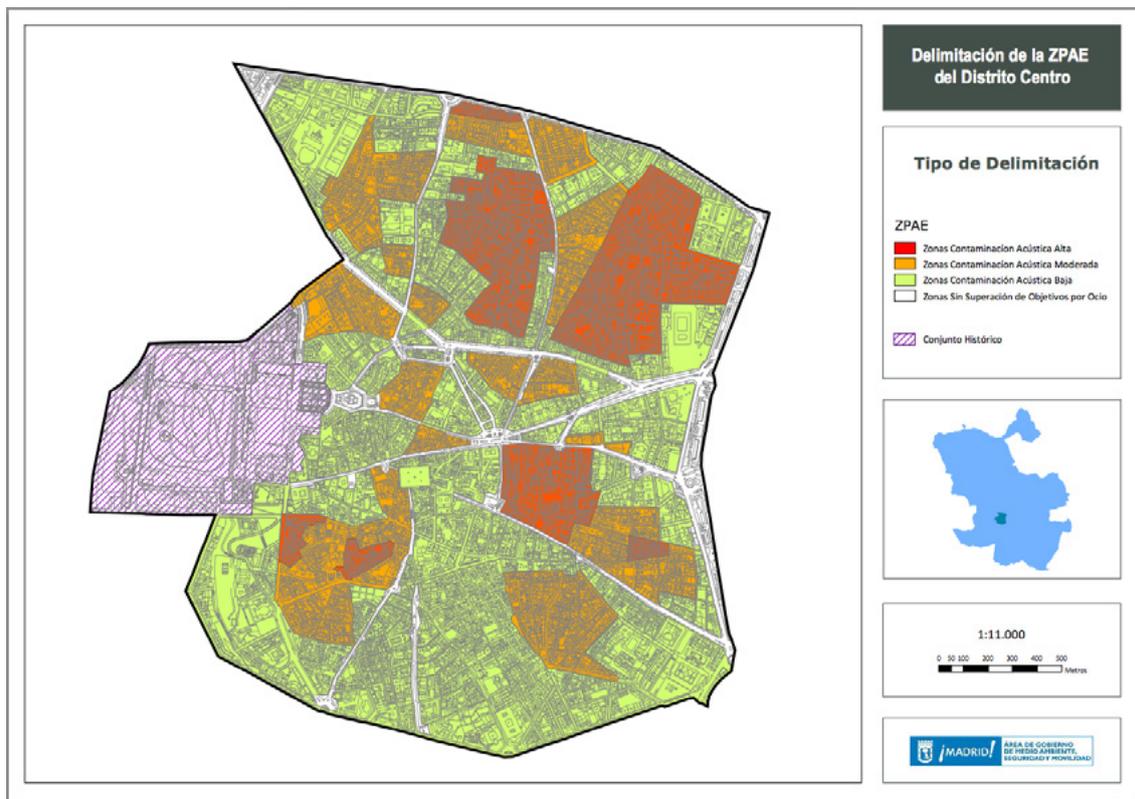
Another notable example is the one that studies the meaning of “quiet” in the British context, in the chapter *Infernal Din*, *Heavenly Tunes: Repertoires of Dramatizing Sound* in the book by Karin Bijsterveld *Mechanical Sound*. And finally, the chapter *Ethical Volumes of Silence and Noise*, in Brandon Labelle’s book *Acoustic Territories*, which discusses the sound of the *other*.

Mechanical noise is not a new noise, it is the sound of work and it changes as the pace and techniques of work change. This rather obvious remark can be applied to transport and leisure, to understand the problem in a different light. The iron carriage wheels of days gone by are the reaction engine of the planes at Heathrow, while the street musicians that bothered Charles Babbage are our cities’ nightclubs. The question, therefore, is the position taken by the person listening as opposed to the person enjoying or suffering the noise. The undesirableness of noise tends to be its social context. More than an auditory annoyance, noise causes alterations in the patterns of production and rest. This is, it disturbs the productive patterns governing a city that is run to create profits.

In this presentation we put forward the findings of two very specific cases that clearly show how measures against acoustic pollution are actually used for different purposes. This, rather than universally describing noise as an anti-productive force, demonstrates that it, as an inextricable part of the social realm, can generate or shape political and economic relations.

3. MARÍN Miguel Angel “*Sound and urban life in a small Spanish town during the Ancient Regime*”, *Urban History*, 29:1 (2002), 48–59. http://www.campusvirtual.unirioja.es/titulaciones/musica/fotos/felipeV_Marin.pdf

4. San Sebastián en 1761" Joaquín de Ordoñez (??-1769), Alfredo Laffite <http://www.soinumapa.net/marker/donostia-euskararen-disonantziak/?lang=en> Date viewed May 27, 2014

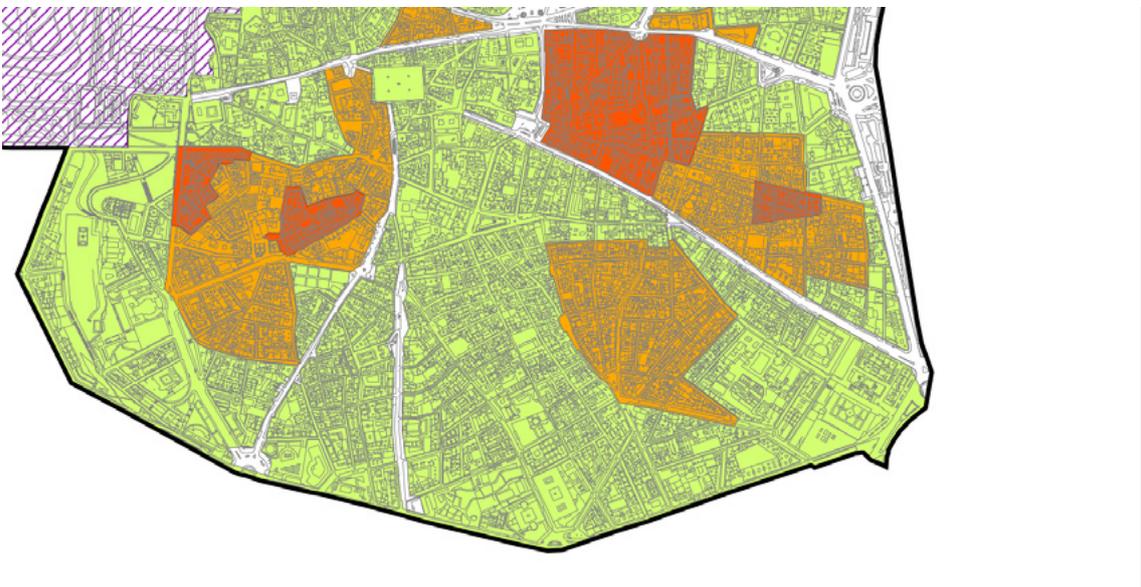
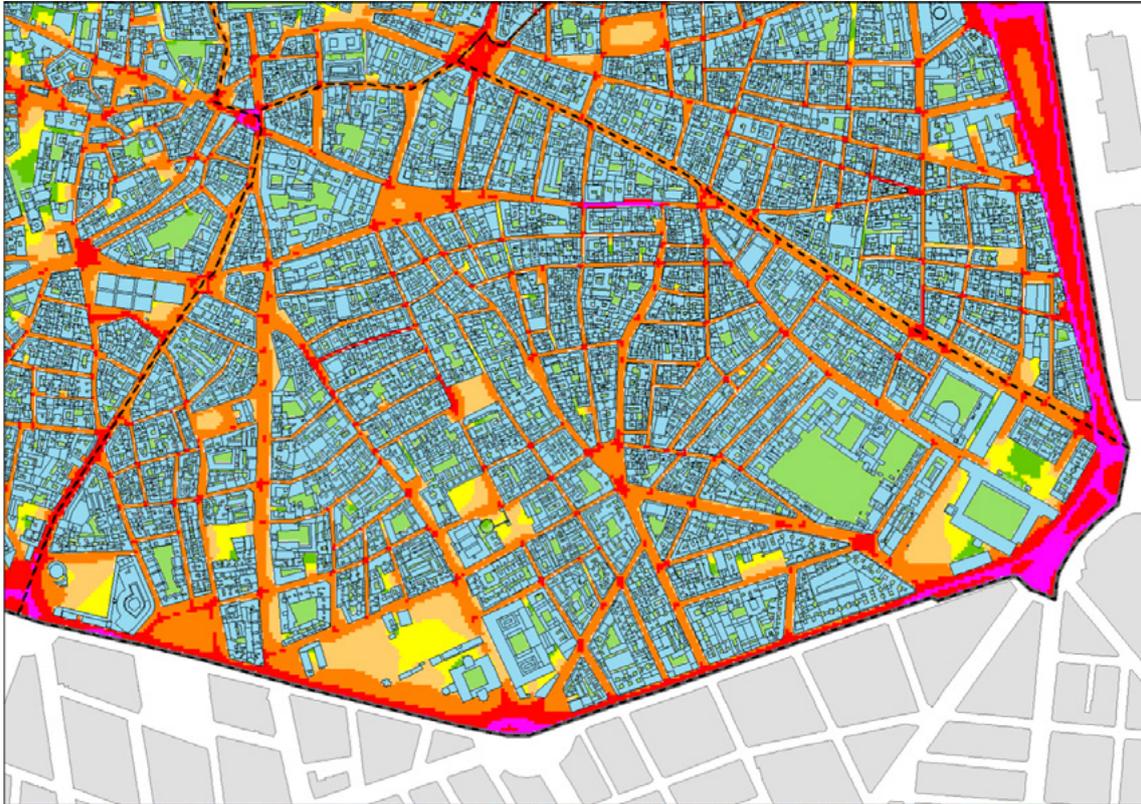


The Strategic Noise Map was drawn up in compliance with an EU ordinance issued in 2002. The Special Acoustic Protection Areas map is part of a City Council plan to control areas with high levels of nightlife. A comparison of the two reveals that the noisiest areas according to each map are not the same.

For example, the neighbourhood of Lavapiés, which falls under the Special Acoustic Protection Plan, is the area with the most complaints concerning traffic and neighbours. The handling of such issues would involve major architectural and urban planning changes.⁶ In December of 2013, as part of the festival ¡Volumen!⁷, a *sound walk* took place, comparing the readings made for the aforementioned maps. It became evident that the acoustic space perceived during the walk did not coincide with the readings cited in these maps.

6. CASCALLANA, Jara. *Estudio de rehabilitación acústica de los edificios del barrio de Lavapiés*. Master's Thesis. E.U.I.T. Telecomunicación (UPM) http://oa.upm.es/21506/1/TESIS_MASTER_JARA_CASCALLANA_OLMEDILLA.pdf Date viewed: May 27, 2014

7. ¡Volumen! At La Casa Encendida, in Madrid https://www.lacasaencendida.es/sites/default/files/docp_festival_volumen_2013.pdf Date viewed: May 26, 2014



The hypothesis developed during the project is that the city's manoeuvres in relation to acoustic pollution are not a reflection of its concern about environmental or social issues, but rather of other interests.

- First, the gentrification process that the city council of Madrid has been fomenting consistently since 2008, which includes closing down leisure establishments, rais-

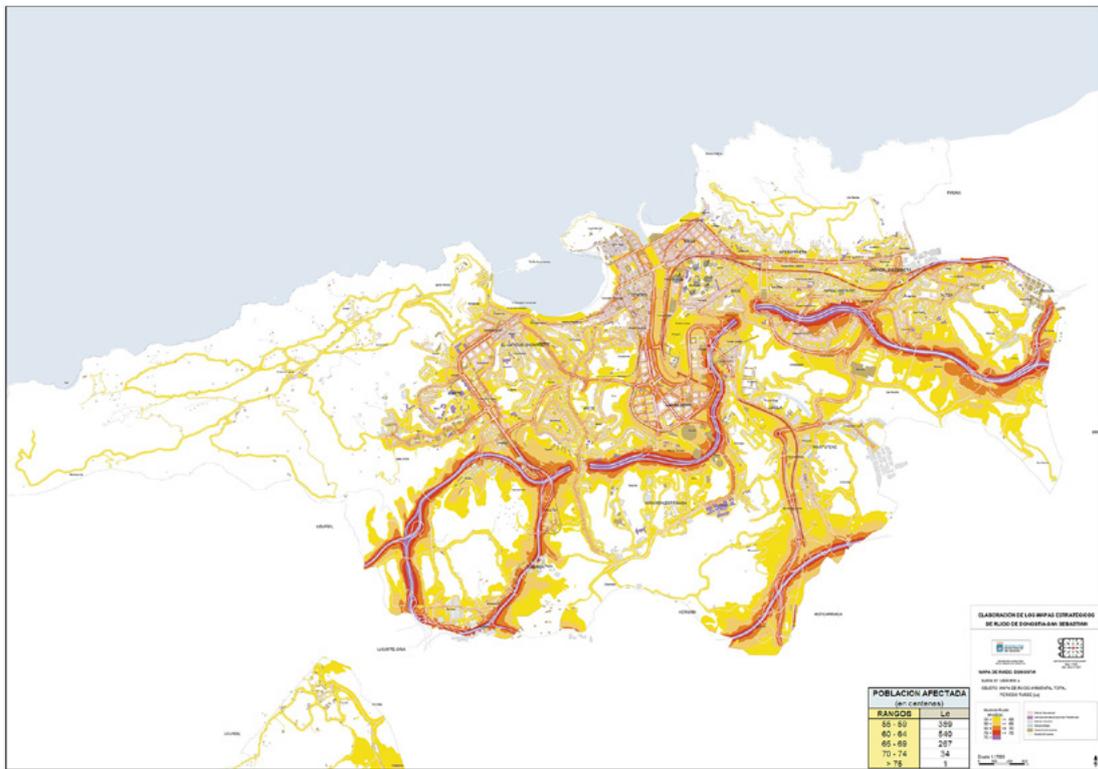
ing property prices and transforming the city centre for tourism purposes, with the construction of luxury hotels.

- The second is the effort to centralise leisure activities in venues operated by the City Council. This manoeuvre became tragic when five persons died at a massive event held in one of these venues. A lawsuit was brought in relation to the deaths, and among the accused parties was the Councillor in charge of the public company that managed the venue, who also happens to be in charge of drawing up the Special Acoustic Protection Areas map.

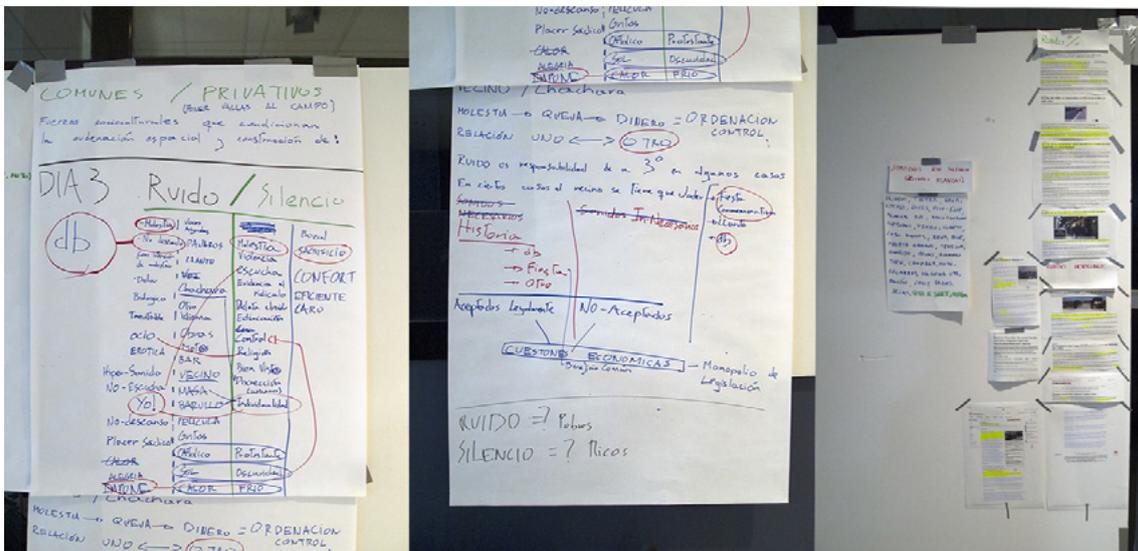
These two details indicate that measures against noise pollution are in fact used for purposes more related to business, and to illegitimate and corrupt use of public space.

2. Donostia noise

In Donostia (San Sebastian) leisure activities and tourism are a significant driving force for the economy. The way the Donostia City Council treats this matter is practically the opposite of the one seen in Madrid, and a comparison of the two allows some very interesting conclusions to be drawn. The noise produced by leisure activity is sometimes ignored and the city's noise map does not give adequate consideration to this type of noise. Donostia's noise map was drawn up in compliance with the 2008 EU ordinance and it mainly reflects the noise of traffic. However, since the measurements are taken from a car, the map does not reflect the true acoustic situation, nor the complaints lodged by the main anti-noise associations, because the neighbourhoods with leisure establishments are mostly pedestrian. The areas with the most complaints are the area surrounding Monte Igueldo and the Old Town (Casco Viejo).



The Donostia-Noise project, like its counterpart in Madrid, arose out of an interest in analysing environmental regulations and the policies put in place to control noise in this city. The methodology used in the analysis consisted of a working group that primarily carried out two activities. One of the activities was a reading group that examined some sound studies with a view to critically re-interpreting the soundscape and to sharing information sources related to noise, architecture and urban planning.



Also, a series of outings took place, news clippings were collected and a podcast was distributed. Finally, the study attempted to draw conclusions about the two areas mentioned above. Although both areas are the object of complaints about leisure-related noise, the reasons that their respective numbers are greater than those of the rest of the city are very different.

- The Old Town has a lot of complaints that go without response because, since the streets in this neighbourhood are pedestrianised, the map is not in effect and therefore many of the acoustic pollution rules cannot be applied. In Donostia, to request an official measurement of decibels, which is required before a complaint can be lodged, costs the requesting party money after the third time. Since the income levels in this neighbourhood are not very high, the neighbours often end up moving away and the problem continues just as before.



- The other area with problems, the area around Monte Igueldo, is a highly sought-after neighbourhood with many high-income residents. The complaints revolve around a club where wedding celebrations take place, in which the noise generated blocks the sound of waves, considered a common good. In contrast with the Old Town, the residents of this quarter can afford to keep paying for the official measurements, as part of their effort to have the celebration venue closed down and thus recover the sound

of the sea. Although in this neighbourhood there is less noise, many more complaints are lodged, although the problem persists in both areas.



The experience of Donostia Noise also pointed out suspicious relationships between property prices, money and noise. Like in the examples cited at the beginning, it is clear that peace and quiet is a luxury that certain social classes are in a better position to demand.

3. What noises can we take responsibility for?

Noise is knowledge, but it obliges us to do politics from a position of dissent. Noise tells us about our customs and our defects. In this specific case it tells us about a classist social system in which laws can be used to make a profit or pursue other corrupt aims.

Noise, before the arrival of technologies for measuring and recording sound, was understood to be an emanation, like diaphanous music or a dreadful din. The poor sections of ancient cities were inundated with the noise caused by metalworkers and with the stench emanating from tanning activities. In response to this situation, such activities were taken to the outskirts of the city. The industrial areas of 19th and 20th century cities, where workers

lived, also shared noxious air, water and acoustic space. Today cities in Taiwan and China, where most of our consumer goods are manufactured, have very high noise levels.⁸ If we think about this example in the context of today's global economy, the tactics used to solve the noise problem are the same; moving it to areas where the consumers and upper classes, in this case us, cannot hear it. It has already been said that the limits of the city (Polis) is where the screams for help can no longer be heard.⁹

What noises are we responsible for? Can we imagine an acoustic space not governed by authoritarian and productivity-based economic patterns? What would allow these spaces to evade their purposes? A good example can be found in street musicians. What economic model do they represent with respect to the worldwide music industry?

Acoustic space, when all is said and done, is a space of relationships. The rules and regulations analysed in this project contemplate a hearer-victim, and a noisemaker-criminal. This leads to policies that are focused on 'policing' and are therefore ineffective in matters of this nature. Is it really reasonable to expect that all unwanted sounds will be controlled and managed by government agencies?

To solve this problem what is needed are active listeners, who, as they acquire awareness of themselves, become responsible for the noise they generate. This is not far from the educational programs promoted by some governments. However, a better listening culture would not focus solely on producing less noise. It would also understand that some of the sounds produced by others are necessary, and that other sounds, for example a large part of the sounds and objects derived from production and consumption, are unnecessary.

8. Suii Cindy *Taiwan's noise pollution dilemma* <http://www.bbc.com/news/world-asia-18980194> Date viewed: May 27, 2014.

No noise? 5 reasons why you should be concerned with noise pollution in China. <http://ijustwannabuy.com/?p=1476&> Date viewed: May 27, 2014.

9. CAYRLE, Angus: *Autumn Leaves. Sound and the Environment in Artistic Practice.* Double Entendre, Paris, 2007. p. 4

The Use of Virtual Reality Technology in Noise Action Planning

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Abstract

Technical noise information, conventionally communicated through noise maps and numbers, is far away of depicting complex sonic environments and not comprehensible for general public. For this reason, in noise action planning, the dialogue between the stakeholders usually faces difficulties and the public information and participation process fails.

This paper introduces an innovative approach to enhance public information and participation processes in noise action planning. This approach employs virtual reality technology in order to enable public listen and see a priori the results of proposed corrective measures in noise action plans. In this way, the public can comprehend the results in an intuitive manner and generate own opinion on the issue without any requirement of technical acoustics knowledge. The utility of the proposed method is evaluated by its application on a case study (Plutarco Av. Noise Action Plan-Malaga/Spain) which deals with noise from places of entertainment and agglomeration of people.

Keywords: noise action planning, public participation, virtual reality, noise from entertainment venues

1. Introduction

In last decades, the scientific society has seen the gap between individuals' experiences and the actions taken (in a conventional manner) to improve acoustic quality of environments. Conventional methods and actions taken were successful to a certain extent, especially regarding higher levels of noise exposure conditions (so-called black areas), but do not offer consistent solutions for relatively lower levels of noise exposure (so-called grey areas that are characterized with 55-65 dBA). In these areas, noise exposure is assumed to be acceptable and not harmful for individuals' health. However it can still cause serious annoyance that plays an important role affecting the overall well-being and quality of life of the exposed population.

In this context, in the last decade, soundscape theory (Schafer 1977) has been revisited by the scientific society and practitioners in order to fill this mentioned gap and achieve successful noise action plans (Brown 2007; Kang 2007; Botteldooren et al. 2008). These efforts triggered a paradigm shift in our understanding of noise control. Today, it is widely accepted that noise control engineering and soundscape concept are complementary approaches to achieve a better acoustic environment. As a matter of course, the toolbox of noise action planning practice has been enriched with techniques like soundwalks, narrative interviews, listening tests, etc. that deal with full spectrum of human experience (Adams et al. 2008; Fiebig et al. 2010; Schulte-Fortkamp 2010).

Beside the technical benefits, the use of such tools in noise action planning is also advantageous to enhance collaboration between different stakeholders and to achieve a more democratic governing practice. The involvement of stakeholders in decision making process enables a better understanding of users' needs and expectations, and also helps to build trust, increase user satisfaction and facilitates acceptance of new interventions in urban area.

As involvement process deals with different stakeholders with different levels of technical knowledge and utterly different agendas, these processes usually face communication difficulties. The lack of comprehensible information flow between stakeholders underlies such communication difficulties. Technical noise information, conventionally communicated through noise maps and numbers, is far away of depicting complex sonic environments and not comprehensible for general public. Thus, usually the dialogue between the stakeholders (public – policy makers – practitioners) faces difficulties and the public information and participation process fails.

There are several attempts to achieve better practices covering these gaps of conventional procedures of noise control and public involvement. Three dimensional representations and virtual reality simulations (Murphy, Rice, and Meskell 2006; Kurakula and Kuffer 2008; Law et al. 2011) have shown promising results to overcome these issues. With the recent developments in VR technology and auralization techniques, it is much easier to communicate complex noise information making it audible and present it in its multisensory context (Maffei, Masullo, and Basturk 2011). Thus the general public can experience the urban environment with the changes in its aural and visual aspects in a realistic way and understand noise information without any prior knowledge of complex noise indicators.

This paper introduces an innovative approach which makes use of virtual reality technology to complement conventional noise control studies through active participation of the effected people (end users) in decision process. With this approach it is intended to enable an easy and intuitive comprehension of noise problems so as to encourage non-technical stakeholders to participate in solution seeking and decision processes. In collaboration with the Municipality of Malaga, the proposed method is applied to an actual project which deals with noise from places of entertainment and agglomeration of people.

2. What is Virtual Reality?

Virtual reality (VR) is a thriving technology which serves wide range of activities; basically psychological therapy, technical training and education in numerous fields, social and professional networking, gaming, art and any kind of design activity including urban design. In broad terms, virtual reality can be defined as an environment generated in the computer, which the user can operate and interact with in real-time. Virtual reality systems employ various output devices (effectors) in order to reproduce full spectrum of sensory information, and input devices (sensors) which provide lifelike interaction.

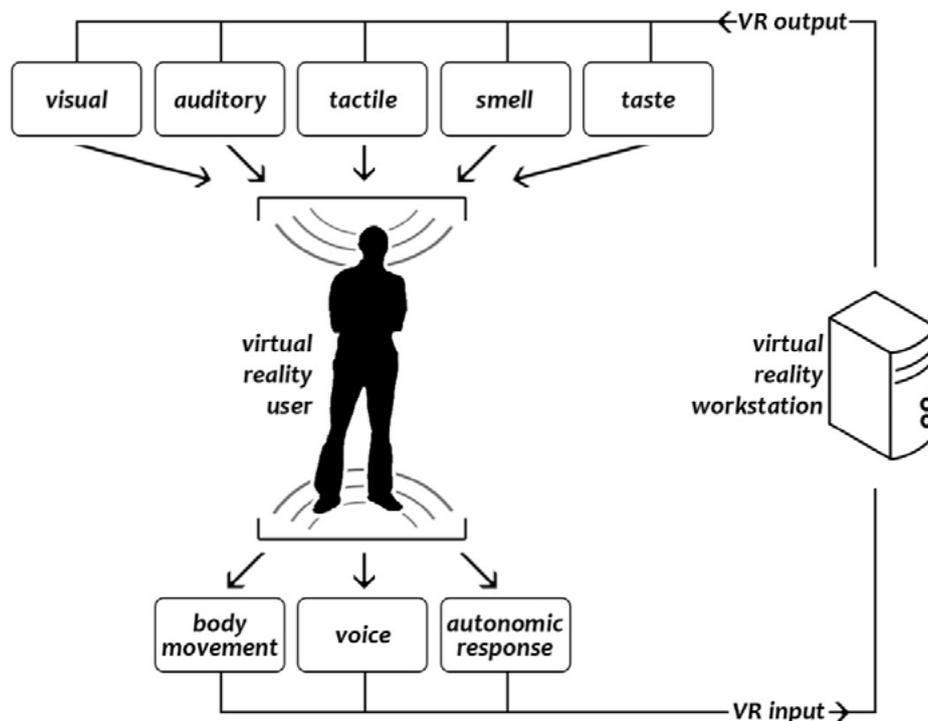


Figure 1. Range of possible input (sensors) and output (effectors) devices for a VR system (adapted, Biocca and Delaney 1995).

Realistic audio representation is important in virtual reality applications as it enhance the sense of immersion and spatiality. In the last decade, scientific research is engaged in improving the auralization systems which is “the technique of creating audible sound file from numerical (simulated, measured, or synthesized) data”(Vorländer 2008) . Auralization techniques for indoor environments are notably advanced but for complex outdoor environments it is still an important challenge to achieve real-time auralization due to computational shortcomings. In order to lower computational load of auralization for complex outdoor environments with relatively higher number of sources and higher level of interaction, perceptually plausible resulting sounds are usually aimed rather than physically correct results, in outdoor auralization processes (Funkhouser, Min, and Carlbom 1999; Tsingos, Gallo, and Drettakis 2004; Vorländer 2008).

3. Virtual Reality in Noise Action Planning

The proposed method is based on the use of virtual reality technologies to enable end users, who do not have technical acoustics knowledge, listen and see a priori the predicted impacts of proposed corrective measures. In this way, users can comprehend the noise control measures in an intuitive manner, generate their own opinion on the issue and actively participate in decision making. As it is shown in the figure, the proposed method includes the virtual reality design step in addition to the conventional steps of noise action planning.

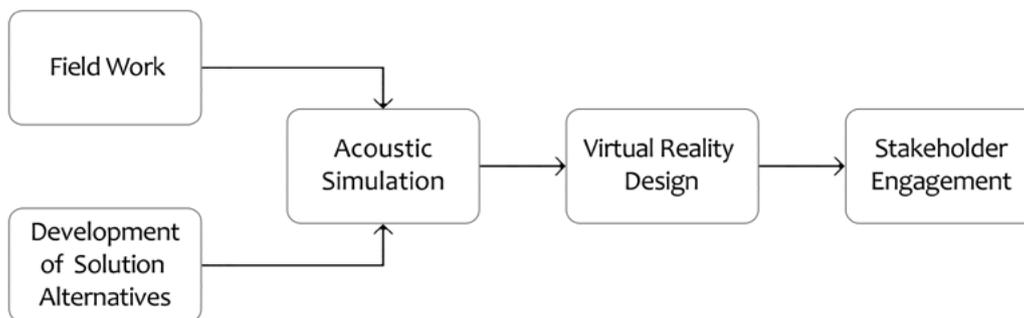


Figure 2. Steps of the proposed method.

In accordance with the defined steps, field work comes first. In this step, in addition to the usual techniques, it is necessary to capture detailed visual (video&photo shooting) and aural (audio recording) information that will help to depict the existing situation of the studied area in virtual reality design step. Captured visual and aural materials provide input to the acoustic simulation step together with the developed solutions (corrective measures). In the acoustic simulation step, acoustic models of the study area (existing situation) and each of the solution alternatives should be prepared in order to predict the noise attenuation in case of application. In the next step, the objective is to create realistic audiovisual depictions of the solution alternatives. In this context, to obtain a realistic audio representation of the design alternatives, audio material captured in situ should be convolved with signal processing algorithms in accordance with the noise attenuation values extracted from the acoustic simulation. This process should be realized for multiple receiver points which will cover the possible navigation area and head orientation of the virtual reality user.

Afterwards, these obtained auralizations should be merged with visual models so as to complete the virtual reality application. This final virtual reality application should introduce an interactive and immersive interface to its user letting him/her to navigate freely in these

environments. The last step of the proposed method is public information. In this step it is intended to present the resulting virtual reality application as a common frame of reference to the stakeholders and enhance communication and the understanding of the problem. Thus better informed stakeholders can contribute to further decision making processes.

4. Project Plutarco

Places of entertainment are a major source of neighborhood noise problems in Europe. The statistics show that the main reason for noise complaints in Spain is entertainment activities (35% of all complaints (Contaminación acústica 2005)). The noise from entertainment activities arise not only from amplified music but also from agglomeration of people on public spaces during night time in residential areas. Being directly related to behavior of individuals and to culture and lifestyle of communities, for such noise problems do not exist neither standardized assessment methods nor easy solutions.

In particular, in Malaga (Spain), noise problems from entertainment activities are focused on a recently developed residential zone (district of Teatinos-Universidad). The rapid growth of this zone caused proliferation of commercial activities in the area without giving any chance to assess progressively its acoustic and environmental impacts. Initial noise complaints followed the emerging noise problems in 2005. In 2007 residents of the mentioned district founded an association against noise (Asociación de Vecinos El Romeral Contra El Ruido, 2014). Efforts to solve the problem with bilateral agreements between the association and the business owners gave no result and in 2008 the municipality started a study to analyze the situation to take a legal action. The study showed evidence of high noise levels but, according to the legislation in force, it was not sufficient for a legal action by the municipality (Avance Sobre La Situación de La Zona Del Romeral, 2008). Between 2008 and 2013, the number of entertainment venues has increased by approximately 37%, outdoor seating of these premises occupied major part of the sidewalks, the noise problem and related complaints persisted. For this reason in 2013 a mediation and solution seeking process has been started in which the proposed method employed.

4.1. Field Work

In accordance with the proposed method, a series of fieldwork was carried out in a selected area on Plutarco Av. where noise problems concentrate.

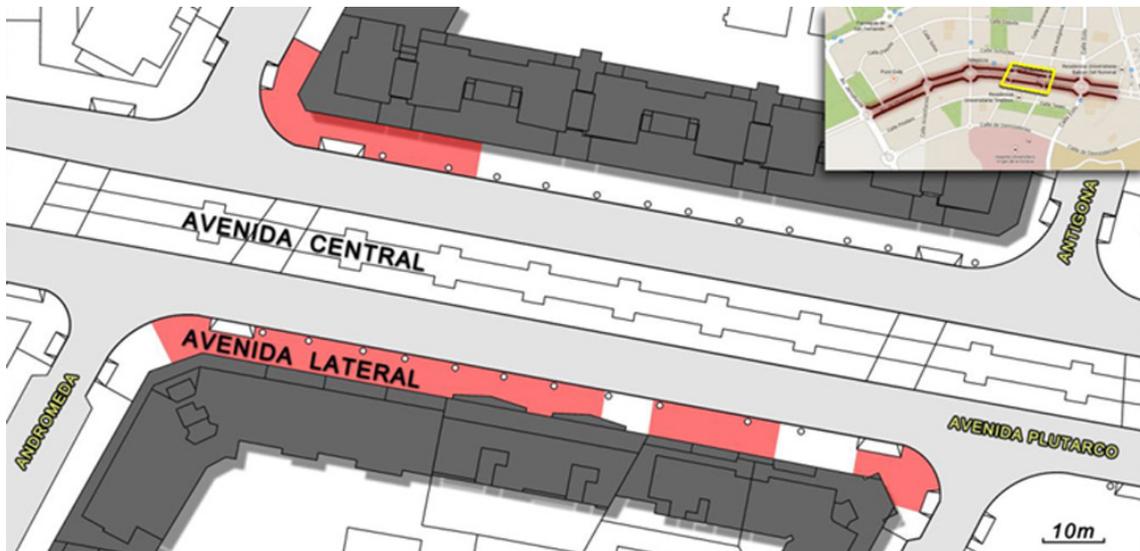


Figure 3. Plutarco Avenue and the selected study area (top-right). Outdoor seating areas of entertainment venues are marked in red.

During August and September 2012, acoustic measurements, audio and video recordings, vehicle and pedestrian (users of outdoor seating of entertainment venues) traffic counts were conducted especially in weekend periods when the conflict was more noticeable.

Audio recordings (16 bit/44.1 kHz) were realized using a portable two-channel device in different timeframes of the day -12:00, 18:00, 21:00, 23:00, 01:00- along the center line of the avenue and the south sidewalk. Concurrently, sound pressure levels were measured with a Larson Davis 824 sound level meter. In addition, 24hrs long audio recordings and measurements were conducted at a fixed point in a selected first floor residence. As shown in figure 4 the selected measurement point is situated just above the entertainment venues.



Figure 4. 24hrs long measurements at a first floor residence.

The results of the fieldwork show that outdoor seating on sidewalk can accommodate approx. 220 people and the point of highest gathering of people is around 11 p.m. (65% occupancy), henceforward, even the number decreases gradually, the presence of people on sidewalk lasts until about 3 a.m.

The change in sound pressure levels throughout the day was studied based on 24hrs long measurements. As shown in figure 5, between 9 a.m. and 3 a.m. sound pressure level does not show significant variations. However, it is expected to see a significant decline in sound pressure levels starting from 11 p.m. as the night time period (11 p.m. – 7 a.m.) require lower noise levels to avoid sleep disturbance. Particularly, at his point, the measurements show that sound levels persist between hours 11 p.m. and 3 a.m. because of the noise from outdoor seating of the entertainment places.

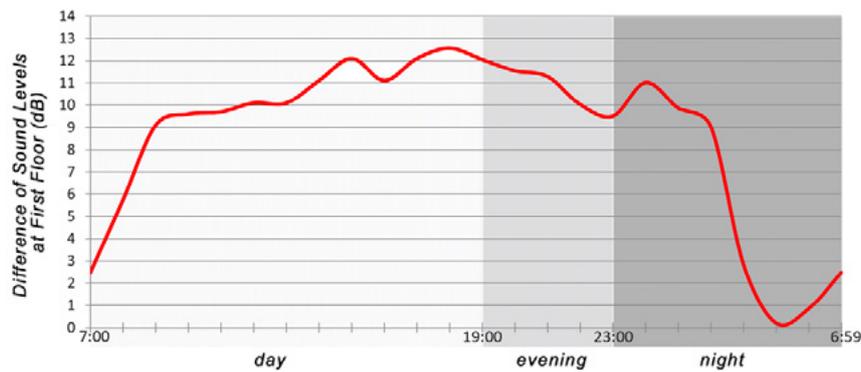


Figure 5. 24hrs long measurements at a first floor residence.

4.2 Development of Solution Alternatives

In this study, it is intended to involve all stakeholders in solution seeking process rather than a top-down process with concrete decisions. Within this context a series of solution alternatives were proposed in order to present an initial framework to the stakeholders and encourage participation. The proposed solution alternatives:

- Introduction of absorbent awnings on outdoor seating of each entertainment venue
- Introduction of a pergola along the sidewalk
- Covering the sidewalk with sound absorbing carpet
- Limiting the number of tables to half of the existing situation

4.3. Acoustic Simulation

After determining the solution alternatives, three-dimensional models of the study area and the solution alternatives were prepared employing a 3D modelling software. These models were transferred to CadnaA (DataKustik GmbH 2012) noise prediction software in order to analyze how the corrective measures might affect the acoustic environment.

In acoustic modelling, outdoor seating areas were characterized with area sources at 1 m height above the terrain. Considering the characteristics of human voice, emission of these sound sources is adjusted to 86 dB sound power level between 500Hz and 4000Hz (Sepulcri et al. 2011). One other sound source, road traffic, was also modelled based on the traffic counts realized in situ.

On the other hand, in order to simulate the corrective measure that offers reducing the number of tables by half, the sound power level of area sources was reduced by 3 dB. In acoustic modelling of the other solution alternatives, commercially available and acoustically tested products were preferred (Diseño y Validación de Carpas de Exterior Para la Minimización del Ruido Por Actividades de Ocio 2011).

Table 1. Parameters related to the acoustic modelling of the solution alternatives.

Solution alternative	Description	Sound absorption coefficient	Altitude above terrain (m)
Awning	absorbent	0.3	3.45
Pergola	reflective	0.2	4.00
Carpet	absorbent	0.3	0.02

In order to complete the acoustic modelling, 2 receiver points were defined. One of them (R1) was located at the same place where the 24hrs measurements took place at a height of 4.7m above the terrain. The other receiver point (R2) was located on the center line of the avenue at a height of 1.6m above the terrain (Figure 6). The receiver point R1 was intended to calculate the noise attenuation at the first floor residences in case of application of the corrective measures. On the other hand, receiver point R2 was employed to test whether the reflective pergola increases the noise immission level in other parts of the avenue.

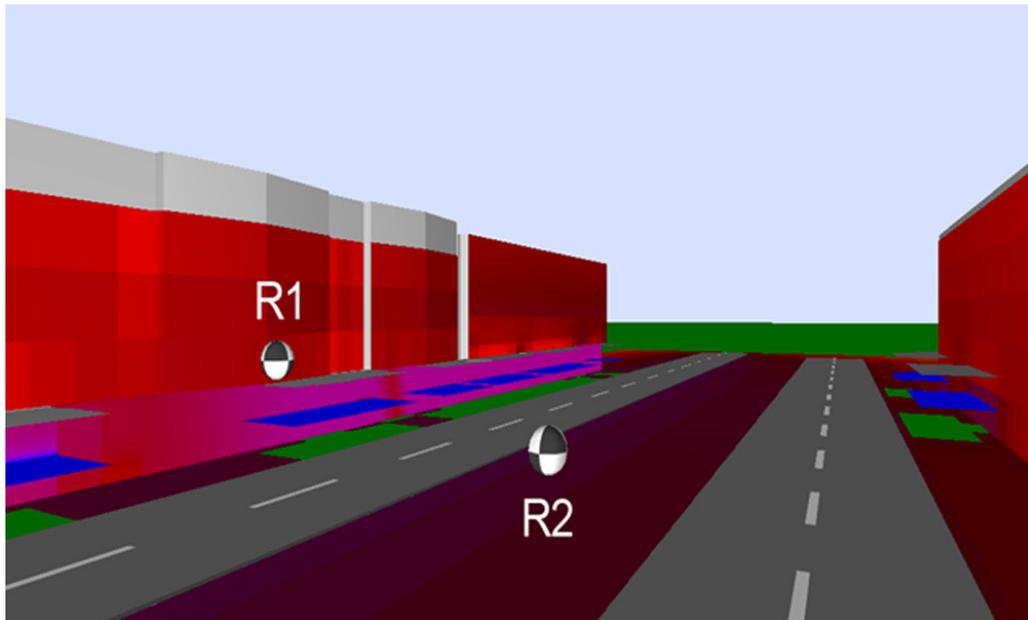


Figure 6. Acoustic model of the study area and the receiver points.

The results of the acoustic simulation show that there is no significant impact of the solution alternatives at the receiver point R2. The results obtained at receiver point R1 are shown in the following table.

Table 2. Noise attenuation values obtained at R1 receiver point.

Solution alternative	Calculated sound sources	Lp (dB)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
Pergola	outdoor seating + road traffic	8.6	6.2	8.1	8.8	8.3	8.5	10.8
	road traffic	7.4	5.8	6.8	7.4	7.4	7.7	8.7
Awning	outdoor seating + road traffic	2.7	1.6	1.8	2.3	2.5	3.1	4.6
	road traffic	1.9	1.6	1.8	1.9	1.9	2.0	2.0
Pergola + Awning	outdoor seating + road traffic	8.7	6.2	8.1	9.0	8.4	8.6	11.0
Pergola + Awning + Carpet	outdoor seating + road traffic	8.7	6.2	8.1	9.0	8.4	8.6	11.0
Reduction of outdoor seating by 50%	outdoor seating + road traffic	0.5	0.0	0.0	0.3	0.4	0.7	1.5
Reduction of outdoor seating by 50% + Awning	outdoor seating + road traffic	2.9	1.7	1.9	2.5	2.6	3.3	5.3

As seen in Table 2 the corrective measure that introduces pergola has the highest noise attenuation value with 8.6dB. On the other hand, the awning solution offers 2.7dB of noise reduction at the receiver point R1. Different combinations of these solutions (pergola + awning and pergola + awning + carpet) do not offer significant improvements respect to single applications. Even there is no significant effect in the results, the carpet solution may play an important role in reduction of noise annoyance at night-time as it damps the noise generated by the moving tables and seats during the closure of the entertainment places. The results also show that reduction of the outdoor seating by half does not offer a significant improvement.

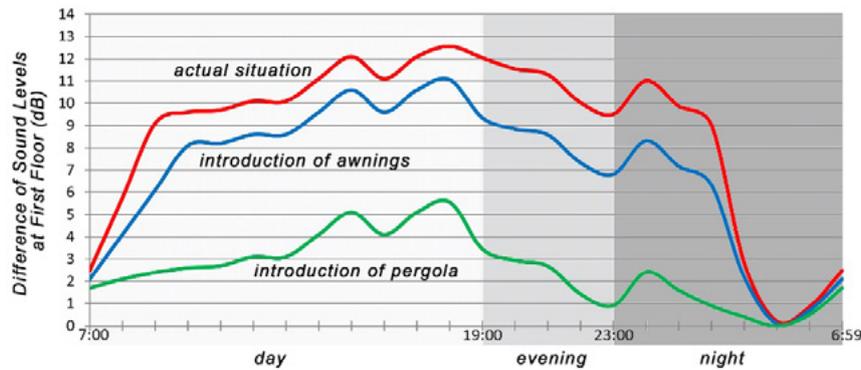


Figure 7. Reduction of environmental sound levels by proposed corrective measures. The lowest value indicated as 0dB.

4.4. Virtual Reality Design

In this step, the objective is to create realistic audiovisual depictions of the solution alternatives in virtual reality medium. Within this scope, first, previously captured *in situ* audio recordings were analyzed and various soundscapes that represent existing situation were generated. In addition to this, these soundscapes (audio signals) were processed (Perea Pérez et al. 2010) with appropriate attenuation filters which had been calculated previously by noise prediction software, so as to obtain new soundscapes that represent post-application situation. This signal processing step was repeated for each solution alternative.

After obtaining the audio component, the next step is the preparation of the visual component of the virtual reality application. Previously prepared (in the acoustic simulation step) simple 3D model was improved by adding building façade elements, street furniture and vegetation. Also, the solution alternatives were detailed and placed at corresponding locations (Figure 8). In order to increase the visual realism, previously captured photos and videos were processed and applied as textures (texture mapping) on 3D model.



Figure 8. Still images from the interactive application. Introduction of awnings (left) and pérgola (right).

The completed visual model was merged with the prepared soundscapes employing Worldviz Vizard (Worldviz LLC 2014) virtual reality development software. In this stage, programming is the main task in order to define how each element will act in virtual environment and interact with other elements. The final virtual reality application offers an interactive and immersive interface that the user can switch between scenarios (solution alternatives) and walk through the Plutarco Av. while he/she listens and observes in an intuitive manner his/her surroundings. In this case, considering the complexity of the immersive virtual reality hardware and difficulty to reach the large target audience, an informative video was extracted from the mentioned interactive application. This informative video represents a virtual walk in Plutarco Av. showing the existing situation and the proposed solution alternatives.

4.5. Stakeholder Engagement

The informative video, details of its preparation process and other information related to the noise issue were presented to the stakeholders through following mediums:

- Professional forums/meetings: The project was presented for the first time on 12 April 2013 at Dept. of Environment and Sustainability of Municipality of Malaga and discussed by the noise control specialists. On 23 April 2013, the project was presented to the urban planners, environmental engineers and economists in a conference titled “Effects of Acoustics on Urban Planning”, which was organized by Municipality of Malaga. Later on, the project was presented and discussed in two other conferences in Spain.
- Local press: On 13 May 2013 a press conference was held and the Plutarco Project was presented. By means of this, the project reached to a large audience through local newspapers and news portals.
- Meetings with stakeholders: On 22 May 2013, a meeting was held with the residents and the business owners of the district Teatinos-Universidad in order to discuss the

project and get feedback about new suggestions for the solution of the noise problem.

- Internet: The prepared informative video and a poster which explains the details of the project were published on the website of the municipality. Also a dedicated webpage was prepared for the project.

The project aroused the interest of stakeholders in relation to noise problems in PlutarcoAvenue. During the professional forums, many professionals from different backgrounds (noise control specialists, urban planners, architects, economists and politics) contributed to gain a wider insight into the problem. On the other hand, the residents of the district found possibility to discuss and express their opinions for the solution of the problem, both on web (discussion forums related to the press news) and directly via the district meeting held by the municipality. At the same time, the project has been a major awareness campaign for general public of Malaga as it has brought the noise problem from entertainment activities into view.

The stakeholder engagement process has not ended up yet with a definitive solution. Notwithstanding, business owners, on their own initiative started to consider introducing sound absorbent awnings in their premises. Almost all of the entertainment venues have recently installed new awnings to participate in the solution. Today, the municipality is studying the efficiency of these installed awnings realizing in situ measurements and interviewing local people in order to encourage a wider and correct application of this solution in future.



Figure 9. Installation of new awnings at entertainment venues.

5. Conclusion

This paper introduces an innovative approach to noise control practice that usually lacks in public information and participation as it conventionally uses complex acoustic parameters to describe noise issues which are not comprehensible for general public. In this context, a theoretical framework which makes use of virtual reality technology to enhance public information and participation processes in noise action planning process is developed.

Also, the proposed method is implemented within Plutarco Av. noise action planning study and its efficiency is proved with this real life example. The results demonstrate that it is a promising approach for the solution of the complicated noise issues related to behavior of individuals and to culture and lifestyle of communities. Employing the proposed approach, the municipality had the opportunity to evaluate the perception and the opinion of the public before implementing any corrective measure. Moreover, with this approach, the overall success of the action plan is ensured as it is the product of a consensus of the stakeholders.

REFERENCES

- Adams, Mags D., Neil S. Bruce, William J. Davies, Rebecca Cain, Paul Jennings, Angus Carlyle, Peter Cusack, Ken I. Hume, and Christopher J. Plack.** "Soundwalking as Methodology for Understanding Soundscapes." In *Institute of Acoustics Spring Conference 2008 - Widening Horizons in Acoustics*, 552-58. Reading, UK.2008.
- Asociación de Vecinos El Romeral Contra El Ruido.** 2014. Accessed June 8. <http://elromeralcontraelruido.wordpress.com/>.
- Ayuntamiento de Málaga.** "Área de Medio Ambiente y Sostenibilidad. Avance Sobre La Situación de La Zona Del Romeral." Málaga, Spain. 2008.
- Biocca, Frank, and Ben Delaney.** "Immersive Virtual Reality Technology." In *Communication in the Age of Virtual Reality*, 57-124. Hillsdale, NJ, USA: L. Erlbaum Associates Inc.1995.
- Botteldooren, Dick, Bert De Coensel, Timothy Van Renterghem, Luc Deconinck, and Dominique Gillis.** "The Urban Soundscape: A Different Perspective." In *Sustainable Mobility in Flanders: The Livable City*, 177-204. Belgium: Institute for Sustainable Mobility, Ghent University. 2008.
- Brown, Lex.** "The Noise Control and Soundscape Paradigms: Complementary Approaches to a Better Acoustic Environment." In *36th International Congress and Exposition on Noise Con-*

- trol Engineering, Inter-Noise 2007. Istanbul, Turkey.2007.
- Defensor del Pueblo.** *Contaminación acústica.* Madrid, Spain. 2005.
- DataKustik GmbH.** *Cadna A Reference Manual.* Greifenberg, Germany.2012.
- Aitex.** *Diseño Y Validación de Carpas de Exterior Para La Minimización Del Ruido Por Actividades de Ocio.* Alcoy, Spain.2011.
- Fiebig, André, Viviane Acloque, SeckinBasturk, Maria Di Gabriele, Marko Horvat, MassimilianoMasullo, RetoPieren, et al.** Education in Soundscape - A Seminar with Young Scientists in the COST Short Term Scientific Mission "Soundscape - Measurement, Analysis, Evaluation." In 20th *International Congress on Acoustics - ICA 2010.* Sydney, Australia. 2010.
- Funkhouser, Thomas, Patrick Min, and Ingrid Carlbom.** "Real-Time Acoustic Modeling for Distributed Virtual Environments." In *Proceedings of the 26th Annual Conference on Computer Graphics and Interactive Techniques*, 365-74. Los Angeles, CA, USA.1999.
- Kang, Jian.** *Urban Sound Environment.* Taylor & Francis Group.2007.
- Kurakula, Vinay Kumar, and Monika Kuffer.** "3D Noise Modeling for Urban Environmental Planning and Management." In *REAL CORP 008 Proceedings*, 517-23. Vienna, Austria: CORP, Competence Center of Urban and Regional Planning. 2008.
- Law, Chi-wing, Chee-kwan Lee, Aaron Shiu-waiLui, Maurice Kwok-leung Yeung, and Kin-che Lam.** "Advancement of Three-Dimensional Noise Mapping in Hong Kong." *Applied Acoustics* 72 (8): 534-43.2011.
- Maffei, Luigi, Massimiliano Masullo, and Seckin Basturk.** "Potentialities of the Immersive Virtual Reality in Environmental Noise Annoyance Studies." In 42nd *Spanish National Congress on Acoustics - TecniAcustica 2011.* Cáceres, Spain. 2011.
- Murphy, Enda, Henry J. Rice, and Craig Meskell.** "Environmental Noise Prediction, Noise Mapping and GIS Integration: The Case of Inner Dublin, Ireland." In 8th *International Symposium Transport Noise and Vibration.* St. Petersburg, Russia. 2006.
- Perea Pérez, Francisca, Seckin Basturk, Massimiliano Masullo, and Ricardo Hernandez.** "A Tool for Environmental Auralization of Stationary Sound Sources." In 1st *European Congress on Sound and Vibration - EAA EuroRegio 2010.* Ljubljana, Slovenia. 2010.
- Schafer, R.M.** *The Tuning of the World.* Borzoi Book. New York, NY, USA: Knopf.1977.
- Schulte-Fortkamp, Brigitte.** "The Tuning of Noise Pollution with Respect to the Expertise of People's Mind." In 39th *International Congress and Exposition on Noise Control Engineering, Inter-Noise 2010.* Lisbon, Portugal. 2010.
- Sepulcri, Daniele, Alessandro Buoso, Francesca Remigi, Angelo Scarpa, and Roberto Spinazzè.** "Valutazione Di Impatto Acustico Di Sorgenti Sonore Costituite Da Aggregazioni Di Persone." In 38th *National Congress of Italian Acoustical Society - AIA 2011.* Rimini, Italy. 2011.

Tsingos, Nicolas, Emmanuel Gallo, and George

Drettakis. "Perceptual Audio Rendering of Complex Virtual Environments." In SIGGRAPH 2004. Los Angeles, CA, USA.2004.

Vorländer, Michael. *Auralization: Fundamentals of Acoustics, Modelling, Simulation, Algorithms and Acoustic Virtual Reality.* RWTHedition. Springer. 2008.

Vorländer, Michael. "Virtual Acoustics: Opportunities and Limits of Spatial Sound Reproduction for Audiology." In 39.DGMP Tagung. Oldenburg, Germany.2008.

Worldviz LLC. "Vizard 4.0 User's Manual." Accessed June 8. <http://docs.worldviz.com/vizard/>.2014.

Resounding Overbetuwe. An Acoustic Gradient in a Sustainable Transport Corridor

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Abstract

Overbetuwe, a region in the Netherlands, functions as a transport corridor. The presence of large-scale infrastructure causes noise nuisance and make the landscape in Overbetuwe unpleasant be in. New functions with noise sensitive facades are planned, while the presence of traffic noise will increase due the A15 expansion of 2x3 ways. Meanwhile the Overbetuwe municipality strives to reach climate neutrality by the year of 2030. The widening of the A15 and the ambition to become climate neutral will affect the landscape experience in Overbetuwe. Both undoubtedly mean an increase in the number of sound sources and noise pollution. The challenge here is the implementation of renewable energy technologies in the surroundings of the motorway, but also aims acoustic landscape quality.

Keywords: Landscape architecture, landscape experience, Overbetuwe, traffic noise, soundscape

1. Introduction

In a densely populated country, as the Netherlands, sound is ubiquitous in the landscape. The Dutch soundscape exists out of airports, wind turbines and natural areas. Nevertheless, no sound is as present as the sound of cars passing by with an average speed of 130 kilometres per hour. We produce this sound every day when we travel between home and work. Depending on the direction of the wind, the noise of the motorway is audible in many places. The sound is all around us and is penetrated into our daily lives. Although sound can be perceived both as pleasant and unpleasant, the impact of noise pollution is immense. With the increase of infrastructure, as motor for economic growth, the soundscape of the Netherlands changed drastically. Not only, has it become hard to find silence in our noisy country, but also natural environmental sounds, such as bird songs, are overwhelmed by traffic noise.

1.1. Case study: Overbetuwe

Traffic noise is also dominating the soundscape of Overbetuwe. The region is intersected by three freeways, several highways and two train lines. The most important linear structures are the A15 and the Betuweroute, which transect the region from East to West (figure 1). The A15 connects Rotterdam and Enschede with each other. Parallel to this motorway the Betuweroute is constructed (a freight railway). Both infrastructural networks form an important connection for the distribution of goods and services to Germany.

The large-scale infrastructure thus connects spaces. It creates connectivity and economic development on the national level as well for the region. Nevertheless, the construction of large scale infrastructure also includes negative side effects, such as large-scale developments near the motorway, noise nuisances, pollution and intersections of the landscape without significance for the traditional structures in this landscape.

These negative consequences will increase in the near future, since it is modelled that traffic congestion will occur when the A15 will not be adjusted to the increase of road users (Projectbureau ViA15, 2011). This not only affects transport within the region of Arnhem-Nijmegen, but also the distribution of goods between Randstad¹ and Germany. In order to avoid congestion a new plans are introduced for the A15 trace. The plan connects the A15

1. Randstad includes the Rotterdam harbour. Nevertheless, the distribution of goods will hardly affect the traffic congestion at the A15, since this will be transported by water and rail traffic. This means an increase of traffic noise produced by trucks on motorways, but an increase of noise produced by railways (Betuweroute) (Havenbedrijf Rotterdam, n.d.).

with the A12 and current connection between Valburg and Ressen will be widened to 2x3 lanes (Projectbureau ViA15, n.d.).



Figure 1. Construction plan A15 (author; Projectbureau ViA15, n.d.b): Current connection between Valburg and Ressen will be widened to 2x3 lanes and the A15 will be connected to A12.

Recently, the municipality of Overbetuwe introduced a new land use by setting the ambition to become climate neutral by 2030 (Berns, Willems, & Berg, 2009; Libercé-Kruit & Uitbeijerse, 2010; Tempelman, Ahoud, Berns, Jaarsma, & Westerdiep, 2010). In other words, the municipality wants to reduce the emission of greenhouse gasses (CO₂, etc.) to zero with regard to electricity and gas consumption by households, business and organizations (Berns et al., 2009). Within the research conducted for the author's bachelor thesis both the implementation of renewable energy technologies in the surroundings of the motorway and acoustic landscape quality are taken into account. Nevertheless in the context of this publication this paper focuses on the implementation of an acoustic gradient in the sustainable transport corridor of Overbetuwe.

1.2. Problem statement

The widening of the A15 and the ambition to become climate neutral in 2030 will affect the landscape experience in Overbetuwe. Both undoubtedly mean an increase in the number of sound sources and noise pollution. Moreover, is the appearance and spatial organisation of renewable energy technologies in the physical environment hardly taken into considering by landscape architects (Dobbelsteen & Stremke, 2013; Sijmons et al., 2008). It is therefore necessary to study the impact large scale infrastructure, energy transition and the use of different (renewable) energy sources, on landscapes around us.

Dobbelsteen and Stremke (2013) are doing this by postulating that landscape architects should develop sustainable energy landscapes, rather than renewable energy landscapes. Although a lot has already been written on sustainable energy landscapes, and designers are anticipating on the topic, there is a need for a better integration of aesthetics and environmental psychology into the shaping of sustainable energy landscapes (Dobbelsteen & Stremke, 2013). In other words, there should be a focus on the experience of sustainable energy landscapes.

Traditionally, the focus of landscape experience, within the discipline of landscape architecture, was always on scenic quality (Blessner & Salter, 2007; Hedfors, 2003). Especially acoustic landscape experience has been hardly studied so far (Benfield, Bell, Troup, & Soderstrom, 2010; Hedfors, 2003). In case the acoustic environment was taken into account, it mostly was integrated in motorway design for noise reduction. Brown and Muhar (2004), therefore, encourage a more positive approach to sound. Accordance to them landscape design should focus on environments that produce sound that people prefer or consider as desirable. This thesis elaborates on both the knowledge gap and the statement of Brown and Muhar (2004) by studying present and (expected) future sound changes in Overbetuwe.

1.3. Research objective

The research in this paper aims to explore the possibilities of landscape architecture to contribute the development of a sustainable transport corridor, with large scale-infrastructure and renewable energy technologies, which fosters visual and acoustic experience in Overbetuwe. The study focus is on the concept of soundscapes, which exist out of any acoustic landscape experience. Augoyard, Karlsson & Winkler (1999) define soundscapes in more detail as the “totality of sound phenomena that lead to perceptual, aesthetics and representational comprehension of the sonic world” (Hedfors, 2003, p. 25).

Although the receiving of sound is highly personal, Schafer (1997) indicated the existence of a favourable and unfavourable sound, namely *hi-fi* and *lo-fi soundsystem*. Between these systems a contrast between noise and silence can be indicated. The *hi-fi* system is processing favourable signals: discrete sounds with a low ambient noise level that can be heard clearly (Schafer, 1997). Soundscapes where *hi-fi* sound dominates allows listeners to hear noises on distance. In a *hi-fi* soundscape hearing cannot be closed off at will, nevertheless a receiver is able to hear what he or she is willing to hear. In other words, people have are able to filter out undesirable sound, while concentrating on what is desirable (Schafer,1997).This is not the case in *lo-fi* soundscapes, where unfavourable sounds are produced. Here the amount of signals are overcrowded and exist out of loud sounds. Under these conditions noise so much

acoustic signals are present that people get lost in orientation. It causes a soundscape that is unpleasant to be in. The lo-fi system is therefore closely related to the term *noise pollution*.

Most of the time such loud sounds are unfavourable and perceived as unwanted. Brown and Muhar (2004) made a distinction between wanted and unwanted sound signals. They state that wanted sounds are mainly produced in the natural and human soundscape, such as church bells, sounds of nature, sounds of city vitality, food steps, sounds of running water music etc. (Brown & Muhar, 2004). Unwanted sounds are mostly present in the mechanical soundscape, such as road traffic, human sounds, amplified music, machinery noises, etc. (Brown & Muhar, 2004).

Within the study the term *noise pollution* will be used to make a distinction between natural acoustic environment and the disruption of this acoustic environment by mechanical sound (noise pollution). Furthermore, audio audio-visual interactions are taken into account; there is a contradiction between the dominating sounds and the visual appearance of the landscape itself.

2. Acoustic landscape experience in Overbetuwe

Traffic noise is a one of the most dominating sounds in the landscape of Overbetuwe, since the region is intersected by three freeways, several highways and two train lines. The most important linear structures are the A15, A50 and the Betuwe route, which transect the region from East to West (figure 2). Although it is acknowledged that traffic noise has a disruptive effect and can damage the auditory organ (Keulen, 1970; Maschke & Widmann, 2013), it has been not proven that it is perceived as noise pollution or overwhelms natural and human sounds in Overbetuwe yet. In order to do so this chapter identifies the characteristics and acoustic environment of the Overbetuwe landscape in the surroundings of the A15, A50 and the Betuwe route. In addition the chapter identifies the potentials for renewable energy technologies in Overbetuwe in relation to its soundscape.



Figure 2. Topographical map (author): The landscape gradients still dictates current land uses and settlements.

2.1. River landscape

Overbetuwe is part of the river delta of the Rhine. Entering Overbetuwe this river splits up in rivers Nederrijn and Waal (figure 2). Both stream from East to West and formed the landscape of Overbetuwe, which is known for its soils, fruit nurseries and particular landscapes. The appearance of this landscape nowadays finds its origin in the Pleistocene. In that time the region was surrounded by sand hills, push moraines (Dutch: *stuwallen*), that were formed by glaciers in the penultimate glacial period, the Saalien (figure 3) (Jongmans, van den Berg, Sonneveld, Peek, & van den Berg van Saparoera, 2013). In the lower areas, inbetween the push moraines raging rivers, Waal and Nederrijn, flowed freely by constant shifting their beds.

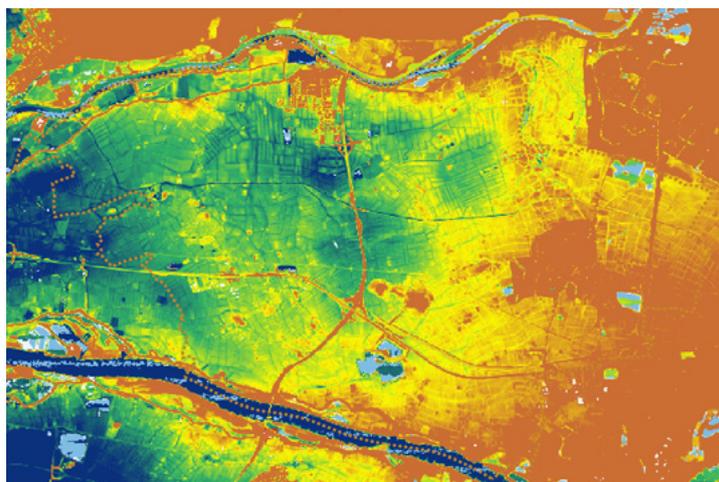


Figure 3. Elevation map (Geodan, 2012): Situation of push moraines (red), natural levees (red-yellow) and river basins (green-blue) in the landscape of Overbetuwe.

2.2. Natural landscape

Such a moving curved riverbed is called a meandering river system. Since the Netherlands is a flat country rivers have the tendency to meander all the time. On the one hand rivers erode in the outer curve due fast flow velocity. On the other hand sedimentation of sand and clay takes place in inner outer curves due slow low flow (Jongmans et al., 2013).

The same principle takes place at high tide when the river overflows its banks. When a river floods, sand and clay particles are transported out of the riverbed and deposited on the river banks as soon through loss of flow velocity (Jongmans et al., 2013). Due the deposition of sand close near the river natural levees (Dutch: *oeverwallen*) are formed. These are sandy depositions that form elongated elevations along (former) beds in the river landscape. Natural levees are covered with hardwood alluvial forest (Dutch: *hardhout ooibos*), such as *Fraxines excelsior*, *Quercus robur*, *Quercus palustris*, *Alnus Glutinosa*, *Salex Alba* (Jongmans et al., 2013). At the lower parts of natural levees alluvial forest is not able to grow due high water levels. Therefore another vegetation type is present there, namely the swamp forest (Dutch: *moerasbos*).

Behind natural levees, flood basins (Dutch: *kommen*) are formed. Since sand (coarse sediment) is heavier than clay it is deposited very close to the river bank. Clay (fin sediment), in contrast, is light and can be transported over a longer distance before deposition (Jongmans et al., 2013). Flood basins are situated low lying parts or flat areas inbetween natural levees. Flood basins are characterised by high groundwater levels and open landscapes. Within this open landscape some elevation can occur. This are river dunes (Dutch: *rivierduinen* or *donken*), which are formed by wind depositions during the last ice age (Weichselien). In Overbetuwe Valburg and Elmeren are built on these elevations.

As show in figure 3 and figure 4, the landscape of Overbetuwe is characterised by small flood basins. This is the result of the meandering river system whereby a great amount of large flat levees formed by fossil rivers.

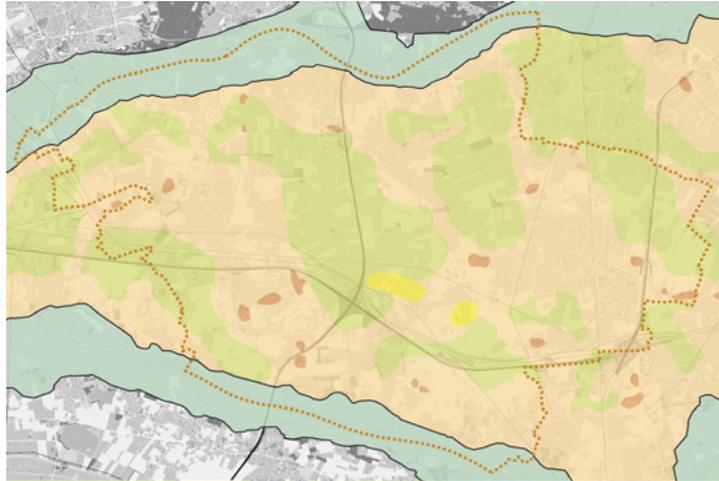


Figure 4. Landscape type map (author): flood plains (blue), natural levees (orange), river basins (green), river dunes (yellow) and historical occupation sites (brown).

2.3. Cultural landscape

The appearance of natural levees and flood basins has dictated the land uses and settlements in Overbetuwe, since people determined their place of establishment on flood hazards. First human settlements (circa 700 before Christ) were located on higher grounds: natural levees and river dunes (Gemeente Overbetuwe, 2010; Haartsen, 2009; Jongmans et al., 2013). Nevertheless, since these the natural levees were not as big as nowadays, the first occupation sites were heighten with organic waste (Dutch: *woerd*) (Jongmans et al., 2013) (figure 4).

From the eighth century, almost all villages, farms, roads and estates in Overbetuwe concentrated on natural levees. Hence, figure 2 in combination with figure 3 and figure 4 show that in Overbetuwe different dominant lines of human settlements can be identified on the natural levees of fossil rivers (Dutch: *stroomrug*). People settle, thus on high areas, since they are dry. Other places, such as Heteren, Driel and Randwijk, are developed in the Roman time at places where roads met (Gemeente Overbetuwe, 2010). Roman settlements were situated on location that were not only high and dry, but also close the river (transport) and suitable soils for agriculture as result of fertile river deposits. Therefore, most of these settlements remained during the Middle Ages.

Since the low-lying lands, flood basins, were not suitable for human settlement they were used as uncultivated land (Dutch: *woeste gronden*). That is, land that only was used in summer for grazing and hay production. In order to reclaim and protect low-lying lands for being flooded dykes (Dutch: *dijken*) were constructed during in the 12th and 13th century (Gemeente Overbetuwe, 2010; Haartsen, 2009; Jongmans et al., 2013). Wild rivers were tamed by long stretched ground bodies along the rivers. Originally the cultivation of land

started from the natural levees, but due to the diking of the rivers it was also possible to cultivate the flood basins. Gradually, the land use in Overbetuwe changed with the introduction of fruit orchards (17th century). In the 19th centuries agricultural land, which are close to human settlements, are replaced by tree nurseries (Gemeente Overbetuwe, 2010).

Although the dyke system leads to more security it also changed the drainage system in Overbetuwe. Traditionally water, originated from natural levees, is distributed by ditches (Dutch: *zegen*) to the flood basin. Meanwhile, soil in the river basins were saturated with seepage (Dutch: *kwelwater*) from the push moraines. The increase of excess rainfall could not be infiltrated in the ground anymore. Therefore, river basins are dewatered by a system ditches (Dutch: *sloten* or *zegen*), which transport water from the natural levees to the Linge; a drainage canal (Dutch: *wetering*). In contrast with the natural part of the canal, the Linge in Overbetuwe is dug around 1250.

The introduction of the dykes did not only change the landscape in the river basins, but also the landscape wedged inbetween the dykes. Different processes have transformed this area into an undulating landscape, which exist out old river beds (Dutch: *geulen* or *strangen*) and deep water bodies that are remained after dyke breaks in the past (Dutch: *kolken*). At the same time the brick industry (figure 5) had a great influence on the appearance of flood plains (Gemeente Overbetuwe, 2010), since they excavate the clay soil for brick production. Since the river still floods every winter, still sediments are deposited on in the flood plains, which cause a micro relief for different grass habitats close near the river. In summer the flood plains are these grasslands are used as meadow land.



Figure 5. Impressions of the natural gradient (author): (a) brick industry in the flood plains by the Nederrijn, (b) estate on a high natural levee by Hemmen, (c) orchards on low natural levee by Slijk-Ewijk and (d) open field in river basins between Andelst and Herveld.

2.4. Current landscape

The natural gradients of flood plains, natural levees and flood basins, still dictate current land uses and settlements. In the Northern part of Overbetuwe this landscape, despite recent changes, still very readable since most occupation still is situated on natural levees. Nevertheless due urban growth of Arnhem, Elst and Nijmegen the rural area in the East of Overbetuwe decreases, while more and more farmers are not economically viable anymore. In the next 10 years, 100 farmers are, therefore, forced to stop their activities within the area of Overbetuwe or switch to crop production in glass houses (Gemeente Overbetuwe, 2010). Another option for farmers is to increase the amount of owned land. Nevertheless, this is not always possible since land in Overbetuwe is not always available or farmers are not able to pay for the land prices.

Both developments, the urban growth and changes in the agricultural sector, have led to settlements and densification in the open water basins. Furthermore, it increases the levelling of natural gradients in the landscape (Haartsen, 2009). Besides these developments, urban growth will also increase the need for outdoor recreational space.

Down south, over the years large scale infrastructure has been introduced, which also affects the clarity of the visual transition from one landscape type to another. First infrastructural line that has been introduced is the rail connection between Arnhem and Nijmegen (1879) (Gemeente Overbetuwe, 2010). Later on the rail line between Arnhem, Tiel and Nijmegen was realised in 1882 (Gemeente Overbetuwe, 2010). More recently constructed are the motorways: A15, A50 and A325 (figure 2).

The A50 is elevated in the landscape and forms therefore a physical and visual barrier. The A15, in contrast, is situated at surface level. It therefore does not forms such a strong visual barrier, but this changed with the introduced of the Betuweroute parallel to the A15 in 2007 (Haartsen, 2009). Both infrastructural transect the region of Overbetuwe from East to West and split up the region of Overbetuwe in a North and a South (Gemeente Overbetuwe, 2010) since by the construction of both infrastructural lines the traditional landscape structures are not taken into account. Most unrecognizable is the traditional water system, which transports water to the Linge. That is since the water system is intersected by the A50. Other factors that suppose that the traditional landscape is not taken into account are the placing of trees and scrubs at traffic junctions and the placing of sound barriers (screens) along both sides of the Betuweroute.

Besides its appearance, the introduction of large scale infrastructure also included other negative side effects, such as large-scale developments near the motorway, limited access and pollution. Off all these negative side effects the introduction of large-scale develop-

ments by exits. By the motorway exits of Andelst, Heteren and Elst, for example are business areas introduced, which just as the large-scale infrastructure not is adjusted to the natural landscape. The business area of Heteren, for instance, is situated in a river basin that used to provide an open view.

2.5. Soundscape

Not mentioned yet is the noise nuisance that is caused by large scale infrastructure in Overbetuwe. In the south of Overbetuwe noise nuisance is most ubiquitous in the landscape, since large scale infrastructure is concentrated here (figure 2). The nuisance concerns the existence of road and rail traffic noise that is produced by motorized vehicles at the A15, A50 and Betuweroute (chapter 1). Figure 6 and figure 7 show the striking character of both sound sources. Road traffic noise seems to have less impact than rail traffic noise, but appearances are deceptive. Though it is true that the sound level (dB) of railroad traffic noise exceeds the volume of road traffic noise the endurance of both sound sources is not indicated in the figures. Since rail traffic noise is not always present in the landscape its impact is big large but short-lived. In contrast, road traffic is ever present. Although its presence fluctuates over time this omnipresence disrupts the perception of natural and human sounds in the landscape. Where a train passing by makes the acoustic environment for a moment unclear while motorways produces a continuous lo-fi sound system. Figures 6 and figure 7 also show that this system is not limited to the surroundings of the motorway or train rail. Instead traffic noise can still be heard at a distance of 2000 meters away from its sound source. The presence of this mechanical sound has accordance theory a major impact on the acoustic landscape experience.

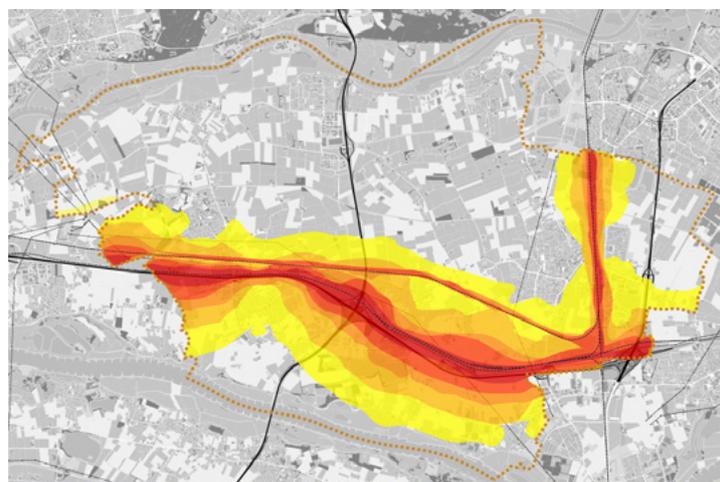


Figure 6. Isobel contour map: railroad traffic (author; Gemeente Overbetuwe, 2007, fig. 17): 45-50 dB (yellow), 50-55 dB (yellow-orange), 55-60 dB (orange), 60-65 dB (orange-red) and >65 dB (red).

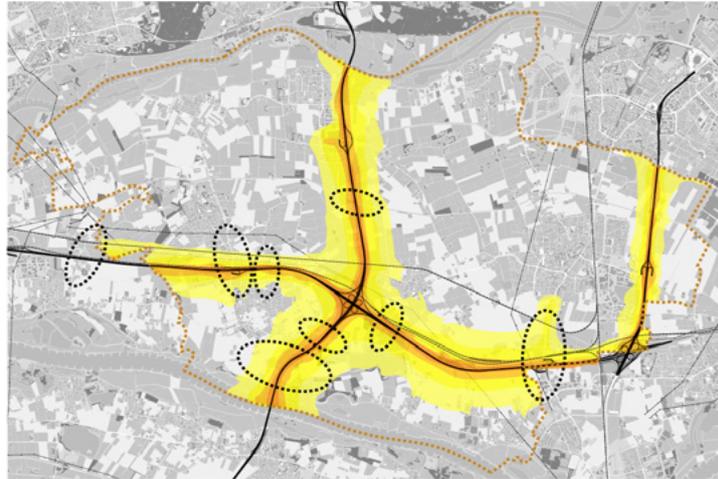


Figure 7. Isobel contour map: road traffic (author; Gemeente Overbetuwe, 2007, fig. 17): 45-50 dB (yellow), 50-55 dB (yellow-orange), 55-60 dB (orange), 60-65 dB (orange-red) and >65 dB (red).

To indicate to what extends the presence of traffic noise in overwhelms the natural and human sounds the soundscape of the south of Overbetuwe has been quantified and measured by an acoustic landscape analysis. This analysis focuses on human and natural sounds that occur in the surroundings of the motorway and the dominance of road traffic noise produced by the A15 and A50 to these sounds. In other words, the acoustic analysis indicates what sound sources are present in the soundscape of Overbetuwe and how their appearance is perceived. Railroad traffic is in the analysis not considered as a sound source, since its presence is accidentally and therefore difficult to measure in time.

Along the A15 and A50 in total 8 strips of 4 measurements have been taken; 2 at both sides of the motorway (figure 7). Since the appearance of sound is influenced by wind direction and the distance from each measurement to the motorway should be approximately equal the selection of measurement points is based on its accessibility. In other words, the measurements are taken at transitions that are transverse to the motorway at about 25-50 and 200-250 meter distance from the motorway. In addition, the measurements are taken between 10:00 am and 16:00 pm, to avoid intensity fluctuations during rush hours. At the moment of measurement there the wind was coming from the southwest with a wind speed of 4 Bft.

At each measurement the intensity of the ambient sound is measured by a Sound Level Meter and notations written down by the author in the field. This data analyses for the sounds is based on the book *The soundscape: our sonic environment and the tuning of the world* by Schafer (1997) gives an good guide for noting sounds within the field. To ground the impression of the soundscape and minimize the effect of subjectivity sound records and panorama photos are taken. Since it is hard to formulate and represent an exact expression

of a soundscape the measurements are analysed and visualised in (1) Isobel contour maps (2) sound event maps, (3) visual impressions and (4) sound description diagrams.

The Isobel contour and sound event maps show the locations of the four measurement points in one strip, in what direction the visual impressions are taken and where the sound sources appear. The visual impressions exist out of panorama photos show the (sometimes) present contradiction between the dominating sounds and the visual appearance of the landscape itself. The sound diagram analyses the sound record by the following parameters: (1) duration (time), (2) frequency (acoustic frequency patterns) and (3) intensity (volume).

Duration gives a time indication of the presence of sound, in this case minutes. Thus, it indicates temporal patterns in the soundscape, such as seasonal (winter-spring,-summer-fall) and day-night (dawn-noon-dusk) rhythms (Pijaonwski, Farina, Dumyahn, & Krause, 2011). In addition, frequency indicates the frequency patterns of a sound. So it indicates if a sound is inconsistent or continuous if it is present. Continuous sound is continuously present, while frequent inconsistent sound is contain repetitive patterns of silence and high/low notes. In the sound description diagram a distinction has been made between inconsistent sounds and frequent inconsistent sounds. Inconsistent sounds exist of long repetitive sound patterns, while frequent inconsistent sounds are characterized by a rapid succession of repetitive sound patterns. The intensity indicates the dominance of sounds in the soundscape by using the notation from very loud (ff) to very soft (pp) (Schafer, 1997). In contrast with the Sound Level Meter measurement a notation of sound conducted by the author which indicates the acoustic dominance of a certain sound source.

By comparing the sound diagrams can be made clear that road noise from the motorway always present, as it runs from east to west and from north to south though the region. In addition the amount of sound sources in the area is a limited number. Except from sounds produced by motorized vehicles, only the sound of wind, birds and talking people are identified. These natural and human sounds, apart from wind, are hardly heard because of their low intensity and the inconsistent character. Against the very loud intensity and continuous sound of traffic noise and wind, the sound of birds and talking people is muffled away. Traffic noise and wind are therefore dominating the soundscape. The sound measurements contribute to the statement found in literature that mechanical sound dominates acoustic landscape. Nevertheless, the acoustic analyses gained also new insight in the fact that there is hardly any differentiation in sounds in the landscape. The visual impressions of each measurement, state this this birds songs only occur in vegetation zones and wind is always most dominant in open space. At all other places sounds are mostly submerged by traffic noise. The appearance of sounds in the landscape is thus as monotonous as the visual landscape, which mostly exist of agricultural land.

3. Acoustic landscape design challenges and strategy for Overbetuwe

In order to design such sustainable transport corridor it has been argued that landscape architects should participate on the acoustic landscape quality. This quality is determined by sound waves that are produced by natural, human or mechanical sound sources, which all produce their own soundscapes. The appreciation these soundscapes is highly depending on audio-visual interactions and personal preferences. They can be perceived as keynote sound, sound signal and soundmark. Of all these soundscapes the mechanical soundscape is the most polluting one since it produces lo-fi sounds which overwhelm the natural and human soundscape.

The mechanical soundscape is most of the time produced by motorized vehicles. In Overbetuwe the mechanical soundscape is dominated by road traffic noise and rail traffic noise. In order to reduce this noise legislation has been formulated in terms of spatial interventions and risk zones. Most effective spatial interventions against traffic noise are the creation of distance, noise barriers and the use of slopes or sunken infrastructure. The presence of vegetation is less effective as spatial intervention for noise reduction, but also reduces air pollution and has positive impact on the landscape experience of both motorist and residents.

The implementation of renewable energy technologies in the landscape asks for an acoustic strategy. Soundscapes are not accidental by products of today's society; they are produced on purpose by carrying out a particular activity in a given environment. Landscape architectural design plays an important role in allocating activities to places, since a spatial design invites activities and therefore sound (Hedfors, 2003). This can result in places that are associated with life but can also turn in lo-fi environments, such as roadsides of a motorway. Due a vast increase and intensity of lo-fi sound produced by machines in current society the connection with the natural soundscape is disappearing in Overbetuwe. Schafer (1997) states that our soundscape nowadays not only tends to obscure natural sounds, but also creates an inhuman environment.

3.1. Design challenge

Schafer refers with inhuman environments to environments that produce unpleasant sounds; soundscapes where people feel uncomfortable in because they are not able to filter out un-

desirable sound. In other words people prefer clear landscapes, where they can recognize sounds and identify themselves with the landscapes.

In order to make a soundscape attractive again design was focused on noise reduction for a long time. Nevertheless landscape architects were designing for the deaf by playing with distance, walls, heights and the texture of pavements. They aimed to make landscape more attractive by noise reduction (Blessner & Salter, 2007; Brown & Muhar, 2004; Schafer, 1997) rather than designing landscapes that are both visually and auditory attractive.

According to Brown and Muhar (2004) a more positive focus on acoustic design is needed in order to create soundscapes that people prefer or consider as desirable environments. The challenge thereby is to deal with the dominant noises in an environment in an existing environment. In other words, a landscape is always inhabited with sound and landscape architect has to design with the many sounds already present in that landscape.

3.2. Soundscapes design

Since sound production is closely related to human activities, the best way of designing soundscapes is by zoning them (Brown & Muhar, 2004) in terms of land use or the location of facilities (Kersten & Noordhuizen, 2011). Designing in this context means the careful placing or allowing certain keynotes, sound signals or soundmarks in a certain zone to create clear landscapes. Zoning thus creates diversity within a landscape and gives each zone a unique soundscape. It helps the designer to create a “substantial portion of the prominent sounds’ progression possessed (...) which could easily be identified” (Hedfors, 2003, p. 37).

In order to make a zone recognizable for people a distinction has to be made between foreground and background sounds. A clear distinction between the two creates a pleasurable soundscape. In order to create a clear acoustic zone the acoustic space of foreground sound must not overlap. Background sounds may overlap, but must not tend to turn the foreground into a lo-fi landscape. Another way to produce clear landscapes is to take into account the temporary or lasting nature, rhythm and tempo of foreground and background sounds.

In order to classify the types of sounds and to turn them into sound should be defined as a resource (Hedfors, 2003) of which behaviour can be influenced in a certain environment. For influencing of three strategies by spatial design can be identified in literature: (1) sound reduction, (2) sound masking and (3) sound experience.

First, sound reduction includes the prevention of environments from acoustic pollution by the isolation of sound vibrations. This can be done by the placing noise barriers in the form of screens or earthworks or vegetation. Nevertheless, the creation of distance reduces the sound level.

Second, sound masking refers to camouflaging an undesirable sound by a pleasurable sound. In other words, when a undesirable sound is not too loud it can be turned into a background noise by overwhelming it with a pleasurable sound (Brown & Muhar, 2004; Schafer, 1997). Traffic noise, noise for example, can be overwhelmed by the noise of a flowing water stream when this one is loud enough to overrule the traffic noise. While reducing the impact of the unfavourable sound, the sounds that give sense of a place are preserved. According to Schafer (1997) the preservation of a soundmark is one of the most important sounds to fight for in a design, since they reflect the character of a place.

Third, sound experience allows unpleasurable sound or other sound signals at certain places to create an attractive and stimulating environment (Brown & Muhar, 2004). In order to do this human and mechanical sound must always grow out to a sublime acoustic experience at a certain location. This can, for instance, be done by creating a platform. Where the first two strategies can cover a whole zone, the third strategy can carefully be placed within a zone to create an unexpected experience.

3.3. Design location

For implementation of the design strategies in Overbetuwe in the surrounding of Overbetuwe is identified where the impact of road and railroad traffic has affects the landscape the most. This is where the sound intensity of the traffic noise is above 48 dB and where noise sensitive facades are located. A comparison of figure 8 indicates that the impact of traffic noise is highest in the south east of Overbetuwe. Although the intensity of sound here is comparable to other surroundings in the transport corridor, most noise sensitive facades are located here. In addition there are new developments are planned in this area along the motorway and plans for the widening the connection between Valburg and Ressen to 2x3 lanes will increase the intensity of traffic noise in this area and will not take into account the gradients in the landscape.



Figure 8. Noise sensitive facade map (author; Kersteren & Snitselaar, 2009a, fig. 13; 2009b; fig. 1): residential area (red), recreation area (yellow), business area (orange). The coloured spots are existing sensitive facades, while the dashed line indicates planned noise sensitive facades.

Focussing on the South of Overbetuwe it becomes clear that the development of urban areas on the regional scale, such as urban growth and changes in the agricultural sector are threatening the readability of the gradient in the south of Overbetuwe. The urban growth on the natural levee by Oosterhout (on the border of Overbetuwe and Nijmegen) threatens the quality and readability of the landscape. Current developments indicate already the appearance of glass houses and citizen inherits (Dutch: burgererven) within this area (Gemeente Overbetuwe, 2010). The urban growth will increase the need for recreational area which is planned by the expansion of Strandpark Slijk-Ewijk. That is a place where sand has mined for the development of the Betuweroute, but now is used as recreational pond. Meanwhile the expansion of the motorway creates attractive location for the enlargement and development of business areas.

In order to make the landscape gradient in Overbetuwe clear again the design should contain elements that counter further urbanisation from the Waalsprong. At the same time the natural gradient in the area strengths or even reintroduces.

Currently within the area three landscape types can be indicated: namely flood plains, natural levees and a transition area from the natural levee to the river basin. The landscape types form an gradual transition from a relative small scale landscape along the Waaldijk (natural levee) to an opener and low laying landscape along the A15 (transition from natural levee to river basin).

Recent years, the differences between these landscape types have become less readable, except from the flood plains. These are still very recognizable in the landscape, because of the present of the Waaldijk and the fact the flood plains remained unbuild (flood risk). In

contrast appearance of the natural levee has changed drastically; traditional orchards with high trunks have been replaced by orchards with low trunks, tree nurseries are introduced and reparcelling has taken place. This all resulted in the loss of small scale structures in the landscape such as hedges on the plot slopes (Dutch: houtwallen).

Since the once relatively dense coulisse landscape on the natural levee has become an open landscape, also the transition from natural levee to the river basin has become less clear. Hence, the intensification of agricultural land and the introduction of large scale infrastructure in river basins only strengthened this effect. The intensification of agricultural land introduces more building farms and plantings in the open landscape, while infrastructural lines, including the network of electricity transmission towers, intersect the landscaping structures.

Nevertheless, some relicts of the natural levees and the river basins are still present in the south of Overbetuwe, such as Landgoed Loenen, Huis Oosterhout and De Danenberg. Landgoed Loenen and Huis Oosterhout are real estates, which are located at the east and west site of the area. Both are recognizable due the presence of boscages and tree-lined avenues. Danenberg is a former country seat, which is located on a site that is elevated (Dutch: woerd). In addition there are old village centres, such as Slijk-Ewijk. From a top view the structure of these villages stretches along historical transit roads where (former) farms were located (Dutch: boerenlint or dorpslint) figure 9 and figure 10. Other important structures that are still present are the Waaldijk, Rietgraaf, Oosterhoutse straat, Griftdijk, Eimerensestraat, Reethsestraat and Esterveldsche Zeeg (figure 11).



Figure 9. Topographical map (author).



Figure 10. Landscape type map (author): flood plains (blue), natural levees (orange), river basins (green), river dunes (yellow) and historical occupation sites (brown).



Figure 11. Historical linear structures and elements in Overbetuwe landscape (a) and Dominant linear structures in Overbetuwe landscape (b) (author).

Most important structures were the Waaldijk and Griftdijk. They formed important transit roads while protecting the people for flooding at the same time. In addition the Riet-

graaf is an old river bed, which has been damped and moved during the intensification of agricultural land in Overbetuwe (figure 11). The Estervelsche Zeeg, on the other hand forms a straight ditch that not has been changed of course. The Oosterhoustse straat, Eimerensestraat, Reethstraat and Esterveldsche straat are historic linear structured villages in the area. Of all the Oosterhoustse straat was the most important one, since it connected Oosterhout and Slijk-Ewijk.

3.4. Design strategy

As figure 11 these historic structures are still dictate as long lines in the landscape. Two directions can be indicated. First there is the north south direction that follows the transition from the natural levee towards the river basin (figure 11) Second have a dominant east-west direction indicate the different gradients of the high and low natural levees parallel along the river Waal (figure 11). These horizontal lines can form a basis for acoustic zoning design, since each landscape gradient is characterized by different land uses and different sounds.

The first zone that can be identified is situated on the higher part of the natural levee inbetween the Waaldijk and the Oosterhoutse straat (figure 12). This zone is formed by the presence of Landgoed Loenen, De Danenberg and Huis Oosterhout. In this zone sound experience will play an important role.

Second zone is layer on the lower part of the natural levee, enclosed by Oosterhoutsestraat and the Rietgraaf. Most important strategy to include in this zone is sound masking to overwhelm the traffic noise. Nevertheless, further away from the motorway sound experience can play a more important role.

Third zone is formed by the agricultural land inbetween the Eimerensestraat and Reethstraat, which forms the transition area from the natural levee towards the river basin. Just as in the second zone sound masking will play an important role in here.

Although sound masking helps to reduce the impact of acoustic landscape experience, it will not be enough to protect the noise sensitive facades along the motorway. Therefore the strategy of sound reduction will be deployed in surroundings of the motorway.

As figure 12 shows the concept of zoning not only provides the opportunity to strength the natural gradient with an acoustic layer but also can gives each zone an unique soundscape. This can be done by the identification of possible sound sources within the area. Since mechanical sound made other natural and human sounds tend to be obscure in the Overbetuwe landscape, the design tends to decrease the acoustic experience of mechanical sounds and increase the occurrence of human and natural sounds in the gradients of Overbetuwe.



Figure 12. Identification of different soundscape (zones) in the landscape of South Overbetuwe (author).

3.4.1. Human soundscape

The location of land use is closely related to human activities (Kersten & Noordhuizen, 2011) and can give clues about the kind of human sounds that occur where and when at a certain place. Places that are inhabited by are most of the places where facilities are present, such as shopping centre or leisure facilities. These are places where people gather together and produce human sounds. At places that are less inhabited human sound is only occasionally present. That is for example the case by agricultural land use. Although human sounds occur in many ways, it is impossible to specify them in detail. The differentiations in human sounds are therefore too similar, since they are all related to human voice and body and only noticeable by being on site close to the source. Especially in the acoustic design of Overbetuwe it is not necessary to make a distinction between human sounds, such as speaking, call, singing, laughing or groaning, because it concerns just the presence of human sounds is scarce in general. Only a few spots that are more inhabited by human sounds could be indicated. These sound sources are visualised in figure 13. The recreational area by Strandpark Slijk-Ewijk, for example, forms an important cluster for the production of human sound sources, especially in summer when people gather there for swimming and other leisure activities. In addition human sounds are present in visitor centres and camping grounds and leisure parks. In addition human sounds can also occur in moving condition along recreational pedestrian and cycle routes.



Figure 13. Sound event map: human soundscape (author).

3.4.2. Natural soundscape

The identification of natural sounds in the area of Overbetuwe is less easy to identify. On the one hand it is ever present by climatic conditions such as wind and rainfall, while on the other hand animals' sounds are hard to indicate. They are not standing still, are constantly moving and influenced by the rhythms in nature. Nevertheless, just as humans the living area of animals can be pointed out. By analysing the habitat preference of animals and inventory where they live they can be identified as sound sources on a map. Figure 14 shows where animals' sounds sources are present. The event maps show hints for the allowance of certain natural sounds as keynotes, sound signals or soundmarks in each landscape gradient.

Potential keynote sounds can be formed by mammals that are the hedgehog (Dutch: *egel*), rabbit (Dutch: *konijn*), different mouse and marten species (Vries, 2007). Sounds produced by breed birds that are present in the area are characteristic for agricultural landscapes in the Netherlands. The means that the sounds produced by the following species can be indicated as sound signals: Boerenzwaluw, Huiszwaluw, Graspieper, Gele Kwikstaart, Kneu, Huismus, Spotvogel and Patrijs (Vries, 2007). Amphibians can also become sound signals since they are foreground sounds. They amphibians that are present within the area is formed by different frog species (Vries, 2007). Sound marks refer to a beacon sound that mark a certain place in the landscape, is highly recognizable and in contrast with other elements in the landscape. Such sounds can be formed by animals that are endangered or scarcely present in the south of Overbetuwe. These species are the bat (Dutch: *vleermuis*), Steenuil, Grote bonte specht and the Ransuit, since a bat colony is located in Oosterhout. The Steenuil, Grote bonte specht and Ransuit are endangered species (Vries, 2007), which live in orchards and small scale coulisse landscape at the natural levee in the south of Overbetuwe.

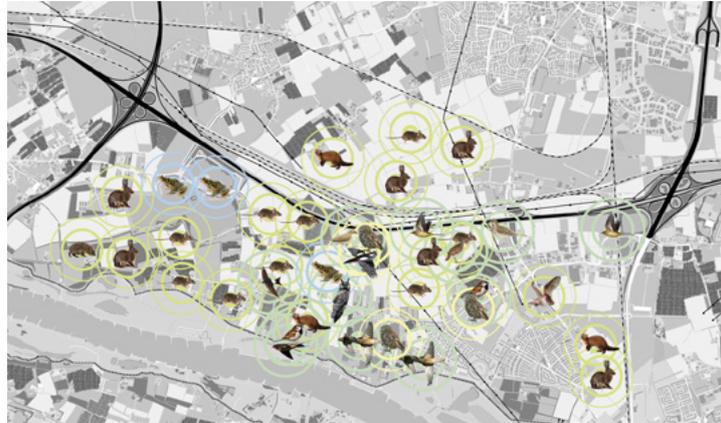


Figure 14. Sound event map: natural soundscape (author).

3.4.3. Mechanical soundscape

In order to let people experience acoustic sounds in Overbetuwe the mechanical sound has to be reduced. The spatial interventions for doing this are (1) distance, (2) noise barrier, (3) raised or sunken infrastructure and (4) the use of vegetation. Most effective spatial interventions for applications in Overbetuwe are the use of (1) distance, (2) slopes and (3) vegetation. Distance and slopes can help to increase the openness of the transition from the natural levee to the river basin. In addition noise barriers are needed to protect noise sensitive facades along the motorway. Further away from the motorway vegetation can strengthen the coulisse landscape at the natural levee.

Renewable energy techniques can also be used to strengthen the acoustic landscape gradient. The presence of solar energy, wind and biomass energy have highest potential in Overbetuwe. In addition the introduction of solar panels has no acoustic impact on the acoustic environment. They can easily be implanted in at places where the landscape experience strategy will be applied. The production of biomass energy introduces vegetation in the landscape that can increase the amount of natural sound in Overbetuwe. Nevertheless it also introduces mechanical sound during harvesting and the generation of heat. Of all these techniques the conventional wind turbine is most unsuitable for implementation in the soundscape, since it produces an unpleasurable sound. Nevertheless, in comparison to rail road traffic noise is limited. Placement of wind turbines can therefore be desired for fuelling mechanical acoustic landscape experience at certain places.



Figure 15. Sound event map: mechanical soundscape (author).

4. Resounding Overbetuwe

The design strategy as suggested in previous chapter proposes a future for the development of a sustainable transport corridor in Overbetuwe. It concerns a research-based-design that challenges the implementation of energy technologies in Overbetuwe, but also aims the acoustic quality in the surroundings of the A15 and Betuweroute.

4.1. Concept

Based on the historical lines of the natural gradient that is present in Overbetuwe, it is argued that the natural gradient can be strengthening with an acoustic layer. In other words, this design aims the reintroduction of the natural gradient, whereby natural energy technologies (solar, wind and biomass energy) are used for the generation of a pleasurable acoustic experience.

The natural gradient will be strengthened by making the transition form a coulisse landscape at the natural levee to the open field in the river basis clear again. Therefore three zones are identified.

Seen from the river Waal, the first estate zone is identified as natural gradient. In this one two estates and former country seat are present. By expansion of existing boscaiges and the introduction of new levelled hedges (Dutch: *houtwallen*) the small scale returns to the natural level and produces organic waste (punning's).

As second, the orchard zone, which is characteristic for Overbetuwe, is reintroduced in the form of an energy orchard. The orchard provides a pleasurable acoustic experience since it covers a slope where PV panes are situated. In addition the orchard trees form living habitat for different breeding bird species, such as the Steenuil (owl).

Third zone, the open field, covers the transition from the natural level to the river basin. Here energy crops are harvested and can people experience the mechanical sound of a wind turbine.

4.2. Landscape plan

Figure 16 and 17 show the implementation of the zoning strategy, as discussed in chapter 3, in the landscape of Overbetuwe. Most important structures in this design are Waaldijk, Oosterhoutse straat and Rietgraaf, since they form the borders between the estate zone, energy orchard zone and field zone.

The energy orchard is most important, since it provides the highest differentiation in acoustic experience and forms a buffer against the urbanization from the Waalsprong. The differentiation in the orchard zone is highest since it is living habitat for different animal species and is surrounded by other zones that produce mechanical and human sounds, such as the recreation pond.

Energy provision is delivered by each zone. Together they produce a total energy amount of 516.9 TJ. Since Overbetuwe has the ambition to be energy neutral, and thus self-sufficient by 2030 the landscape plan provides a design based on closing energy cycles. In other words, energy and water flows are combined in order to match supply and demand as much as possible within the region. As residual kitchen waste (e.g. fruit and vegetables), organic waste and black water streams will be pumped towards the anaerobic digestion installation (Zeeman et al, 2008). At the anaerobic digestion installation, biogas will be produced. The CHP (Combined Heat and Power) will burn the biogas to produce electricity and heat. Heat will be used for the heat distribution network and for direct application at the digestion installation. The still polluted water coming from the digester will be treated with magnesium to recover phosphorus in the form of struvite (Zeeman et al, 2008). Struvite can be used as fertilizer for agricultural practice (Green et al, 1988). The anaerobic digester, ATEZ and CHP, are located in the east of Overbetuwe.



Figure 16. Design strategy (author): Dominant long structured lines form the basis for the implementation of an acoustic gradient in the South of Overbetuwe.



Figure 17. Landscape plan (author).

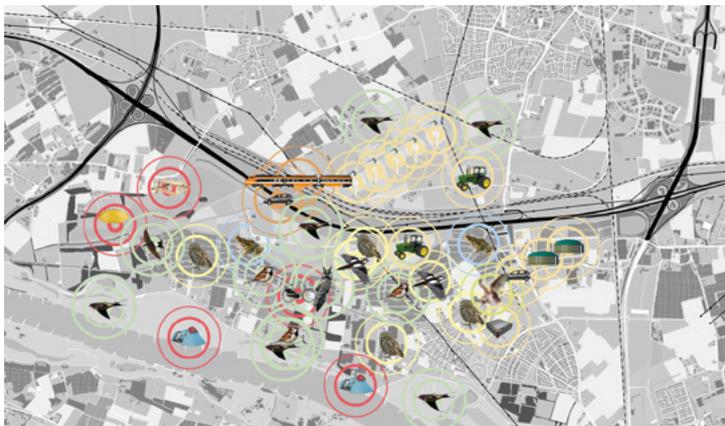


Figure 18. Sound event map: landscape plan (author).

4.3. Site design

The site design and design detail indicate more precisely the strengthening of the landscape gradient in Overbetuwe. Near Danenburg a new coulisse landscape has been introduced (figure 19). Agricultural land has been replaced by a stronger structure of energy orchards and an open field has been realized (figure 21). To deal with noise nuisance of the large scale infrastructure sound barriers and a slope with elephant grass are introduced there were noise sensitive facades or activities are located (figure 20). In conclusion are all the zones connected by a foot/cycle path which stretches from the river plains to Elst. Along this path different sound sources can be experienced.



Figure 19. Current situation and artist impression of the estate zone (author). Keynote sound: Gewone dwergvleermuis.



Figure 20. Current situation and artist impression of the field zone (author). Keynote sound: Boerenwaluw; keynote sound: wind turbine; sound signal: agricultural motorized vehicles.



Figure 21. Current situation and artist impression of the energy orchard zone (author). Soundmark: Steenuil; sound signal: frog.

5. Discussion

This paper focused on acoustic landscape experience in sustainable energy landscapes and how these could be improved by landscape architectural design. Although most literature is focused on noise pollution by traffic, this thesis tried to encourage a more positive approach to sound. In other words, it aimed to explore how a landscape architectural approach can contribute to pleasurable acoustic experience while taken into account the impact of renewable energy technologies on the acoustic environment. This topic turned out to be relevant for landscape architecture since the traditional focus within the discipline of landscape architecture was on scenic quality and there is need for a better integration of aesthetics and environmental psychology into the shaping of sustainable energy landscapes. Although the initial idea of this thesis was to show how a landscape architectural design can contribute to pleasurable acoustic experience, it turned out that is impossible since acoustic landscape experience is highly subjective. It depends on personal preference and people's associations with a certain landscape or sound in particular. In addition the time and place also play an important role in acoustic landscape experience.

In order to ground the design interventions of the proposed design in this thesis an acoustic landscape analysis has been conducted. The purpose of this acoustic analysis was not only conduct an impression of the current soundscape, but also to minimize the effect of

subjectivity within this paper. By the comparison of sound description diagrams for example could be stated why certain sound sources produce a lo-fi or hi-fi system and why they are more or less preferred by the human ear. Nevertheless, since the observations are still taking by one person and not repeated of time they can still be qualified as subjective.

In an addition the research lacks in a multisensory analysis to capture the whole landscape experience. Although the visual landscape experience is partly taken into account the presents other features, such as smell is necessary to determine the whole landscape experience. Due limitation in time, this paper furthermore does not contain a field analyses of differentiation in soundscapes in gradients. The same applies for the effectiveness of spatial interventions to noise reduction and impact of different renewable energy techniques. All are covered by secondary literature research, but field acoustic analyses should contribute to valuable conclusions about the changes in sounds in place and time. Such numbers would have strengthened the statement and proposed design of this thesis.

Since the design interventions are only based on theory, it is hard to forecast if the proposed design actually contributes to a more pleasurable experience is. More research and acoustic landscape analysis to the performance of executed acoustic designs are needed to determine its effectiveness. Such research should not only exist of intensity measurements, but also value judgement should be taken into account. This can be done by asking the users of the acoustic design to comment on sounds they are. By visualizing these into sound event maps can be indicated which sounds take place where and are less or more preferred by others. Such maps only show hints for acoustic design improvement. By doing so it can be guaranteed that an acoustic design can provide a pleasurable acoustic experience over time.

Despite of the limitations of this research the knowledge gathered in this paper can be valuable for our discipline since the topic of soundscapes has hardly been studied in landscape architecture so far. Let alone that acoustic experience has been associated with the acoustic impact of sustainable energy technology. This paper (and the author's bachelor thesis) can be therefore be interpreted as a first attempt to bring knowledge about acoustic landscape experience in relations to the topics of traffic noise en renewable energy technologies together.

6. Conclusion

This paper started a fascination for soundscapes and aimed to explore the possibilities of landscape architecture to contribute the development of a sustainable transport corridor, with large scale-infrastructure and renewable energy technologies, which fosters visual and acoustic experience in Overbetuwe.

The impact of renewable energy technologies has been taken in account. Since the Netherlands limits hydropower resources and does not lie in a region of great potential for deep geothermal, biomass is one of the leading renewable energy sources. Other leading energy sources are solar, wind and heat-cold storage and a heat exchanger. Of all these techniques the conventional wind turbine is most unsuitable for implementation in the soundscape, since it produces an unpleasurable sound. Most silent are the solar panel and thermal heat exchanger: they are noiseless and can be in the river landscape of Overbetuwe without changing the soundscape. Originally the landscape of Overbetuwe was dynamic landscape with clear landscape gradients of floodplains, natural levees and water basins. Nevertheless, due organic growth and the introduction of large scale infrastructure the landscape in the south of Overbetuwe has become less readable. The presence of large scale infrastructure and business area makes this part over Overbetuwe unattractive as recreation area. In addition the introduction of large scale infrastructure causes noise nuisance in Overbetuwe that overwhelms natural and human sound if they are present. This notation contributes to the statement found in literature that mechanical sound dominates acoustic landscape. Nevertheless, acoustic analyses gained also new insight that there is hardly any differentiation in sounds in the landscape. In addition, its present is closely related to the type of land use and the presence of vegetation in Overbetuwe. This visual and acoustic appearance of the landscape can be more or less attractive with the introduction of renewable energy technologies. Highest local potentials for renewable energy in Overbetuwe are solar, wind and biomass energy and are implemented in the acoustic design of Overbetuwe. The design as proposed in this paper not about quoting landscapes or banning out mechanical sound. Instead it focuses at special places where the opportunity exist to reduce, mask or experience (design strategies) certain sounds in order to increase human enjoyment. Zoning plays an important role by the implementations of these strategies in order to strength the qualities that are already present in a soundscape. For Overbetuwe a zoning has been introduced by following the natural gradient and long historical lines that are present in this landscape. Zoning provides here not only provides the opportunity to strength the natural

gradient with an acoustic layer, but also gives each zone a unique soundscape. Since mechanical sound made other natural and human sounds tend to be obscure in the Overbetuwe landscape, the design tends to decrease the acoustic experience of mechanical sounds and increase the occurrence of human and natural sounds in the gradients of Overbetuwe. The focus hereby is on natural sounds; since it's the appearance of different type animal sounds can easily be created within the different landscape zones. In Overbetuwe the bad and three endangered breeding bird species have the potential to become soundmarks. In addition to mechanical noise can best be reduced by the creation of distance, the use of slopes and vegetation. Mechanical sounds produced by an solar, wind and bioenergy technologies can give an extra dimension to the landscape experience in Overbetuwe since it provide both silence and mechanical experience.

The zoning strategy, as applied in this report has resulted in a landscape architectural design that contributes to the development of a sustainable energy transport corridor by the implementation of renewable energy technologies in the design, which together can largely foresee in the energy provision of 500 TJ. In addition the design is in theory able foster to pleasurable acoustic landscape experience. Nevertheless its effectiveness is highly depending on personal preference and people's associations with a certain landscape or sound in particular. Since a total reduction of traffic noise is impossible it will always be present in the landscape. Nevertheless, the design proposed in this paper has proven that zoning strategies can create differentiation in soundscapes and therefore for a more pleasurable acoustic experience.

In addition to this remark it has to be mentioned that the design proposed as proposed in this paper is based on landscape characteristics and local circumstances of the Overbetuwe landscape. Since this is the case and soundscape differs in time and space, it is impossible to give a one set approach for designing soundscapes in general. Nonetheless, the given framework for the development of an acoustic design can be used as a guide for further research, which is important since (traffic) noise pollution and energy provision are important topics. That we, as landscape architectural designers, should not lose out of sight.

REFERENCES

- Benfield, J. A., Belli, P. a., Troup, L. J., & Soderstrom, N. C.** (2010). "Aesthetic and affective effects of vocal and traffic noise on natural landscape assessment." *Journal of Environmental Psychology*, 30, 103–111.
- Berns, A., Willems, T., & Berg, S. van den.** (2009). *Overbetuwe naar klimaatneutraal: uitvoeringsprogramma duurzame ontwikkeling en nergieneutraal in Overbetuwe* (pp. 7–8; 14). Overbetuwe.
- Blessier, B., & Salter, L. R.** (2007). *Spaces speak, are you listening? Experiencing aural architecture*. Cambridge: MIT Press.
- Brown, A. L., & Muhar, A.** (2004). "An approach to the acoustic design of outdoor space." *Journal of Environmental Planning and Management*, 47(6), 827–842.
- Dobbelsteen, A. van den, Broersma, S., & Fremouw, M.** (2013). "Energy potential and heat mapping: prerequisite for Energy-Conscious Planning and Design." In A. van den Dobbelsteen & S. Stremke (Eds.), *Sustainable energy landscapes: design, planning, and development* (pp. 71–94). Boca Raton: CRC Press.
- Dobbelsteen, A. van den, Broersma, S., & Stremke, S.** (2011). "Energy potential mapping for energy-producing neighbourhoods." *SUSB Journal*, 2(2), 170–176.
- Dobbelsteen, A. van den, & Stremke, S.** (2013). "Conclusion." In A. van den Dobbelsteen & S. Stremke (Eds.), *Sustainable energy landscapes: design, planning, and development* (pp. 491–495). Boca Raton: CRC Press.
- Gelderlander, D.** (2013). "Driel krijgt centrale op waterkracht." Retrieved May 29, 2013, from <http://www.gelderlander.nl/regio/betuwe/driel-krijgt-centrale-op-waterkracht-1.2884958>
- Gemeente Overbetuwe.** (2010). *Landschapsonwikkelingsplan: samen werken aan het landschap* (pp. 7–48). Overbetuwe.
- Haartsen, A.** (2009). *Ontgonnen Verleden: regiobeschrijvingen provincie Gelderland* (pp. 107–121). Ede.
- Hedfors, P.** (2003). *Site soundscapes: landscape architecture in the light of sound*. Uppsala.
- Jongmans, A. G., van den Berg, M. W., Sonneveld, M. W. P., Peek, G. J. W. C., & van den Berg van Saparoera, R. M.** (2013). "Rivierlandschappen." In *Landschappen van Nederland: geologie, bodem en landgebruik* (1st ed., pp. 371–428; 459–496). Wageningen: Wageningen Academic Publishers.
- Kersten, I. C., & Noordhuizen, J. R.** (2011). *Vibrant land: responsive engagement with the fragmented coastline of North Carolina* (pp. 38–39). Wageningen.
- Keulen, T. van.** (1970). *Lawaai-groen-stilte*. De Bilt.
- KNMI.** (n.d.). "Klimaatatlas: gemiddelde jaarlijkse duur van zonneshijn 1981–2010." Retrieved June 15, 2013, from <http://www.klimaatatlas.nl/klimaatatlas.php>
- Liander.** (n.d.). "Werkgebied Liander." Retrieved June 17, 2013, from http://www.liander.nl/liander/over_liander/werkgebied_liander.htm

- Libercé-Kruit, M., & Uitbeijerse, G.** (2010). *Strategie CO2-reductie gemeente Overbetuwe: nulmeting CO2-emissie en scenarioanalyse CO2-reductie* (pp. 3-5; 10). Ede.
- Maschke, C., & Widmann, U.** (2013). "The effect of sound on humans." In G. Müller & M. Mösser (Eds.), *Handbook of engineering acoustics* (pp. 69-86). Heidelberg; New York; Dordrecht; London: Springer.
- Pijaonwski, B. C., Farina, A., Dumyahn, S. L., & Krause, B. L.** (2011). "What is soundscape ecology? An introduction and overview of an emerging new science." *Landscape Ecology*, 26, 1213-1232.
- Projectbureau ViA15.** (n.d.). "Gekozen tracé." Retrieved June 04, 2013, from <http://www.via15.nl/>
- Projectbureau ViA15.** (2011). *Betere bereikbaarheid door een robuust wegennetwerk in de regio Arnhem-Nijmegen: trajectnota/MER hoofdrapport* (pp. 7-12; 17-24).
- Provincie Gelderland.** (n.d.-a). "Drinkwater." Retrieved June 15, 2013, from [http://ags.prvgld.nl/GLD.Atlas/\(S\(xcp5oc55542ikl2vvt54cp-ni\)\)/Default.aspx?applicatie=Drinkwater](http://ags.prvgld.nl/GLD.Atlas/(S(xcp5oc55542ikl2vvt54cp-ni))/Default.aspx?applicatie=Drinkwater)
- Provincie Gelderland.** (n.d.-b). "Ecologische hoofdstructuur." Retrieved June 15, 2013, from [http://ags.prvgld.nl/GLD.Atlas/\(S\(xhucbif-h15qndgbncz2cumz\)\)/Default.aspx?applicatie=Ehs](http://ags.prvgld.nl/GLD.Atlas/(S(xhucbif-h15qndgbncz2cumz))/Default.aspx?applicatie=Ehs)
- Provincie Gelderland.** (n.d.-c). "Gelderse cultuurhistorie." Retrieved June 06, 2013, from [http://ags.prvgld.nl/GLD.Atlas/\(S\(bfrvcs-rlxhgu3n55ra3umszm\)\)/Default.aspx?applicatie=gelderschecultuurhistorie](http://ags.prvgld.nl/GLD.Atlas/(S(bfrvcs-rlxhgu3n55ra3umszm))/Default.aspx?applicatie=gelderschecultuurhistorie)
- Provincie Gelderland.** (n.d.-d). "Historisch landschap, historische stedenbouw en archeologie." Retrieved June 15, 2013, from [http://ags.prvgld.nl/GLD.Atlas/\(S\(edhxvy-45b3zuq045erffqkqc\)\)/Default.aspx?applicatie=HistorischEnArcheologie](http://ags.prvgld.nl/GLD.Atlas/(S(edhxvy-45b3zuq045erffqkqc))/Default.aspx?applicatie=HistorischEnArcheologie)
- Provincie Gelderland.** (n.d.-e). "Natura 2000." Retrieved June 15, 2013, from [http://ags.prvgld.nl/GLD.Atlas/\(S\(yfr3wkvaggdnam-55rxehp055\)\)/Default.aspx?applicatie=Natura2000](http://ags.prvgld.nl/GLD.Atlas/(S(yfr3wkvaggdnam-55rxehp055))/Default.aspx?applicatie=Natura2000)
- Rijkswaterstaat.** (2010). *Rapportage gas - en elektriciteitsverbruik in Overbetuwe* (pp. 1-15).
- Schafer, R. M.** (1997). *The soundscape: our sonic environment and the tuning of the world* (pp. 3-12; 29-34; 43-44; 48-49; 71-73; 78-80; 139-144;). Rochester: Destiny Books.
- SenterNovem.** (2005). *Windkaart van Nederland op 100 m hoogte.* Arnhem.
- Sijmons, D., Hugtenburg, J., Hofland, A., Weerd, T. de, Rooijen, J. van, & Wijnakker, R.** (2008). *Kleine energieatlas: ruimtebeslag van elektriciteitsopwekking.* Utrecht.
- Stremke, S., & van Seumeren, R.** (2013). Course outline: Betuwe+ Bsc-thesis.
- Strong, M. F.** (1992). "Energy environment and Development." *Energy Policy*, 20(6), 490-494.
- Tempelman, S., Ahoud, T., Berns, A., Jaarsma, P., & Westerdiep, J.** (2010). *Milieubeleidsplan Overbetuwe 2011-2014* (p. 34). Overbetuwe.
- Vries, E. de.** (2007). *Ecologisch onderzoek Bedrijvenpark Overbetuwe en landschapsvisie Danenberg: inventarisatie van natuurwaarden ihkv de Flora- en Faunawet en natuurbeschermingswet 1998* (pp. 12-15). Zwolle.

The God's Eye and The Buffalo's Breath: Seeing and Hearing Web-Based Sound Maps

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Abstract

Online sound maps have been uploaded for nearly a decade and a half and they continue to proliferate. This paper questions the specific abstractions that are projected through these online map technologies, the “little white lies” that they tell. It explores how the ‘view from above’ that these maps impel us to adopt involves a charged perspective, one that is framed in a particular institutional mesh of delivery and access, that is energised by the suspicion that it involves a ‘watching machine’ that has long been plugged into a ‘war machine.’ Paradoxically, the very height that this view depends upon obscures the urban vertical, that reaches below ground as well as above and which might be a dimension of increasing importance.

When the base layer of the online map is re-assembled for a sonic geography, something strange can happen: the apparently inherent abstractions of the ‘view from above’ can be partially disrupted: the drifting eye-ball can find itself a body, the slippery, icy gaze can be roughened by friction, the high can be brought low, relations can be established between stuff and people and animals and weather – the God's Eye can be misted by the buffalo's breath. What was once invisible can be rendered audible perhaps because sound might always already be a cartography. And yet, that cartographic potential still seems – as it does in the visual register – to avert itself from the elevations and declinations of the vertical.

Keywords: soundmaps, cartography, power, ‘view from above’, ‘the hidden vertical’, abstraction

“The following Generations, who were not so fond of the Study of Cartography as their Forebears had been, saw that that vast map was Useless, and not without some Pitilessness was it, that they delivered it up to the Inclemencies of Sun and Winters”

Jorge Luis Borges, *On Exactitude In Science*.

“Head down, the transparency of the ether, long-distance vision,”

Paul Virilio, *War and Cinema*.

“The landscape begins to look more like a three-dimensional map than a rustic garden. Aerial photography and air transportation bring into view the surface features of this shifting world of perspectives. The rational structures of buildings disappear into irrational disguises and are pitched into optical illusions. The world seen from the air is abstract and illusive,”

Robert Smithson “Aerial Art”

1. The Route Ahead

Maps abstract, of course they do. That is their function¹. This paper is about the specific abstractions that are projected through the online map. It seeks to explore how the ‘view from above’ that these maps impel us to adopt involves a charged perspective, one that is framed in a particular institutional mesh of delivery and access, that is energised by the suspicion that it involves a ‘watching machine’ that has long been plugged into a ‘war machine’ and

1. “A good map tells a multitude of little white lies; it suppresses truth to help the user see what needs to be seen. Reality is three-dimensional, rich in detail, and far too factual to allow a complete yet uncluttered two-dimensional graphic scale model. Indeed, a map that did not generalize would be useless. But the value of a map depends on how well its generalized geometry and generalized content reflect a chosen aspect of reality”, (Monmonier, 1996, p. 25)

that, paradoxically, the very height that this view depends upon obscures the urban vertical, a dimension of increasing importance.

When the base layer of the online map is re-assembled for a sonic geography, something strange can happen: the apparently inherent abstractions of the ‘view from above’ can be partially disrupted: the drifting eye-ball can find itself a body, the slippery, icy gaze can be roughened by friction, the high can be brought low, relations can be established between stuff and people and animals and weather – the God’s Eye can be misted by the buffalo’s breath². What was once invisible can be rendered audible perhaps because sound might always already be a cartography. And yet, that cartographic potential still seems – as it does in the visual register – to avert itself from the elevations and declinations of the vertical.

2. Mapping The Sound Maps

There are pegs that are perforated and pegs enclosing dots, there are circles in blue and red and green, there are triangles, there are inert markers and ones that animate with a throb or a spin or which open and close as your mouse draws closer, there is an arcane symbology of graphic forms, representations of the ear’s pinna, of silhouetted recordists, of closed-capsule headphones, of musical notes, of wave forms. Activating an icon might trigger a preloaded recording or cue access to a live stream; your speakers might receive a very short burst of a signal or the auditory complexities might be given the space to unfold over a lengthier duration; sounds can be deployed with sequential strictness or the user can be left to set off several simultaneously; the sound might enter the world nude or be adorned with a text that is either brusquely explanatory or more decoratively discursive; there might be a photograph.

These online sound maps reflect a continuum of creative conditions that span from sole authorship through editorial moderation to the most open and spontaneous models of crowd-sourcing; some maps are discrete expressions of time-bounded projects while others represent the accumulation of many year’s worth of collaborative enterprise. The web map can locate its boundaries within a circumscribed territory or range far and wide; it can

2. “Buffalo Breath” is the label for a node on an online sound map I created during the Viso Come Territorio residency in Southern Italy. This map was generously enabled through Peter Cusack’s favouritesounds.org and has been written about in (Voegelin, 2014, pp. 30–36)

distinguish itself through a concentration on specific thematic concerns or adopt a more ecumenical approach; it can encourage remixing or be more protective of the purity of its holdings.

In the time that has elapsed since my earliest encounters with online sound maps nearly a decade and a half ago things have changed and things have remained the same. Icons have been shuffled and bits have got deeper but the articulations between the form of content and the form of expression and the forces these forms mediate have remained surprisingly stable. This stability attracts more attention to itself because it has endured in the face of both a relatively substantial proliferation of different web sound maps and a concomitant shift in climactic conditions online that is measurable in technologies, user numbers and user behaviour³. The pleasures of engaging with an online sound map have similarly held their own for me and hours can easily be lost in jumping from peg to triangle to circle to dot to icon.

I have refrained from identifying specific sound maps because I want to focus on a shared quality that persists throughout them all, almost without exception.

3. Universal Textures

While the screens may be different in size and sharpness, what they display draws out a remarkable similarity, the earth tiled in universal textures, patched like mosaic tesserae⁴. Everything is arranged in simpler shapes and softer hues: the seas look washed out, the wilds seem cultivated, the cities' streets aligned to the straight and narrow; everything is flat, every incline smoothed, every depression filled: there are no clouds.

Google might have seemed a good place to start and yet its ubiquity is a particular one. A colossal presence that casts a shadow to match, falling as much on the distinctiveness of the company's 'don't be evil' support for folding bikes and employees' one day a week research projects as it does on questions of national tax avoidance, monopolisation and monetisation of searchable knowledge, capitulation with Chinese data laws and the Street View scandals

3. Online maps in general have expanded in number and significance. Sebastien Caquard claims that "maps have recently become the main interface for accessing data over the internet" (Caquard, 2013, p. 139)

4. Clement Valla's 2012 project "The Universal Texture" brings to the surface a compelling haul of distorted screengrabs that reveal in dripping detail the submarine algorithmic operations involved in rendering Google Earth's relief projections of landscape and architecture. See <http://rhizome.org/editorial/2012/jul/31/universal-texture/>

of the initially unpixellated faces and the netting of shoals of data swimming free from domestic wireless hotspots.

Whether Google, Microsoft's Bing Maps, MetaMap, Meipi, Géoportail or OpenStreetMap, the entry-level base layers ultimately deliver a complex blend of cartographic material derived from remote sensing systems and aerial photography and do so within an institutional environment that that "favours free trade, an open market and privately funded research and development (R&D). It requires a well-funded military-industrial complex that develops defence technology" (Lee, 2010, p. 910). Whatever creative adaptations are made to these base-layers, "it is important to recognize that they do so within a production environment where their emancipatory potential is always constrained by institutional forces that govern the production, storage and provision of geo-spatial data" (Jethani & Leorke, 2013, p. 488).

However intoxicating the resources made available through Geographical Information Systems (GIS) such as web sound maps, these institutional forces and institutional environments that structure their delivery demand more sober scrutiny. Parallel attention needs also to be devoted to the mechanisms of access. *The Economist* magazine's 1995 claim that "half the world's population has never made a phone call" may no longer be credible – if ever indeed it was⁵ – yet the distribution and cost of high speed internet remains far from equal. Jason Farman's 2010 article, for example, distinguished DSL in Japan as 6 cents per 100 Kilo-bytes per second – a price that amounted to 0.002 of the average monthly salary – from the cost for the same data transfer rates in Kenya at twice the average monthly salary (Farman, 2010, p. 869).

If the distribution of uploaded nodes on the online sound maps makes these disparities of digital access palpitate, this inequality shouldn't disguise the distortions that are encoded into the base layer itself. The base maps are never faithful analogues of geomorphology nor indexical renditions of the built environment: they are the multitude of little white lies (and some larger untruths) that Mark Monmonier told us about; they inflect a 'politics of ontology'⁶ that Martin Dodge and Robin Kitchen attribute to online cartography (Dodge and Kitchen, 2013, pp. 19–36).

5. <http://answers.google.com/answers/main?cmd=threadview&id=20411>

6. "As such, the politics of ontology relating to the selective interests of capitalist accumulation or militaristic agendas that underpin the ontological constitution of state-produced maps lies beyond the map itself. What, for example, is the ontological constitution of Google Maps? It clearly has one and it certainly arose from some debate within the company between GI experts, database specialists, interface designers, and business managers, along with the various contracted data suppliers, concerning what about the world should be mapped and how it should be presented", (Dodge and Kitchen, 2013, pp. 19–36).

I want to zoom out from these uncomfortably sharp details of delivery, access and ontological constitutions and consider instead how the apparatus of the standard web map interpellates its user. In what follows, I'll scale back and appreciate how the conventional interface hails us with a specific perceptual subjectivity that I'll call the God's Eye View: hovering, weightless, with neither shadow nor friction, looking down⁷.

The floating, high altitude perspective is not devoid of lyrical resonance⁸. Staring out of the cockpit permitted Antoine Saint-Exupery an observation post for ambiguous reverie: "from up there the earth had looked bare and dead; but as the plane loses altitude, it robs itself in colours" (Saint-Exupery, 2000a, p. 21). On a later journey he was afforded "a dark night, with only occasional scattered lights glittering like stars on the plain. Each one, in that ocean of shadows, was a sign of the miracle of consciousness ... But among these living stars, how many closed windows, how many extinct stars, how many sleeping men" (Saint-Exupery, 2000b, p. 9). On still a another flight, through the different glass of Christmas Eve, the crew of Apollo 8 recorded their fourth orbit of the moon with the 'earthrise' photograph that "was said to have been a key part of the start of the new environmental awareness movement" (Farman, 2010, p. 869) and to have been "imbued with a politics that subordinated the 'notional boundaries of sovereign power in favor of swirling clouds that do not respect the lines configured by human conquest or legislation'" (Sheila Janasoff cited in Phadke, 2010, p. 267).

It is not unexpected that the philosopher Paul Virilio manages to unearth gloomier renditions of the aerial view from both Saint-Ex⁹ and a peering astronaut.¹⁰ Not unexpected, because for Virilio, the airborne vantage, the one which articulates us when we log onto a web map, would be part and parcel of the "infiltration of the military's movements into daily life," (Virilio, 1990, p. 233) understood as an internalised perspective that is engineered by a 'watching machine' that is twinned to the 'war machine. "[F]rom the original watch-tower through the anchored balloon to the reconnaissance aircraft and remote-sensing satellites, one and the same function has been indefinitely repeated, the eye's function being the function of a weapon" (Virilio, 1996, p. 3).

7. For a philosophical perspective on the "God's Eye View" see Putnam, 1992.

8. Roland Barthes claimed that the literary instantiation of this panorama from on high begins with Victor Hugo's *Notre Dame De Paris*, where "The bird's-eye-view, which each visitor to the Tower can assume in an instant for his own, gives us the world to read and not only to perceive...to perceive Paris from above is infallibly to imagine a history..." (Barthes, 1979, p. 11)

9. "All I can see on the vertical is curios from another age, beneath clear untrembling glass. I lean over crystal frames in a museum; I tower above a great sparkling pane, the great pane of my cockpit. Below are men – protozoa on microscope slide... I am an icy scientist, and for me their war is a laboratory experiment", Antoine Saint Exupery, "Pilote de Guerre", cited in (Virilio, 1996, p. 75)

10. "What I felt personally was like going back to, or having a vision of, the village where you were born. *You don't want to live there any more* because you've grown up and moved away and now you'd rather live the life of the city. But it moves you as 'Mother Earth'; *you just know you wouldn't want to go back and live with her*" (Virilio, 1997, p. 97)

While the top-down view has other origins – religious panorama painting, Hugo’s Paris¹¹, Nadar’s balloon photography¹², Barthes’ Eiffel Tower¹³ – this military-image nexus identified by Virilio is neither a metaphor nor a coincidence but a literal consequence of the history of remote-sensing technologies and the abrogation of state budgets to defence spending. It is an uncomfortable connection that, for me at least, is tightened with each news package that includes helicopter surveillance footage, each fictional account that has the darkened war room lit by screens glowing with live satellite links.

The notion of a God’s Eye View has come to be rendered in the “popular imagination [as] myopic and sometimes malign” (Lyon, 2014, p. 25) and as a short-hand for our panoptic surveillance society. This conventional definition ignores other interpretative genealogies such as the one developed by David Lyon, where to come under heaven’s sight did not necessarily mean admonishment. Yet the high-altitude perspective that is stubbornly there for me whenever I click onto a web-based sound map begins with the secular “view from above” that Michel De Certeau also encountered on the 110th Floor of the World Trade Centre. This is a view that, at first at least, renders space abstract, diminishes its complexity, for “[o]ne’s body is no longer clasped by the streets ... Nor possessed, whether as player or played, by the rumble of so many differences. The city’s agitation is momentarily arrested by vision. The gigantic mass is immobilised before the eyes [and the] ordinary practitioners of the city live ‘down below’, below the thresholds at which visibility begins” (De Certeau, 1987, pp. 91–93).

4. Vertical City

This view from above is a strange thing. It depends on altitude, on height, on the axis of the vertical but it paradoxically obscures that very dimension from its lofty scope. It is like Marshall McLuhan’s parable of the fish that can know nothing of the water it swims in – the view from on high is ignorant of its own height. This blind spot in the web map means that we are turned aside from navigating anything that takes place at any elevation from the surface of the earth, both above and below contour zero.

11. <http://www.bartleby.com/312/0302.html>

12. http://www.geog.ucsb.edu/~jeff/115a/jack_slides/nadarparisfromballoon.jpg

13. <http://operasj.org/wp-content/uploads/2012/02/eiffel.jpg>

This optical deflection might be important because whether or not we physically ascend the city's upper levels to look down ourselves, the view from above has become a generalised perspective, a perspective which coordinates 'verticality' as the key axis of the urban environment. The emphasis on verticality, at least according to Henri Lefebvre, tends to produce homogeneity: to the extent that an edifice is constructed with upward momentum, it abstracts from the local specificity of the territory at its base. "Verticality, and the independence of volumes with respect to the original land and its peculiarities are, precisely, produced" (Lefebvre, 1991, p. 337).

It is not just that verticality represents the *espace conçu* through which the technocrats negotiate the territory that we go on to inhabit but that the vertical continuum is where things happen. And they happen in zones excluded from the top-down orientation of the web map. The deep underground of the city, its meshwork of utilities and transport systems, lost rivers, demolished buildings, storage facilities, domestic and industrial waste, the dead, government bunkers, the subterranean lives depicted in the documentary *Dark Days*. The heights of urban prestige, those "placards of prosperity and success" identified by Alfred Bosson, one of the pioneers of skyscraper design (Sharp and Wyde, 1992, p. 27); the "crystal palaces" and "crystal edifices" that, though "beautiful and lofty", Dostoevsky saw in *Notes From Underground* as the architectural equivalent of the "the full triumph of Baal, the ultimate organisation of the anthill" (Dostoyevsky cited in Carlyle, 2000, p. 96).

In his brilliant book *Explore Everything: Place-Hacking The City*, Bradley L. Garrett lets us accompany him into the invisible reaches of the deep and the high, unearthing the sense that "[w]hile the horizontal sprawl tangibly affects us, we often feel out of touch with the vertical sprawl because tall buildings are built for the bankers, businessmen, advertisers, marketers, media, and increasingly, 'tech people' – precisely the groups that create and maintain the spectacle... Increasingly the vertical city is about security from the insecurities of street level" (Garrett, 2013, p. 222).

5. Gone To Ground

Certain environmental sound practices have burrowed into the vertical or scaled its heights but given the vast swathes of city space that are constructed above and below ground level, it is remarkable how little auditory attention has been devoted to these zones of activity. The

problematic notion of the ‘acoustic horizon’ (Blessner and Salter, 2006) has certainly been extended but at the expense of a parallel exploration of the perpendicular axis. The orientation of the top-down sound map itself exaggerates this impression since it represents the icons, dots or pegs as if they were strung out on an atopographic plane, aligned on an endless salt-flat stretched to a blistered infinity. Overlays that visually represent terrain through polygon shading can be switched on or off but the sound symbols hover on unperturbed, neither shifting in their scale, nor tilting in accord with any gravity; floating as we, the user, float above them, encouraged to maintain our high altitude perspective.

It is as almost as if sight has won again and the weighty visual inheritance of the map has conspired – even when it has been repurposed towards the heard world – to flatten sound into a grid of surface and source. And yet, as I said in the introduction to this essay, when sound infiltrates the online map, the God’s Eye view – elsewhere that “omnipotent, instantaneous, disembodied, all-possessing eye” (Sadler, 1999, p. 25) – starts to become distracted, to lose its certainties.

Part of the reason for this is that screens pock-marked with craters of recorded sound contradict any implication of lofty height to be derived from the geomap interface itself; these acoustic hotspots counter with what is evidentially terrestrial, with the distinct huggier-mugger of De Certeau’s ‘down below.’ Moreover, it is harder for a sense of disembodiment to blithely persist when recordings themselves intrinsically account for a human presence; ideally, it should be the soft but perceptible vibrations from the recordist’s breath or the rubbing fabric of their clothes but at the very least we might hear the receding and careful backward paces of someone ‘cabling off’ a microphone. Further still, sound maps, especially those which are crowd-sourced or collaborative, raise the subjective and fragmentary in tension with any ontological constitution towards the all-encompassing and objective that may otherwise radiate outwards from an online map.

6. The Onto-Sonic-Cartographic?

Levi R. Bryant has recently opened up a promising line of inquiry into what he calls the onto-cartographic, inviting a recalibration of map-making towards “‘stuff’ or ‘physicality’ or ‘material agencies’”, that is guided by the conviction that “we can’t fully understand why social ecologies take the form they do without taking into account the role played by non-hu-

man agencies in constructing these assemblages” (Bryant, 2014, p. 253). The potential to map the forces exerted by climatic change, disease, animal migrations and extinctions, resource depletion and pollution and concrete economic relations sounds as laudable as his notions of ‘modal maps’(that project possible futures) and vector maps (that chart the destinies of social ecologies assemblages left to their own devices). Yet it is disappointing that Bryant’s maps turn out to be what you and I would call books – inspiring, catalytic, books, but books nonetheless. Equally frustrating is the sense left as you turn the very last page that Bryant’s statement of his speculative realist enterprise has involved such an extensive polishing of his methodological glasses that time has run out for any chance to look through them and attempt anything of an application.

Environmental sound practices are already close to invoking this onto-cartographic. They may not obsessively engage with the hidden vertical – which may be little more than my own obsession – but they do reveal the stuff of life and non-life, the dynamic interactions of human and non-human, of the organic and inorganic as the temporal reels out. The online sound map is one agency through which the invisible forces of the city are brought down to earth and into hearing range but there are other tactical interventions at our disposal. Performative sound-walking with or without popping balloons, a singing voice or an ambient voice. Dialogic listening spurred by the imperatives of activist intent or by the desire to triangulate the sonic ways of knowing place. Affective attentiveness to what goes on behind the windows and walls, to the domestic beyond the architectural façade; intensified sensitivity to magnetic fluxes, to the internal vibrancy of matter, to shifts in heat, in wetness and wind, to the racket of the cicada and the buffalo’s breath, to the dangerous (however visibly innocuous – or, even, however audibly innocuous) and to the precarious (in whatever the language it speaks).

Maybe this isn’t the onto-cartographic, but, at the risk of the self-congratulatory, it also absolutely does not involve any “disembodied master subject ... seeing everything from nowhere” (Haraway, 1991, 189). Our years of sonic exploration might ultimately constitute a collective counter-mapping that makes audible that which struggles to be seen as visible.

REFERENCES

- Barthes, Roland** (1979) *The Eiffel Tower and Other Mythologies*, (New York: Farrar, Strauss and Giroux, Inc.
- Blessner, Barry and Ruth Salter** (2006) *Spaces Speak: Are You Listening* Cambridge, Mass: MIT Press
- Bryant, Levi R.** (2014) *Onto-Cartography: An Ontology of Machines and Media* Edinburgh University Press, 2014
- Caquard, Sebastien** (2013) "Cartography I: Mapping narrative cartography" in *Progress in Human Geography* 37 (1)
- Carlyle, Angus** (2000) "Beneath Ground" in eds. Nick Barley and Ally Ireson, *City Levels* London: Birkhauser
- de Certeau, Michel** (1987) *The Practice of Everyday Life* Berkeley and Los Angeles, University of California Press
- Dodge, Martin and Robin Kitchen** (2013) "Crowd-Sourced Cartography: Mapping Experience And Knowledge", *Environment and Planning A*
- Farman, Jason** (2010) "Mapping The Digital Empire: Google Earth and the process of postmodern cartography", *New Media and Society* 12 (6)
- Garrett, Bradley L.** (2013) *Explore Everything: Place-Hacking The City* London, Verso
- Haraway, Donna, Simians** (1991) *Cyborgs and Women: The Reinvention of Nature*, London: Free Association Books
- Jethani, Suneel and Dale Leorke** (2013) "Ideology, obsolescence and preservation in digital mapping and locative art", *The International Communication Gazette* 75 (5-6)
- Lee, Micky** (2010), "A Political Economic Critique of Google Maps and Google Earth", *Information, Communication and Society*, 13 (6)
- Henri Lefebvre** (1991) *The Production of Space* Oxford: Blackwells
- Lyon, David** (2014) "Surveillance and the Eye of God" *Studies in Christian Ethics* 27 (1)
- Monmonier, Mark** (1996) *How To Lie With Maps* Chicago: University of Chicago Press
- Phadke, Roopali** (2010) "Defending Place in the Google Earth Age", *Ethics, Place & Environment: A Journal of Philosophy & Geography* 13: 3
- Puttnam, Hilary** (1992) "Realism With A Human Face" in ed. James Conant, *Realism With A Human Face* Cambridge, Mass.: Harvard University Press
- Sadler, Simon** (1999) *The Situationist City* London: MIT Press
- Saint-Exupery, Antoine** (2000a) *Southern Mail/ Night Flight* London: Penguin
- Saint-Exupery, Antoine** (2000b) 'Prologue' to *Wind, Sand and Stars* London: Penguin
- Sharp, Dennis and Peter Wyde** (1982) "Alfred Bosson and the American Skyscraper" in *Architectural Association Quarterly* Vol. 13, No. 2-3
- Smithson, Robert** (1996) *The Collected Writings* Los Angeles: University of California Press
- Virilio, Paul** (1990) *Popular Defense and Ecological Struggles* New York: Semiotext(e)

Virilio, Paul (1996) *War and Cinema: The Logistics of Perception* London: Verso

Virilio, Paul (1997) *Open Sky* London: Verso

Voegelin, Salome (2013) *Sonic Possible Worlds*
London: Bloomsbury

Dark Days, dir. Marc Singer, Picture Farm, 2000.

bartleby.com/312/0302.html

geog.ucsb.edu/~jeff/115a/jack_slides/nadar_parisfromballoon.jpg

operasj.org/wp-content/uploads/2012/02/eiffel.jpg

favouritesounds.org

rhizome.org/editorial/2012/jul/31/

universal-texture/

answers.google.com/answers/main?cmd=threadview&id=20411

Unfolding the Soundmaps. Suggestions for Representing and Sharing the Sensory Form of Urban Spaces Through Virtual Environments and Web-Mapping Technologies

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Abstract

The European Noise Directive has introduced the need to identify, protect and enrich, places characterized by a substantial sound quality aimed at reducing the harmful effects of noise pollution by providing quiet areas for the wellbeing of city dwellers. However, the condition of quietness cannot be addressed by applying just a noise control strategy as well as it cannot be focused solely on its sonic qualities, but multi-sensory approaches are needed. Moreover, the visual representation tools commonly used in urban design practices have limited capabilities in describing the sound components. The ongoing research aims to propose new solutions, based on the use of interactive virtual environments, able to describe simultaneously the visual and auditory dimensions of the urban environments.

Keywords: soundmaps; web-mapping; game engine; virtual environments; quiet areas; urban design

1. Quiet areas as an opportunity for applying a multisensory approach

It is a decade since the European Noise Directive 2002/49/EC (END 2002) was issued and, albeit with significant delays, which still persist (COM 321, 2011), the member States have adopted in their legislative frameworks the recommendations contained in the European text. The aim of the directive is:

[...] to define a common approach intended to avoid, prevent or reduce on a prioritized basis the harmful effects, including annoyance, due to exposure to environmental noise [...] emitted by the major sources, in particular road and rail vehicles and infrastructure, aircraft, outdoor and industrial equipment and mobile machinery. (END 2002)

Moreover, the END has introduced the quiet areas, conceived as places characterized by a substantial sonic quality, that need to be identify, to protect and to enrich to deal with the growth of the environmental noise that, together with air pollution, constitutes one of the major threat to physical and psychological health of the city dwellers (WHO 2011; EEA 2010; Kihlman et al. 2001; Berglund and Lindvall 1995). The quiet areas should be conceived as places in which the sonic qualities must be carefully evaluated rather than considered them as collectors of noise sources that affect the indoor environments. Furthermore, besides the urban parks or the areas close to sensitive receptors (such as schools and hospitals), it is necessary to consider the role of the small and medium sized open spaces (e.g. square, garden, pocket-park) that, scattered in the urban fabric, can form an effective urban restorative network (Figure 1).

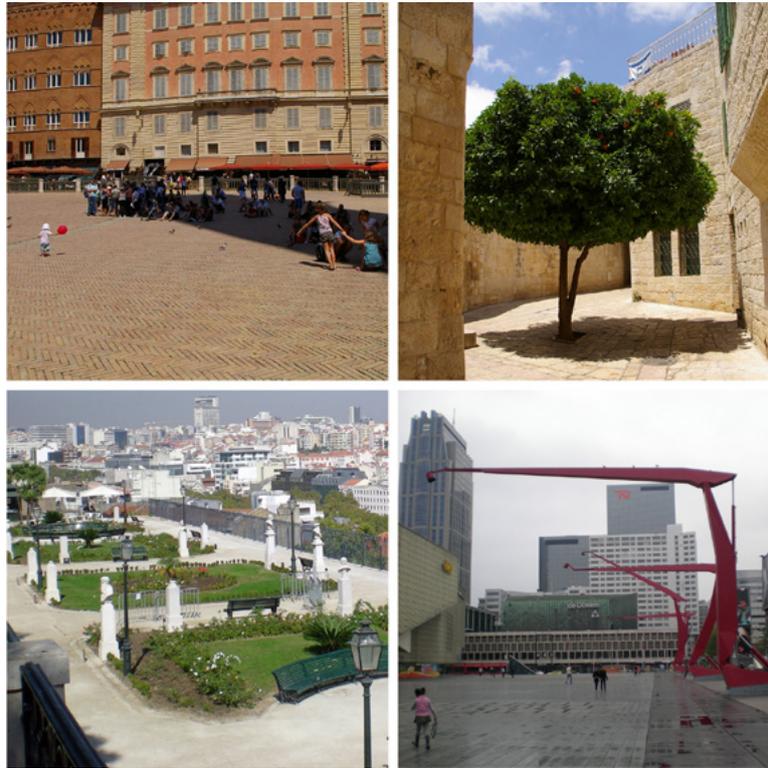


Figure 1. Urban open spaces, in their different locations, dimensions, morphologies and materials, can define effective urban restorative networks. Which characteristics should they have and how can we design these places from a sonic point of view?

2. The limits of the noise control strategies

The European directive did not provide guidelines or methods to identify or protect these places but, by proposing two quantitative and average indicators, it maintained a reductive noise control approach (END 2002: art. 2). European projects (Quadmap¹, Qside², Hush³, Harmonica⁴, Silence⁵, CityHush⁶, Hosanna⁷) and national research (Grimwood 2011; Licitra et al., 2011; Payne, Davies and Adams, 2009; Faburel and Gourlot 2008; Symonds, 2003), were conducted in the years after the issue of the END proposing new indicators and

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1. <http://www.quadmap.eu>
 2. <http://www.qside.eu>
 3. <http://www.hush-project.eu>
 4. <http://www.harmonica-project.eu>
 5. <http://www.silence-ip.org/site/>
 6. <http://www.cityhush.eu>
 7. <http://www.greener-cities.eu>

methodology for dealing with this lack. A common thread is that noise control strategies, although necessary, are insufficient to define a quiet area since the harmful effects of noise pollution are not exclusively related to the overcoming of specific sound level thresholds (Lercher, Schulte-Fortkamp 2003): frequency range covered by the sound sources, as well as their temporality, in terms of duration and repetition, are attributes equally important to consider. Moreover, the indicators proposed by the END describe an average sound pressure level over a long period of time. For this reason they do not allow us to distinguish the presence of impulsive sounds, characterized by high sound pressure levels and short duration, as well as intermittent or periodic sounds. It is not possible to extract, through these indicators, specific tonal components in which a certain range of frequencies prevails, e.g. it is not possible to estimate the annoyance provided by the sound sources that cover the low frequencies of the audible spectrum (EEA 2014; Berglund, Lindvall 1995). However, all these physical attributes provide just a partial description of the acoustic environment. Sound components are tightly linked with time, daily and seasonal changes and characterized by the space in which they are emitted: morphology of the urban fabric, paving and building materials, urban furniture and vegetation, local climate components, as well as the various human activities, contribute to form unique soundscapes (Venot and Sémidor 2006; Jeon, Jang and Kim 2013).

In addition to this, any sound event can be perceived as pleasant or unpleasant regardless its physical characteristics but considering the value that a listener assigns to it or according to the activities carried out by him/her (e.g. reading a book, having a conversation, doing sport) (Booi and Van den Berg 2012; Axelsson 2011; Kang 2007; Amphoux 2003; Augoyard and Torgue 1995), and others sensory cues influence our perception of the sonic environment (Pheasant et al. 2010; Southworth 1969). A broader sensory approach is needed for the identification and design of these places, both in quantitative and qualitative terms and new tools and methodology, able to support the design process of these *sensitive* places, have to be developed. (EEA 2014; Gidlof-Gunnarsson and Ohrstrom 2007; Kang 2007; Zardini 2005; Martellotti 2004).

3. Representing the sensory form of the city beyond the cartographic media

Quantitative and qualitative dimensions of the sonic urban environment can be represented through cartographic media. However, while the noise maps (Figure 2), that present the “geographical distribution of noise exposure, either in terms of measured or calculated levels” (Kang 2007) in a specific period of time and using defined indicators, are well known and defined by regulatory instruments in urban planning⁸, the soundmap (Figure 3), that are used for displaying a qualitative descriptions of the sonic environment, are rarely employed for this purpose.

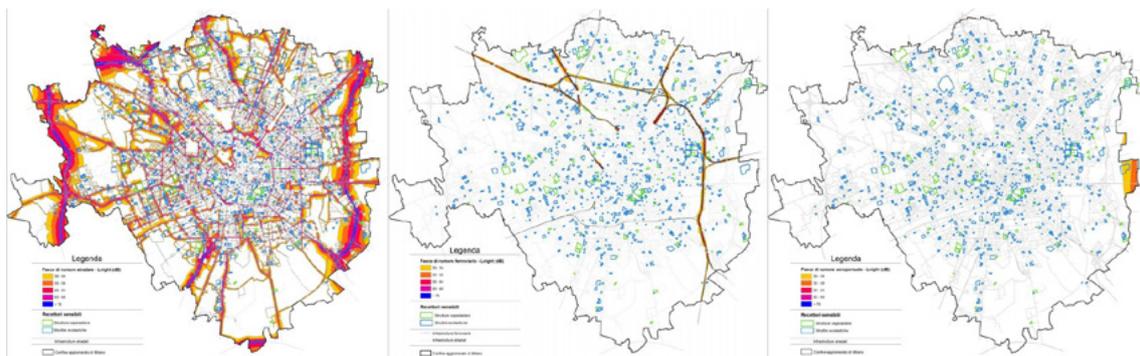


Figure 2. Strategic Noise Map of Milan. Representation of the L_n data for the major roads, railways and airports. The sensitive receptors (mainly schools and hospitals) as represented as well (AMAT 2013).

A soundmap can be defined as a form of locative media that links a place with its sonic representation. Noticeable examples of these products were developed during the '60 (Radicchi 2012). The Worldv Soundscape Project, a research group at the Simon Fraser University of Vancouver (Schafer 1977), developed a series of soundmaps, using various graphical techniques, for providing a visual description of the qualitative characteristics of the sonic environment (Schafer 1977b). However, as Schafer claimed in his work:

8. The European directive has required to use two annual average indicators for the noise maps: a noise indicator for annoyance during the day period (L_{den}) and a noise indicator for sleep disturbance (L_n) focusing in particular on the noise emitted by the major transport infrastructures (END 2002). The noise data can be determined either by computation or by measurement. In the first case the reliability of the computation depends on the algorithm used, the accuracy of the urban model employed and the amount of sound sources data (e.g. number of vehicles passing on a specific road).

Such diagrams are hints only, but perhaps this is all one should expect of sound visualization – a few hints which the ear can then follow up in its own way. [...] The temptation of bad habits is no doubt still implicit in them, and it is for this reason that I conclude this chapter with a warning that no silent projection of a soundscape can ever be adequate. The first rule must always be: if you can't hear it, be suspicious. (Schafer 1977: 132)

Thanks to the improvement of information technologies and the growth of web-mapping services occurred in the first half of the 2000s, these communication media have been enriched with the possibility to geo-localize multimedia objects such as images, videos and of course sounds. In other words it is now possible to directly hear the recorded sounds, rather than interpret them through graphic conventions.

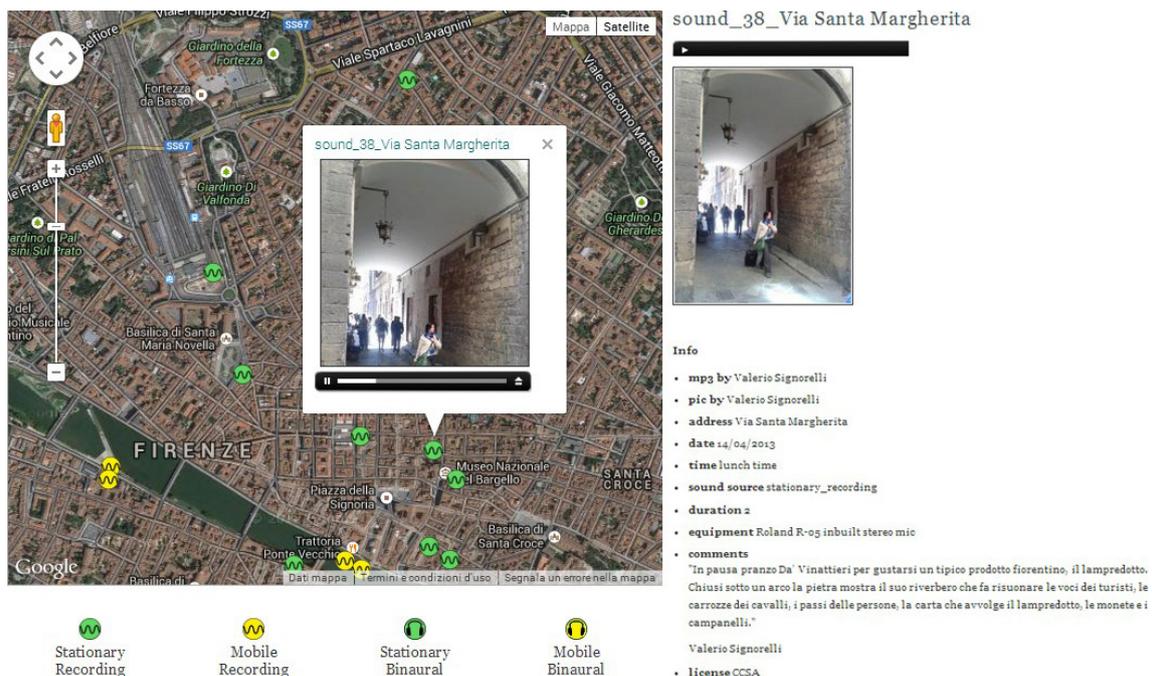


Figure 3. The FirenzeSoundmap, recently published in the OpenData catalog of Florence, Italy <http://www.firenzesoundmap.org/> (Radicchi 2012).

However, through a two dimensional representation we are still missing the possibility to highlight the immersive and multimodal experience of the urban environment. Cartographic media is limited to a planar description of the built environment that is also necessarily coded and *simplified*. Moreover, the majority of the soundmaps consulted are conceived as 'static archives' of recordings, a freeze-frame that aims to collect the memory of the current soundscape, partially disconnected from the others elements that forms the urban envi-

ronment. Considering the need to better communicate the sensory complexity of the quiet areas, avoiding a technical jargon difficult to comprehend for non-experts, new tools and methods need to be developed.

The ongoing research proposes a method to display simultaneously the immersive visual and auditory stimuli through a game engine system in order to unfold the communication capability of the two-dimensional supports by adding the third dimension.

Briefly the project is organized in three phases (Figure 4):

- To develop an interactive digital map system focused on the representation and description of the quiet areas. The auditory data, in their quantitative and qualitative forms, together with the others sensory and physical parameters and analysis will be considered, stored and displayed.
- To develop a 3D dimensional interactive environment used for presenting current and expected scenarios of the quiet areas enriched with sound components by employing a Game Engine system.
- To publish the final product on different platforms (e.g. immersive virtual reality devices, online applications), and test the tool with different class of users.



Figure 4. Scheme of the different phases of the project proposed.

In this paper will be presented the second phase.

4. Unfolding the maps through the virtual environments

In the last decades, virtual environments in urban studies have been extensively improved. They have been used not only to produce visual communication outcomes of existing or proposed urban development projects, but as effective platforms for conducting environmental analysis and simulations which can be represented only partially on a planar support (Crooks et al., 2010; Ceconello and Spallazzo, 2008; Batty 2007; Evans et al, 2005). Moreover, the effectiveness of virtual and interactive environments in urban design practices, particularly during public participation activities, have been investigated as well (Griffon et al. 2011; Salter et.al 2009; Bishop and Lange 2005). However, to produce complex urban models a large amount of data and time are required. These aspects are evident in particular if we need to model small and medium urban spaces, that are characterized by numerous details which need to be accurately displayed for ensure their understanding. Within this context, we choose to use the 360 degree spherical images as effective and rapid prototyping means. A spherical image is a visual medium obtained by the digital composition (e.g. through photo stitching software) of various photos or virtual images, taken from a specific and fixed location, covering the 360 degrees on horizontal and vertical axes. The result is a single image (Figure 5), projected onto a flat surface, used as texture map for mapping the surface of a three-dimensional *primitive* (a sphere or a cube). Afterwards, these images can be displayed interactively giving to the user the impression of being surrounded by an urban environment. The use of the panoramic images for developing virtual environments is not recent. Various examples can be found since the '90ies when the limited computational capabilities of the computer systems were not able to manage large 3D models (Hudson-Smith 2003). Nowadays, the improvement of digital photography and information technologies, makes possible to produce easily these images using affordable devices and open source software maintaining high quality outcomes. The prototype presented uses a high resolution panoramic image developed at the Laboratorio di Simulazione Urbana 'Fausto Curti' of the Politecnico di Milano (Piga et al. 2013).



Figure 5. The final result of a high resolution panoramic image after being elaborated by a photo stitching software (Source: Laboratorio di Simulazione Urbana 'Fausto Curti').

Several soundwalks were performed in different days of the week in order to identify the different sound events that characterize along the time the chosen area, therefore the various sound sources located in the area, and hearable from the location of the spherical photos, have been recorded. Every recorded sounds has been described in detail (e.g. time and duration of the recording, climate condition in the area , devices used etc.). Finally, various three-dimensional models have been created for enriching the virtual environment with dynamic objects, as well as the proposed urban furniture and the surrounding buildings.

The data collected have been imported in the game engine system. Briefly, a game engine is a software system characterized by various components used to manage visual and auditory dimensions of a virtual environment, animations, artificial intelligence, and physical systems. Moreover, the game engine allows us to create highly interactive environments where the user is not just a spectator but he/she can interact directly with the provided simulation (Andreoli et al. 2005). They were developed for the creation of video games, however, in the last years, they have been increasingly used also in disciplines not closely related to a playful attitude (Bishop, 2011; Signorelli 2013). The software employed in this research is the game engine Unity3D™. Due to its flexibility the final product can be easily customized using various programming languages that permit also to interface the game engine to external software (Unity 2014).

The spherical panoramic images were projected on the six faces of a cube and the six images obtained have been modified in a photo editing software (Figure 6).



Figure 6. The panoramic image re-projected on a cube and divided in six images.

Specifically, in order to have the possibility to insert 3D models behind the elements contained in the photo (e.g. a row of trees) the images need to be elaborated and a transparent *alpha channel* needs to be created. Thus the images were used as texture maps for three cubes, with different dimensions, placed one inside the other (Figure 8). All these operations were made using a map as a reference for placing the cubes generated at the correct distance.



Figure 7. The images are applied on the six faces of the cube. In the center is placed the camera.

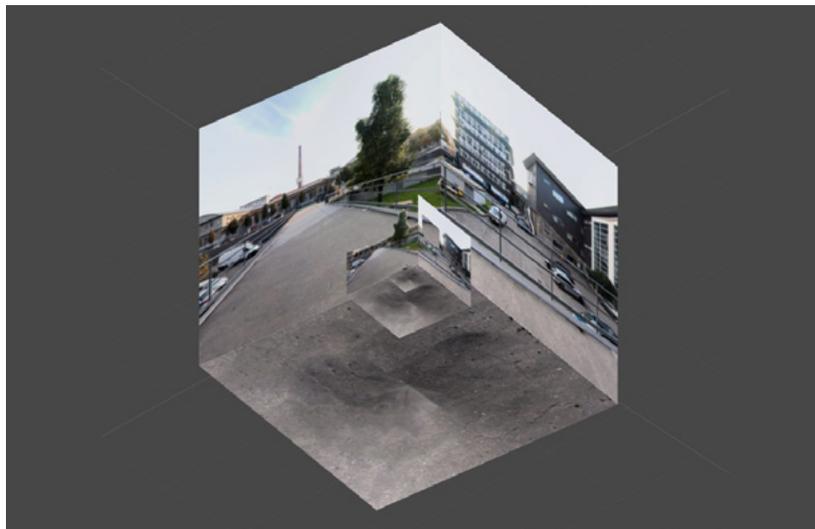


Figure 8. The three cubes in the game engine's environment. The alpha channels of the inner cubes are visible.

Afterwards, a camera was placed in the center of the cubes and a script for allowing the interactive movement was attached to it (Figure 7). Finally, the fixed and moving sound sources collected in the were correctly spatialized in the virtual environment. The sonic environment was controlled using the internal sound engine of the software system that did not allows us to employ advanced audio filters. Thus far just a distance attenuation effect, a doppler effect and a pan effect are used together with a simple reverberation. A more effective sound reproduction system will be investigated. Finally, the virtual environment was enriched with static (e.g. buildings and urban furniture) and dynamics (e.g. pedestrians and trams) 3D models that can project their shadows in real-time over the photo (Figure 9). Both the objects and the sound components can be dynamically activated or deactivated by the user.



Figure 9. Screenshot of the tool, shadows and animations are controlled in real-time by the game engine. The user can interrogate and interact with the virtual objects.

5. Conclusion

The ongoing research aims to highlight the importance and need, for the urban design practices, of new methods and tools to represent the qualitative peculiarities of the urban environment in order to enrich the current strategies based on a merely quantification of the sensory components. The use of new technologies, also borrowed from disciplines not necessarily connected with the urban practices, have been investigated. In particular the use of virtual environments and game engine technologies, conceived as platforms for simulations, and not only as a medium for visual communication, have been proposed. The game en-

engine technologies can be effectively used for describing in a multimodal manner the sensory complexity that belongs to the urban environments, even if various aspects need to be further investigated, e.g. the correct simulation, and consequently the reproduction, of the sonic environment. Thus far the sound engine included in the game engine has several limitations that do not permit to reproduce complex virtual soundscape scenarios based on physical characteristics of the urban environment presented. It still remains a gap between the visual render engine and the sound engine in term of qualitative outcomes that is possible to reach. The integration between the cartographic medium and the virtual environment proposed will be studied, paying attention on the possibility to make them accessible online. Considering the recent improvements of web graphic technologies and in particular of WebGL solutions, this aspect will be likely resolved. Finally, thanks to the flexibility of the game engine used, the developed product will be tested with different output devices (e.g. plan monitors, head mounted display, CAVE systems) in order to evaluate the more appropriate means for enriching the communication capability of the simulation and improve the engagement of the users.

REFERENCES

- AMAT** *Agglomerato di Milano, Piano d'Azione* 2008, *Decreto Legislativo 194/2005* "Attuazione della Direttiva 2002/49/CE relativa alla determinazione ed alla gestione del rumore ambientale". 2013. <http://allegati.comune.milano.it/politicheambientali/mappa%20acustica%20piano%20azione/piano/Relazione%20-%20PIANO%20AZIONE.pdf>
- Amphoux Pascal**, "Ambiance architecturale et urbaine", *Dictionnaire de la géographie* in ed. Lévy J. e Lussault M., 60–61. Parigi: Belin, 2003.
- Andreoli Roberto, De Chiara Rosario, Erra Ugo, and Scarano Vittorio**, "Interactive 3D Environments by Using Videogame Engines." Paper presented at Ninth International Conference on Information Visualisation IV'05, 2005.
- Augoyard Jean-Francois, and Torgue Henry**, *À l'écoute de l'environnement. Répertoire des effets sonores*, Marseille: Editions Parenthèses, 1995.
- Axelsson Östen**, *Designing soundscape for sustainable urban development*. Stockholm: City of Stockholm 2011.
- Batty Michael**, "Model cities." *UCL Working Papers Series* 113. London: University College London, CASA, February, 2007.

- Berglund Birgitta, and Lindvall Thomas,** "Community noise". *Archives of the Center for Sensory Research*, 1995.
- Bishop Ian D., and Lange Eckart,** *Visualization in landscape and environmental planning. Technology and application*. Londra & New York: Taylor & Francis, 2005.
- Bishop Ian D.** "Landscape planning is not a game : Should it be?" *Landscape and Urban Planning*, 100-4 (2011): 390-392.
- Booi Hester, and Van den Berg Frits,** "Quiet Areas and the Need for Quietness in Amsterdam." *International Journal of Environmental Research and Public Health*, 9-4 (2012): 1030-1050.
- Brown Lex** "Acoustic design of outdoor space". Paper presented at Designing soundscape for sustainable urban development, Stockholm, September 30-October 1, 2010.
- Ceconello Mauro, and Spallazzo Davide** "Virtual Reality for Enhanced Urban Design." Paper presented at 5th INTUITION, International Conference Virtual Reality in Industry and Society, From Research to Application. Turin, 6-8 October 2008.
- COM 321,** *European Commission 2011 Report from the commission to the European parliament and the council on the implementation of the Environmental Noise Directive in accordance with the Article 11 of directive 2002/49/EC*. Brussels. 2011.
- Crooks Andrew T., Hudson-Smith Andrew, and Patel Ateen,** "Building 3D agent-based models for urban systems." *UCL Working Papers Series* 161. London: University College London, CASA, November 2010.
- EEA,** European Environment Agency. *Good practice guide on noise exposure and potential health effects*. Technical Report n.11, Copenhagen, 2010.
- , *Good practice guide on quiet areas*. Luxembourg, 2014.
- END 2002/49/EC,** *Environmental Noise Directive*. European Commission, 2002 .
- Evans Steve, Hudson-Smith Andrew, and Batty Michael,** "3-D GIS : Virtual London and beyond." *Cybergeo: European Journal of Geography*, document 359, SAGEO, 2005.
- Faburel Guillaume, and Gourlot Nathalie,** *Report Référentiel national pour la définition et la création des zones calmes*. 2008. http://www.developpement-durable.gouv.fr/IMG/pdf/Referentiel_national_pour_la_definition_et_la_creation_des_zones_calmes_-_2008-2.pdf.
- Gidlöf-Gunnarsson Anita, and Öhrström Evy,** "Noise and well-being in urban residential environments: The potential role of perceived availability to nearby green areas." *Landscape and Urban Planning*, 83 (2007):115-126.
- Griffon Sébastien, Nespoulous Amélie, Cheylan Jean-Paul, Marty Pascal, and Auclair Daniel,** "Virtual reality for cultural landscape visualization." *Virtual reality*, 15-4 (2011): 279-294.
- Grimwood Colin,** "Soundscape, Quiet Areas & Health. A national and local challenge." Paper presented at Brighton Soundscape Workshop, Brighton, April, 2011.
- Hudson-Smith Andrew,** (2003). *Digitally distributed urban environments: The prospects for online planning*. Online. PhD diss., University College London, 2003)

- Jeon Jin Y., Jang H., and Kim Yong H.**, “Final report on remaining work related to work-pacgege 5. Examine and quantify the acoustic effectiveness of vegetation in urban spaces.” HOSANNA project Holistic and sustainable abatement of noise by optimized combinations of natural and artificial means. 2013.
- Kang Jian**, *Urban sound environment*. London New York : Taylor & Francis, 2007.
- Kihlman Tor, Kropp Wolfgang, Öhrström Evy, and Berglund Birgitta**, “Soundscape support to health. A cross-disciplinary research programme.” Paper presented at International Congress and Exhibition on Noise Control Engineering, 1–39, The Hague, 2001.
- Licitra Gaetano, Chiari Claudia, Ascari Elena, Palazzuoli Diego**, “Quiet area definition in the implementation of European directive 2002/49/EC”. *New Zealand Acoustics*, 24–4 (2011): 20–26.
- Lercher Peter, and Schulte-Fortkamp Brigitte**, “The Relevance of Soundscape Research to the Assessment of Noise Annoyance at the Community Level”. Paper presented at 8th International Congress on Noise as a Public Health Problem, Rotterdam, The Netherlands, 29 June–3 July, 2003.
- Martellotti Daniela**, *Architettura dei sensi*. Rome: Mancosu Editore, 2004.
- Payne Sarah R., Davies William J., and Adams Mags D.**, “Research into the practical and policy applications of soundscape concepts and techniques in urban areas.” London: Department for Environment, Food and Rural Affairs, 2009.
- Pheasant Rob J., Fisher Mark N., Watts Greg R., Whitaker David J., and Horoshenkov Kirill V.**, “The importance of auditory-visual interaction in the construction of tranquil space.” *Journal of Environmental Psychology*, 30–4 (2010): 501–509. doi:10.1016/j.jenvp.2010.03.006.
- Piga Barbara. E.A., Morello Eugenio, Cibien Laura and Signorelli Valerio**, “Envisioning the sustainable campus: the urban model as the hub that supports the transformation”. Paper presented at 11th conference of the European Architectural Envisioning Association, Milan, 25–27 September, 2013
- Radicchi Antonella**, *Sull’immagine sonora della città*, Florence: Firenze University Press, 2012.
- Salter Jonathan D., Campbell Cam, Journeyay Murray, and Sheppard Stephen R. J.**, “The digital workshop : Exploring the use of interactive and immersive visualisation tools in participatory planning.” *Journal of Environmental Management*, 90(6) (2009): 2090–2101. doi:10.1016/j.jenvman.2007.08.023.
- Schafer R. Murray**, *The Soundscape. Our Sonic Environment and The Tuning of the World*. New York: A. Knopf, 1977.
- , *Five Villagge Soundscapes*, No.4, The Music of the Environment Series. Vancouver: A.R.C. Pubblication, 1977b.
- Southworth Michael**, “The Sonic Environment of Cities.” *Environment and Behavior*, 1–1 (1969): 49–70.
- Signorelli Valerio**, “Sensescape in urban open spaces, tools for an interactive multi-layers representation of the urban ambiances.” PhD diss. Politecnico di Milano, 2013

Symonds, “Report on the Definition, Identification and Preservation of Urban and Rural Quiet Areas.”, 2003.

Thibaud Jean-Paul, “La méthode des parcours commentés.” In *L'espace urbain en méthodes* edited by Grosjean M. and Thibaud J.-P. 79–99. Marseille: Parenthèses, 2001.

Unity3D, accessed May 2014. <http://unity3d.com>

Venot Flora, and Sémidor Catherine, “The ‘soundwalk’ as an operational component for urban design.” Paper presented at PLEA2006, The 23rd Conference on Passive and Low Energy Architecture, Geneva, 2006)

Westerkamp Hildegard, “Soundwalking” *Sound Heritage*, 3–4 (1974)

WHO “Burden of Disease from Environmental Noise: Quantification of Healthy Life Years Lost in Europe.” Copenhagen: World Health Organization (WHO), Regional Office for Europe, 2011.

Zardini Mirko, *Sense of the City: An Alternate Approach to Urbanism*. Montreal: Canadian Center for Architecture, 2005.

A Sonified Urban Masterplan for Paris – The Use of Sonification in Urban Representation

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Abstract

This paper will discuss the integration of sonification in urban design and planning. Being both temporal and polyphonic in nature, sound can assist in the representation of the multiple temporal flows which contribute to the urban dynamic of a city. Thus we propose a 'sonified' urban masterplan to represent the city in time as well as space, allowing us to better compose urban flows such as movement. First, we introduce the Sonified Urban Masterplan tool, and describe how it can be used to sonify the multiple layers of graphical information used in urban design and planning. Then, we describe how we can use sound to represent different urban systems, before explaining the generation of a Sonified Urban Masterplan for the city of Paris. Through a discussion of the various reactions received from members of the general public, we conclude with the different advantages of the integration of sonification in urban design and planning.

Keywords: Urban design and planning, urban sound cartography, sonification, urban rhythm, Rhythm analysis

1. Introducing Urban Rhythm

The city is a dynamic organism consisting of a number of urban flows, including environmental, transport, and activity flows. We can call these spatio-temporal relationships 'urban rhythms'. Urban rhythms, as described by philosopher Henri Lefebvre, can be observed everywhere where there is an interaction between a space, a time and an energy. (Lefebvre 2004) However, in order to be analysed, these rhythms must first be captured through some sort of spatio-temporal representation technique.

The analysis of urban rhythm, named Rhythm analysis by Lefebvre, can be used as a way of understanding the city. The city, as a collective organiser of our spatio-temporal movements, can be seen as a composer of our social and cultural rhythms. However, these urban rhythms are also subjected to the larger rhythms of the environment, such as the seasons and the tides. In fact, we can see our lives in terms of different types of rhythms at various time scales, which occur on a yearly, monthly, weekly or daily basis. The routine of everyday working life – the cycle of leaving home to go to work in the morning and returning in the evening – is an urban rhythm familiar to many of us.

Many urban problems can be attributed to a failure to appropriately design in space for our desired temporal outcomes. For example urban sprawl, combined with an inadequate provision of public transport infrastructure, has contributed to an over-reliance on the motor vehicle. This has led to traffic jams and excessive commuting times, as well as a lack of urban activity and undesirable pedestrian experiences. The problem of urban sustainability can thus be viewed as a rhythmic one and addressing it calls for a more temporal approach to urban design. (Adhitya 2013)

It is not surprising that urban design is primarily concerned with the spatial organisation of built form, considering its reliance on visual representation techniques. The problem of the graphic urban masterplan is that it is static in nature, as well as limited in the amount of information that can be portrayed – too much visual information becomes illegible and thus incomprehensible. Sound, however, has several advantages which graphic representation lacks – it is both temporal and polyphonic in nature. It is thus well adapted to the representation of temporal information, such as the multiple temporal flows of a polyphonic urban system. In fact, audition has been noted to play a greater role in the cognition of simultaneous streams of temporal data. Sonification is a relatively recent technique which involves the representation of data through auditory means (Kramer 1994).

Thus in this paper, we explore the potential for sonification in the representation and analysis of urban design and planning. In our attempt to integrate sound in the urban planning process, we explore the sonification of urban cartography, which would allow the visual information of an urban masterplan to be heard as well as seen. We discuss the development of a Sonified Urban Masterplan tool – the “SUM” tool – which enables us to articulate various urban systems– environment, transport, form, activity, and design – in time as well as space. As a case study, we apply it to the city of Paris and obtain the reactions of both the general public and urban professionals. From their feedback, we discuss the effectiveness of sonification in the representation of the urban system and the understanding of one’s rhythmic experience in it.

2. Background: Urban sound cartography

Existing urban sound cartography involves the integration of information concerning the acoustic environment with its geographical location, whether quantitative noise levels (in dB) or more qualitative soundscape recordings. This can involve geo-localised environmental sensing from official sources (e.g. Eyes on Earth - NoiseWatch¹) or collaborative databases involving crowd-sourced data from geo-localised mobile sensing devices (e.g. NoiseTube² and Le MontreVerte³).

However, urban designers and planners are responsible for analysing and designing for many urban rhythms which cannot always be heard, ranging from environmental, transport and activity flows, to urban morphology and design. In determining where and how we spend our time, the urban structure inevitably plays a role in composing our everyday urban rhythms. The spatial composition of built form and the temporal connections between them, determine the flow of people and their relative activities, whether commuting, working, or recreational. How can we therefore represent these rhythms of movement and activity, in order to better understand the dynamic of a place, and the way in which we spend our time?

1. European Environment Agency (EEA) <http://www.eyearth.org/en-us/Pages/Learn-More.aspx> [Accessed May 2013]

2. <http://www.noisetube.net/#&panel1-3> [Accessed May 2013]

3. <http://www.lemonde-des-plantes.com/montre-verte/> [Accessed May 2013]

Through image sonification, in which data has a position in time as well as space, the representation of urban rhythms is possible.

3. Methodology: A Sonified Urban Masterplan

With the objective to integrate sound into the urban design and planning process, a tool for the sonification of the urban masterplan was developed in collaboration with Dr. Mika Kuuskankare⁴ at Ircam-Centre Pompidou, Paris.⁵ The SUM tool is an image sonification tool which can be used to transform graphics into sound, towards the creation of audio-visual maps.

Existing image-sound tools, such as Xenakis' UPIC⁶ and its modern equivalent of HighC⁷, were intended for graphic music composition and consist of a single image layer read along a single time line from left to right. However, in order to sonify the multi-layered, spatio-temporal structure of the urban system, we required a tool which could support the sonification of multiple graphic maps and their lecture from multiple directions and speeds. For analytical purposes, it had to be able to transform existing images, and for design purposes it should be possible to create new ones.

The SUM tool was thus specifically designed to support this multi-dimensional structure. Developed within the visual computer-aided composition environment of PWGL⁸, it provides a flexible environment for both sound design and graphic composition. It allows both the importation of raster images, such as existing masterplans, as well as the creation of vector objects for the development of future urban designs. It also allows the definition of any number of spatio-temporal paths of varying speed, for the representation the various urban flows of interest.

The SUM tool translates image into sound through the processes of image rasterisation and parameter-mapping, as shown in Figure 1. After first rasterising the images along our

4. Sibelius Academy

5. Adhitya, Kuuskankare (2011)

6. Xenakis (1977)

7. Baudel(2008), Available from: <http://highc.org/>

8. Laurson (2009)

vector paths of interest⁹, the graphic parameters (RGB colour values) are obtained. These are then converted into sound parameters according to a sound design strategy defined by the user, generating an Urban Sonic Code.



Figure 1. Urban sonification process – from image to sound.

The sound design strategy is crucial to the effective acoustic communication of the data concerned. In our sonification of urban rhythms, we seek to represent a number of urban systems– environment, transport, activity, urban form and its design elements. Thus, in order to be able to identify and differentiate between each urban system, we must consider both how and what we hear.

Drawing on theories of acoustic perception and cognition, our ‘urban sonic code’ thus consists of a combination of soundscape recordings and acoustic modelling techniques, depending on the nature of the urban data. Iconic sounds were used whenever possible in order to assist learning through semantic association¹⁰ (e.g. a church bell associated with a church). When objects are not associated with ecological sounds, sounding objects were created.¹¹ In order to distinguish between each system, we have associated each with a different timbre like the different sections of an orchestra: strings for transportation; brass for environment; woodwind for activity; and percussion for urban form and design elements. The idea was that when played together, due to their timbrel differences, an ‘urban orchestra’ would result.

4. Application: Playing Paris

The SUM tool was then used to generate a Sonified Urban Masterplan for the city of Paris. After generating an image dataset for each urban system of interest –environment; transportation; activity; urban form; and urban design –the colour-coded data was translated

9. according to Bresenham’s line algorithm, Bresenham (1965)

10. Hermann et.al (2011)

11. Rocchesso, Fontana (2003) Available from: <http://www.soundobject.org>

into sound using the SUM tool. The composition of one path could be listened to over time, such as the evolution of a linear experience, as well as its simultaneous relationship to other paths, such as the different lines of the transport system. The set of audio-visual maps could also be played together, such that their interrelationships could be heard. As an example, we sonified all the systems along a specific street in central Paris, Boulevard de Sébastopol, as shown in Figure 2 below.

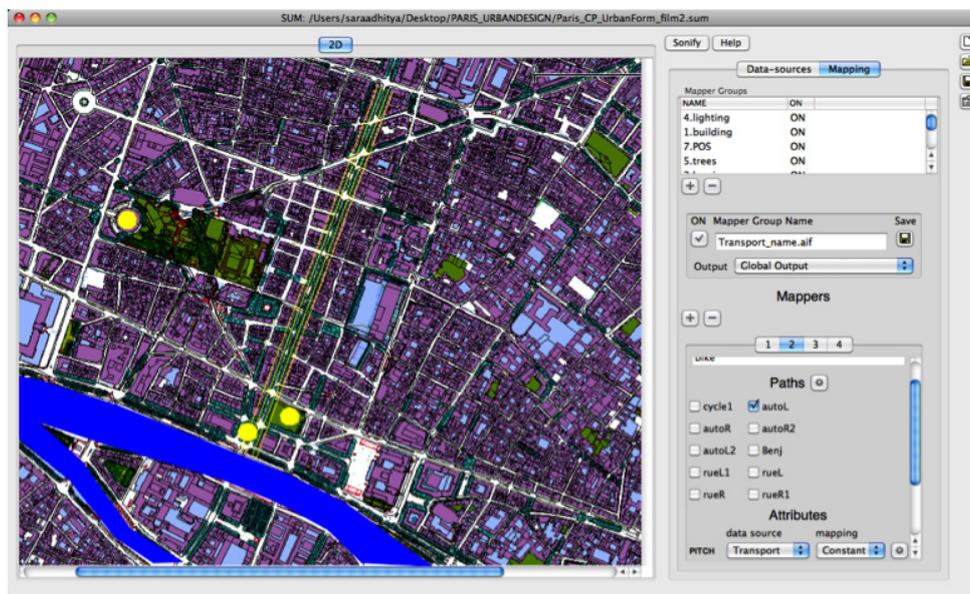


Figure 2. Sonification of Boulevard de Sébastopol, Paris, in the SUM tool.

In order to test the effectiveness of SUM as an urban representation tool, we presented the urban sonic code and resulting sonification to 25 members of the general public¹² in the form of a video. As to be expected, the effectiveness of the acoustic communication depended on the listener. The spatio-temporal connection between image and sound was well-received.¹³ However, while there was ready acceptance of the iconic sounds, the more abstract sounds received mixed reactions, with some participants more receptive to the abstract mapping than others.¹⁴ With little training prior to the viewing of the video, this is not surprising, and can be improved in the future with further training of the urban sonic code.

12. non architects, urban designers or planners

13. Adhitya (2013) 'One can easily assimilate the visual data presented as (s)he follows the structured relationships between them!' Subject xx.

14. Ibid. 'Of course, some mappings are easier to interpret with no training, while for others I would need some more experience' Subject xviii.

5. Results: Listening to Paris

The Sonified Urban Masterplan of Paris attracted a range of responses when presented to the 25 members of the general public, who were not urban professionals. Their feedback to the communicative power of SUM will be discussed below, including its ability to provoke feelings of emotion and recognition; represent temporality and movement; communicate urban data; and increase rhythmic awareness through embodied experience.

Evoking a range of emotional responses, SUM was recognized as a tool '*capable of triggering powerful emotions*'.¹⁵ Aesthetically, the sonification was described as a '*...natural and almost playful data representation*'¹⁶, with several participants referring to it as a '*musical composition*'.¹⁷ Intellectually, SUM inspired an interest in listening to other places, the curiosity to interpret more paths, and the desire to learn more about the composition of the city. The sonification was also reported to have succeeded in igniting the memory and provoking feelings of recognition.¹⁸ Those who were already familiar with the area claimed that the sonification helped to 'transport' them to the place represented and 'relive' their experiences with greater awareness.¹⁹ To those who were not familiar with it, the sonification was said to have helped them imagine what it would be like to be there.²⁰

The ability of sonification to represent travel and movement in a more experiential way was also recognised, through its inherent temporality and capacity to give a sense of timing.²¹ The speed of the path was reported to help with one's understanding of distances, as well as the necessary travel time, which is difficult to judge from spatial representation alone.²² The sonification canal so be seen to have been successful in 'embodying' movement, with a cyclist, for example, able to recognize familiar rhythms of travelling down a road at a certain speed.²³ This included rhythmic qualities of density, repetition, and variation.

15. Ibid. Subject xxi.

16. Ibid. Subject xx.

17. Ibid. 'like listening to a piece of music'. Subject i.

18. Ibid. '*I lived in the area for 6 years and the analysis of Bld Sebastopol feels very familiar - many of the sounds evoke emotional feelings as they mimic the real sound*' Subject xvii.

19. Ibid. '*As the examples in the video are about places I've been to, I feel transported there and biking down Boulevard de Sebastopol but in a more aware fashion than I would normally do.*' Subject vii.

20. Ibid. '*Looking at the map and listening to the music simultaneously provoked visualisation of the journey.*' Subject iv.

21. Ibid. '*It was more experiential than just looking at a graphical plan, gave me a sense of timing of a place in a similar way to physical travel.*' Subject xxii.

22. Ibid. '*The pre-set pace also allows me to have an idea of distances. With a purely graphic map it is often hard to judge how long it would actually take me to walk or bike from one place to another - especially for an unfamiliar city.*' Subject vii.

23. Ibid. '*As a biker I did have some awareness that fitted well to the rhythms represented...*' Subject iii.

SUM was said to reveal a number of urban ‘dimensions’ not normally revealed in the graphic urban masterplan, including the plurality of a city. This included how the city was used by its’ inhabitants, and the change of activities over time, described by one participant as the ‘life’ of the city: *‘The fact that the city is alive, that there are things that happen and change, that walking in a street you can see many different things from one square to the other and discover things.’*²⁴ In doing so, the sonification was able to communicate the social dimension of a city, rather than simply its physical urban structure, and was celebrated for providing a ‘much deeper experience’ than just looking at a map.²⁵

Last but not least, other practical advantages of sound in urban representation were acknowledged. Not restricted to physical scale, sound was able to represent the smaller-scaled details difficult to communicate on a map. As described by one participant, including such information would easily make the graphic masterplan *‘very noisy and impossible to communicate with.’*²⁶ In addition to scale, this was largely attributed to the polyphonic nature of sound: *‘While visually you can only focus on one thing, aurally you can have more than one input.’*²⁷ Sound also contributed to aiding the legibility of the map by avoiding *‘... frequent references to the legend.’*²⁸ Sonification was celebrated for enhancing the graphic plan, making it more ‘informative’ and ‘enriching’ through another layer of representation.

6. Conclusion: SUM and urban representation

The richness of the responses received with respect to the first application of the Sonified Urban Masterplan of Paris, demonstrates the great potential of sonification in urban representation. These initial responses demonstrate the ability of sound to communicate urban movement, experience and rhythm, on both an emotional, aesthetic and intellectual level. This was confirmed by feelings of recognition reported by those familiar with the area. The polyphonic dimension of sound was celebrated for its ability to communicate the plurality of the city often lost in the graphic plan, including its social dimension, while its temporality

24. Ibid. Subject xviii.

25. Ibid. Subject vii.

26. Ibid. Subject xvii.

27. Ibid. Subject x.

28. Ibid. Subject vii.

allowed one to understand the rhythms of the various urban systems over time. For some, it was an introduction to the invisible rhythms of urban composition more often than not ignored on a conscious level.²⁹ For others, it provided a way of capturing lived experiences that the static masterplan could not. In both cases, sonification can be seen to have increased awareness of the effect of the urban structure on the resulting urban dynamic.³⁰ Through the act of listening, not only to the soundscape but to one's embodied experience, we hope to deepen our understanding of the urban composition on our urban rhythms, towards the design of more enjoyable and sustainable experiences in the future.

'Listening to the transposition in sound of the monuments, offices, markets, trees of Boulevard Sebastopol opened me up to the possibility that this manner of interpreting the urban dimension may in fact help to develop a deeper understanding of the city in which I live.'³¹

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29. Ibid. '*... I'm not even aware of it while I'm walking in the city itself. I'll go through crowded places and more silent areas but will not perceive the inherent rhythm consciously.*' Subject xiv.

30. Ibid. '*New and repeated sounds drew my attention to the variety and placing of different aspects of the city, and made me realise that these might be more intentional and "beautifully" placed than I had first realised!*' Subject xxii.

31. Ibid. Subject xiii.

REFERENCES

- Adhitya, Sara.** *Sonifying Urban Rhythms – towards the spatio-temporal composition of the urban environment*, Paris, 2013.
- Adhitya, S., Kuuskankare, M.** “The Sonified Urban Masterplan (SUM) Tool: Sonification For Urban Planning And Design,” in *Proceedings of the 17th International Conference on Auditory Display (ICAD 2011)*, Budapest, 2011
- Baudel, T.**, “HighC.” software. Available from: [http://highc.org/\(2008\)](http://highc.org/(2008))
- Bresenham, J.**, “Algorithm for computer control of a digital plotter,” *IBM Systems Journal*, vol. 4, no. 1, pp. 25–30, 1965
- European Environmental Agency**, *Eye on Earth*, <http://www.eyearth.org/>[Accessed May 2013]
- Hermann, T., Hunt, A., Neuhoff, J.**, (Eds), *The Sonification Handbook*, Logos Verlag, Berlin, Germany, 2011
- Kramer, G.** “Some organizing principles for representing data with sound.” In: *Auditory display. Sonification, Audification, and Auditory Interfaces*, Addison–Wesley, 1994
- Laurson M. Kuuskankare M.**, “Norilo V.: An Overview of PWGL, a Visual Programming Environment for Music”, In: *Computer Music Journal*, vol. 33, no.1, pp.19–31 (2009)
- Lefebvre, H.** *Rhythmanalysis: Space, Time and Everyday Life*, Continuum, London, 2004
- Rocchesso, D., Fontana, F.**, “The Sounding Object, Mondo Estremo”, 2003, [Online]. Available from: <http://www.soundobject.org>
- Noise Tube**, <http://www.noisetube.net/#&panel1-3> [Accessed May 2013]
- Le MontreVerte**, <http://www.lem-onde-des-plantes.com/montre-verte/> [Accessed May 2013]

The Acoustics of the Mevlevi Sama'Khana

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Abstract

The Sama'Khana or the Sufi theatre (hall of listening) complex, an 18th century theatre and monastery constructed for the confraternity of the Mevlevi Whirling Dervishes. It is located in Suyufiyyastreet in the medieval Cairo that lies beyond the old Fatimid walls. The complex was developed in the Mamluk period, and located near the pond of the Birket al-Fir and the old KhaligMasri (canal). The Sama'Khana is a wooden structure which features a circular area reserved for performances and constitutes of two levels of circular galleries surmounted by a wooden dome. The hall was used for spiritual listening, in order to listen to the harmony of the cosmos, the dervishes whirled in the circular space, expressing the geometrical and mathematical symbolism involved in the ceremony. According to the Mevlevi confraternity, the complex was devoted to moral and spiritual education. The proportion of its architectural space reveals the symbolism of geometrical and cosmological expressions. This study explores the geometrical parameters of the Sama'Khana, and its impact on the acoustic environment. The modal analysis of the space revealed that the structure was found to resonate at fundamental frequencies, which are further described to belong to the alpha wave patterns found in the human brain. These patterns are associated with meditation, relaxation, and altered states of consciousness. All this adds to the special soundscape patterns associated with the ceremony of listening to the cosmos, and outlines the importance of the sonic properties of the Sama'Khana.

Keywords: Acoustic, Mevlevi, Sama'Khana, Resonance

1. Introduction

Tasawwuf is method by some Muslims to adore god. The believers of Tasawusuf state that it represents the spiritual dimension of god adoration, and the mysterious dimension of Islam. Tasawwuf is seen as a method whose objective is the purification of the heart and mind to take it away from everything except God. The practitioner of the Tasawwuf is known as Sufi.

The Sufis believe that they can embrace the Divine presence in life and they can achieve the perfection of worship by performing their spiritual meeting (called Majeles) ceremonies. According to the approach of performing Tsawwuf (which is known as Turroq) the performance of ceremony is done. Approaches like Khalwaty, Riffai, Aleevi, Chishti, Bektashi, Mevlevi, and Naqshabany are common. The meeting places of Sufis ceremonies are performed in places known as zawiyahs, Khanqqah, or Tekke. From the ceremonies of Sufis (depending on the approach) there are Anasheed which is the use of Duf (a type of drums) to sing Islamic poems, Sama is the pronouncement of names of God while dancing or moving, and Whirling is performing of Sama with customary revolving dance. In Whirling, the dervishes (revolving Sufis) aim to reach the perfection (in relation to God) through individual desires by listing to melody concentrating on God and spinning one's body in repetitive circles, which is seen as a symbolic imitation of planets in space revolving the sun.

2. Mevlevian Approach

The Mevlevi order represents one of the main orders or Turroq of Sufis founded in Konaya by the well-known Persian poet in the 13 th century Galal El-Din Mohamed El Romi. The Mevlevi approach in Tasawwuf, can also be named as Whirling Dirvishes which is based mainly on the whirling. As previously discussed the Whirling is performing Sama while whirling. The Sama represents a mysterious trip for the human spiritual ascent through mind to the perfection.

2.1. Whirling ceremony

Whirling ceremony is dancing by whirling for long hours on the centre of a circle, under supervision of Sheikh (leader of Darvishes). This whirling dance shown in figure1 let them

integrate into the feelings of self-spiritual sublime, where they are freed from their psychological feelings and go far away from the material world to the Divine Presence. These Dervishes ceremony becomes a symbol of immortality and a sign of yearning for God and neutralize the Earth's gravity, to open the eyes of the heart to recognize the infinite immortality, in order to free the dervish 's spirit from the Earth's gravity with the self-liberation of the perception (that represents a constraint), to become a recluse in God(Farraro 2010).



Figure 1. Mavlavian ceremony (Whirling dancing).

The dance of the dervishes, whirling is an expression of the cosmic enjoy that is felt by the impact of the vanishing, coincided with the remembrance of God Almighty, which represents struggling with themselves towards sky.

The process of rotation in the cosmos started with the beginning of the universe, where planets were asked by the God once to rotate, then they revolved around their center (Sun) as an immediate obey to God's order and take the path of the galaxies to rotate in an anti-clock wise in a way which makes the whole universe is worshipping to God. According to Mevlevian Darvishes, if we take a look to the universe we will notice the whole universe is in unstopped revolving. An atom revolve around one or more electrons in orbits , or orbits of their own , and this means that all the atoms of solids , liquid , and gas in the universe are revolving anti clock-wise. Also the electron spins around itself, and then revolves around the nucleus of an atom in an anti-clockwise. Such rotation resembles the revolving of Muslims around the Kaaba (the holy mosque of Muslims in Mecca). The living organisms through each living cell «protoplasm» (is living material cell) is revolving anti-clock wise obeying the same concept like the cosmos, the earth revolves around the sun, the moon revolves around the Earth, solar systems revolve around the center of the galaxy, and the galaxy revolve around the center of the group of galaxies, which all show the unity of the universe and the oneness of the Almighty Creator.

The group of Galaxies revolves around the center of the universe in which no one knows except God Almighty know this center, all of the whole universe is rotating counter-clockwise, everything in the universe is going on this wondrous rotation, the electricity, cells, moons, planets, stars, solar systems, galaxies,... etc.

3. Sama'khana building for Mevlevian ceremonies

The Mavlavi complex containing the Sama'khana is situated at a short distance from the Citadel in Cairo, on as-SiyufiyyaStreet which lies along the ancient north-south axis of medieval Cairo. The cluster of buildings which make up this complex range from the early Mamluk period (the madrasa/mausoleum of the Emir SunqurSa'di/HasanSadaqa built in 1315 and the palace of YazbakAqbardi dating to the 14th century to the late Ottman era (the MevleviSama'khana built in the 18th century)

The Sama'khana is a wooden structure which occupies a 25*25m square and features a central circular area reserved for performances and surmounted by a 10.65m/diameter wooden dome. Two levels of circular galleries line the height of the central performance hall and are supported on slender wooden columns(Giuseppe 1983), as shown in figure2.

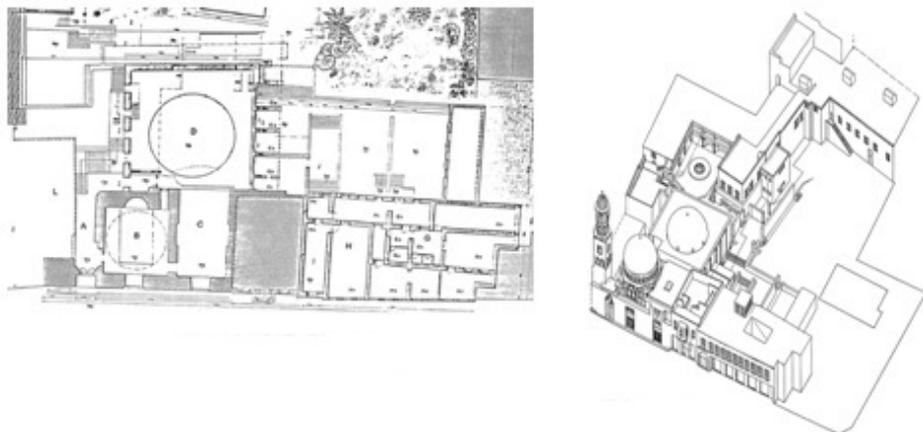


Figure 2. Mavlavi complex with Sama' Khana.

The Sama'khana has a great historical importance not only because it represents the last building of the Mavlavi complex, but also for its unique presence in Egypt as the only building that was designed by Dervishes to perform their ceremonies. On the other hand from the architectural points of view, the Sama'khana (the word means the hall of listening) shows

an interesting architectural design concept that shows the function of the building which is listening to the harmony of the cosmos (names of god and music while performing their ceremony by whirling) by generating the form that fulfills this sonic environment and also embodies the philosophy of MevlevianDarvishes. The main listening hall is shown in figure3.



Figure 3. The hall of listening of the Sama'Khana.

3.1. Concept of Sama'khana design

The Mevlevia's main ceremony is the Sama which is listening, as a refer to the harmony of the cosmos. The Sama ceremony architectural space called Sama'khana is defined by a scheme of geometrical and mathematical symbolisms, the sama'khana represents the greatest expression of this particular architectural function. The central area where the Sama takes place through circular movements as an expression of rotation of the celestial spheres represents the origin of the universe geometrical and cosmological description.

In the centre, the point was at the beginning as the big bang of the creation, the point geometrically does not have a dimension which is the absolute unity, and its projections are geometric sequence of points that form circular line, as represented in Figure4. The circular line is the path of life and knowledge which continuously has reference to the centre as the origin of everything. The circular perimeter also defines the Sama performance area, since its radius is the diameter of the Sama circular area that represents the first orbit of the Darwishpath. Two lines extending from the post where the sheikh sits and tangent to the orbit forms an equilateral triangle symbolizing the descending of life force from the upper unity to the multiplicity, and its expansion on the earth assumes the shape of the square in the sama'khana plan as shown in Figure5.

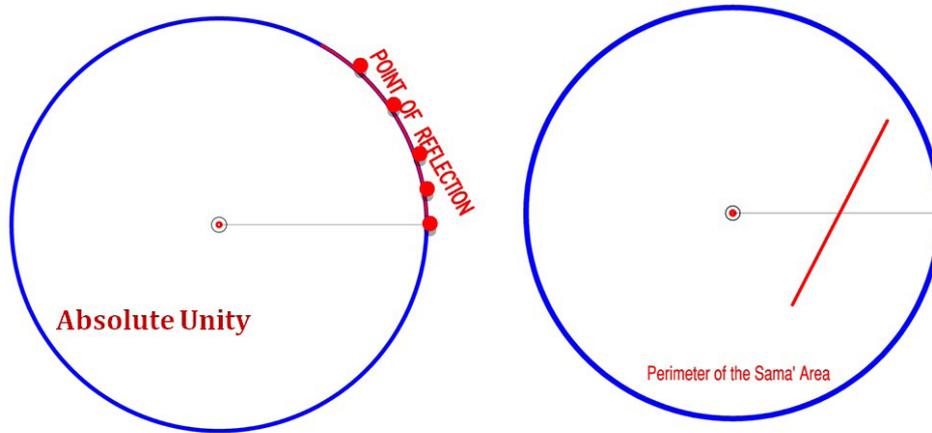


Figure 4. Left: the point as the big bang of creation, Right: is the projection of the point that creates the circular line.

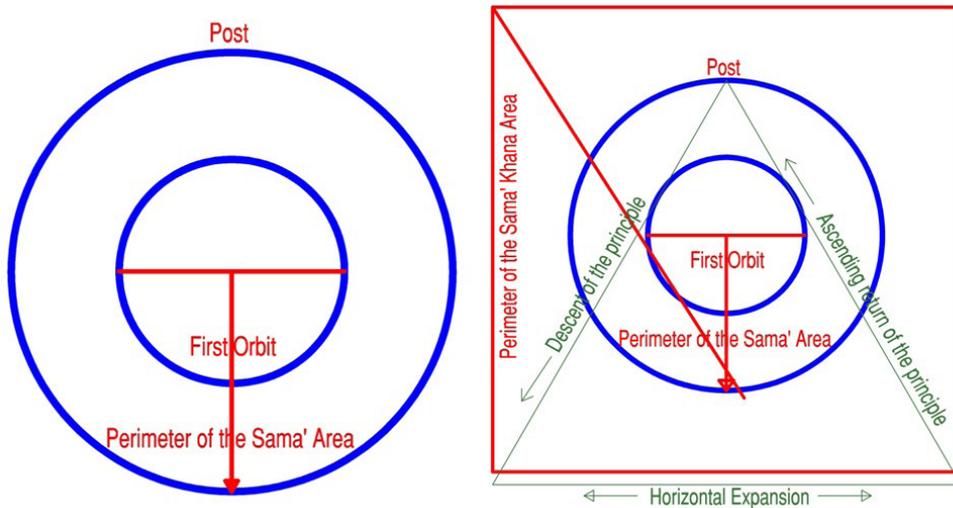


Figure 5. Left: the first orbit of Darwish path, Right: the projection of the point that creates the circular line.

Other circles with their centre along the first orbit are developing and through their intersections the circle of the second orbit of the darwish path is formed as shown in Figure 6. The sequence of the large circles having the Sama area radius and their centres on the first orbit, represent the mystical expansion over the spectators inside the Sama'khana area. Figure 7 shows the intersection of the circles with the perimeter circumference of the Sama area marks the position of twelve pillars supporting the dome of the samakhana itself and symbolically the celestial spheres of the sky and cosmos.

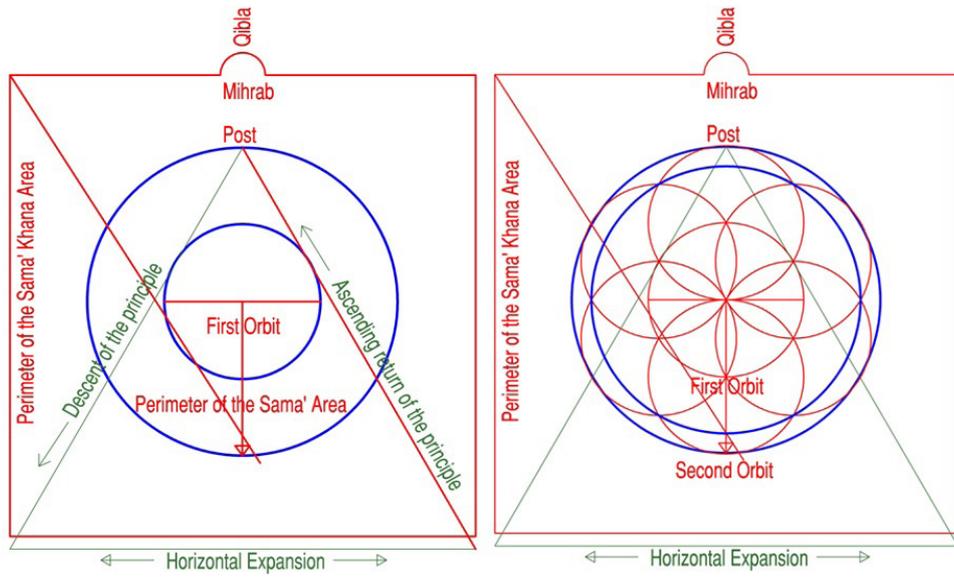


Figure 6. The second orbit circle.

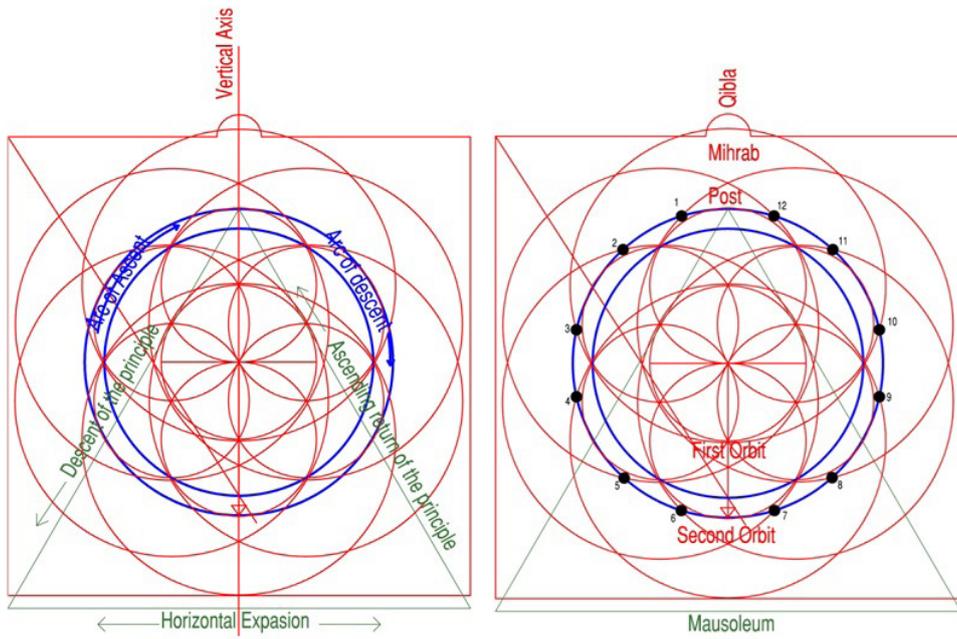


Figure 7. Left: circles represent the mystical expansion over the spectaculars, Right: The twelve wooden pillars.

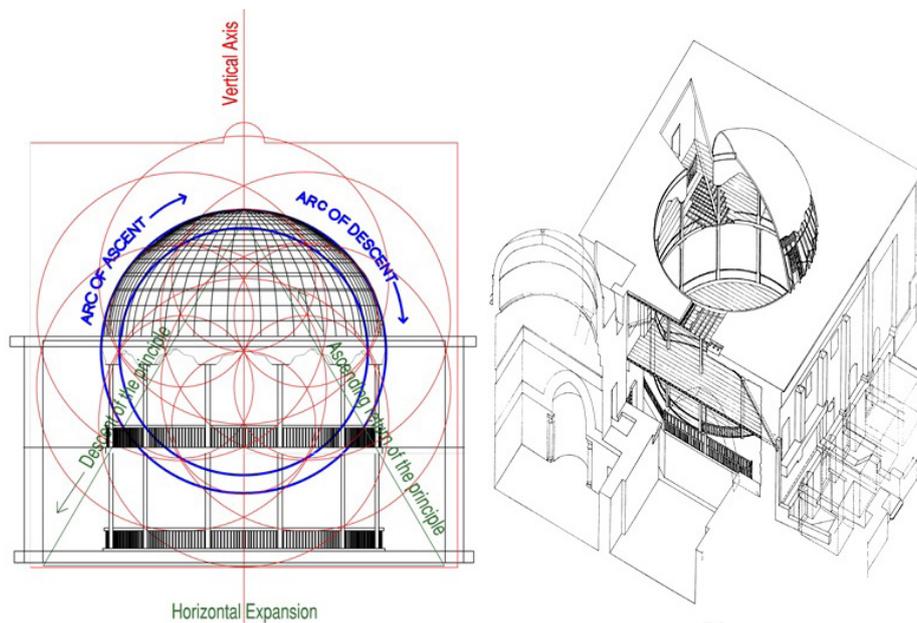


Figure 8. Architecture section of Samakhana shows the same proportions like the plan.

The square has symbolical reference to the earth, the circles and the geometrical design of the Sama'khana plan was linked on propose again with the same proportions in the vertical dimensions in the architectural section. The cube is an earthly world, and the overhanging dome is the support of the cosmos spheres, the resulting geometry is shown in figure 8.

4. Perception of Sound

4.1. Circular buildings

The most intriguing design feature of the Sama'khana from the acoustic perspective is its circular plan. Thus it is not surprising that a numerous of well known religious buildings, have circular plan design, and consequently outstanding acoustic phenomena. St. Pauls cathedral in London(Raman n.d.)has a circular raised dome that allows clearly a whispering gallery effect to be heard at remote distances. Even 5000 years old stone structures such as the Stonehenge were found to resonate at certain frequencies. Till (Till 2010) showed that in Stonehenge the sarsen stone ring, called the slaughter and heel stones are placed in a middle zone so as to interact with the acoustics of the space reinforcing the sonic environment. Modern Soundscape sculptures as well incorporated a circular shaped cylinder. Bernhard

Leitner (Leitner 1990) introduced a space for seeing and hearing. The Cylindre Sonore at the Parc de la Villette in France is representing a new approach in architecture design, bringing together the architect experience and the composer imagination and the will of the sculptor. This soundscape feature lies sunken inside the bamboo garden. The upper edge of the double cylinder is at the level as the pedestrian alleys.

This outlines clearly the importance a circular shaped space plays in the resultant acoustic environment and soundscape experiences for attendees. Generally if one stands in the middle of vertical walls erected on a circular pattern the sound will propagate away hitting all the circumference hard surfaces simultaneously and all energy packets will return back at almost the same time, due to the equal path length. Depending on the space size a prominent echo and reverberation will be produced by the late energy packets.

If the location of the listener is away from the centre near the edge of the circle then the reflections will arrive according to the following sequence: The first reflection would be sound packages reflected back from the nearest wall portion, the second when sound hits the side parts of the walls reflects twice and propagates back forming a triangle. Higher order of reflection will form a polygon shape path with n sides where $n-1$ is the order of reflection. Thus in circular shapes form a reverberant field is created and additional echoes are experienced as well.

4.2. The Acoustics of the Sama'khana

It is not surprising that the circular wooden building of the samakhana would have strong acoustic effects. The effect is produced by circular modes of vibration that produce a number of harmonics. It is not surprising that the samakhana building resonates and produces sound in time with the regular echoes produces inside the space. The samakhana is therefore a complex monument involving number of geometric shapes, despite this theoretically it should have a strong fundamental resonance at a certain frequency.

The smakhana was built to have strict geometrical circular concepts in its horizontal plan, the same proportions adopted in the plan are proposed again in its architectural vertical section. Measuring these dimensions that equalizes the space vertically and horizontally, tells us that the fundamental resonant frequency would start at 7-14Hz, this raised a number of interesting issues. Alpha brain waves of deep relaxation start at 8Hz and end up at 15 Hz. Alpha brain waves are present in deep relaxation and usually when the human eyes are partially or totally closed, when you're slipping into a lovely daydream or during light contemplation. It is an opportunity and optimal time to program the mind for success and it also increases the human memory, imagination, visualization, learning and concentration.

It is the gateway to the human subconscious mind and lies at the base of the conscious awareness. Alpha activity has also been connected to the ability to recall memories, lessened discomfort and pain, and reductions in stress and anxiety(Williams 2006)(Nomura T 2006) (HC. 2000)(Hall 1865). The 14Hz is described as infrasound; it is possible for humans to hear notes below 20Hz they only have to be adequately loud(Till 2010), in addition periodic rhythmic vibrations. One feels sound waves between 15Hz and 20Hz as much as one hears it; the sounds between these ranges are felt as rattles or vibrations.

According to Till (Till 2010), from 1-14Hz one perceives sound as rhythms, often described as number of crotches or beats per minute, table 1 outlines the human perception of sounds at various frequencies.

Table 1. Perception of sound at different frequencies(Till 2010)

Frequency	Perception
Above 20Hz	Pitch or musical note
14Hz-20Hz	Vibration
1Hz-12Hz	Rhythm
1-3Hz	crotched pulse
2-6Hz	quaver pulse
4-12Hz	semi quaver pulse
0-1Hz	
1Hz	1 second
0.5Hz	2 seconds 60 seconds or 1 minute
0.0167Hz	

This outlines clearly the intended geometric proportions of the Samakhana design that respond acoustically to functional aspects of being a place of spiritual religious ceremonies. Table 2 and Figure X summarize the axial modes of the samakhana space.

Table 2. Axial modes inside the Samakhana.

	1st	2nd	3rd	4th
Length	7Hz	14Hz	22Hz	29Hz
Width	7Hz	14Hz	22Hz	29Hz
Height	7Hz	14Hz	22Hz	29Hz

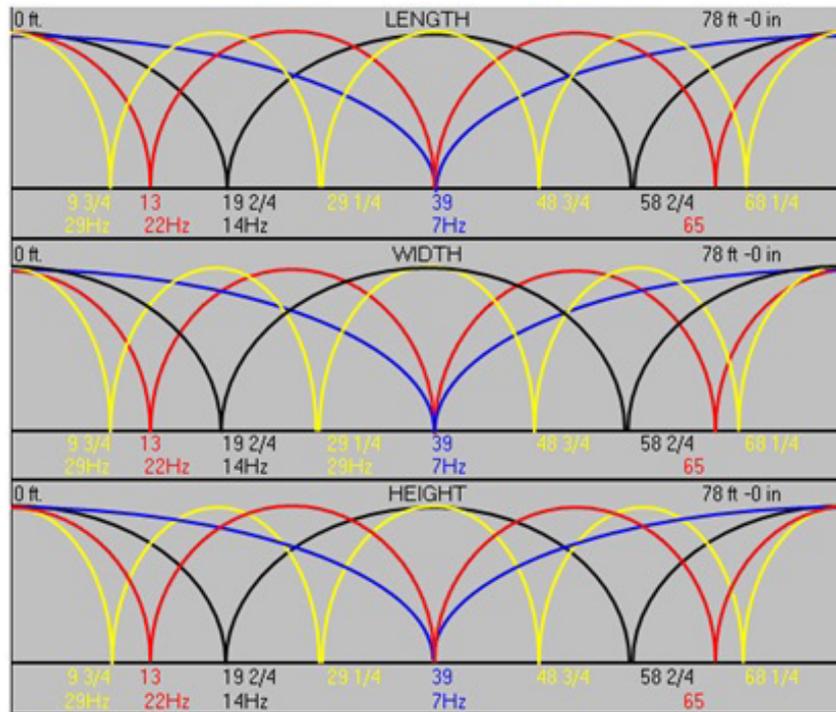


Figure 9. Arepresentations of modes inside the Samakhana space.

Thus the acoustic of the samakhana seemed to suit sound making, participative, amplified, and rhythmic activity where the gathering of people take part in the Mevlevis ritual ceremonies. These Mevlevis ritual resemble trance-like rituals. The body and mind were entertained by specific frequencies produced by the acoustics that helped the brain to produce alpha wave patterns; this consequently helped to achieve the desired state of consciousness.

5. Conclusion

This study revealed that the sama'khana design demarcated visual relations as well as sensuous aspects. The building was proposed to house the rituals of the Mevlevis confraternity, dedicated to spiritual dimensions. The conceptual analysis of the sma'khana design revealed that its plan and section are carefully laid out to correspond to the cosmos relations. The circle where the whirling dervishes performed was designed so as to mimic planet movements in an orbital accurate tactic motion. Even structural elements represent connections with

spectaculars platforms. Thus being inside the circular ring would produce a powerful sense of inclusion and involvement, with the surrounding set of configuration.

Having the sama'khana designed for performances to achieve a coherent body and soul connection, in conjunction with the exhaustion provoked by the whirling, during which the “dancers” could reach the mystic ecstasy. Music was a powerful vehicle for the diffusion of those new movements; often, remixing Oriental rhythms in order to meet the religious expectation. Having these parameters indicating a strong potential that the building could have outstanding acoustic features, the paper examined the sonic impact of the building and its effect on the resultant soundscape, and the additional semantics that could be added to the space.

The investigation of modal patterns of the space revealed evidence of resonance starting at low as 7Hz, which helped to induce alpha wave brainwave patterns. Alpha brainwaves are associated with relaxation, altered state of consciousness, meditation, and consequently a spiritual level of acoustic practice. Previous research revealed that the brain can synchronize and entrain to such frequencies, this means that if the dervishes whirl at such tempo their brain tend also to exhibit such frequency. Thus the sama'khana acoustic atmosphere was found to be prominent, specific and well specified, that it seems that the acoustic effect was understood and designed to act in harmony with the ritual performances. Further investigation is needed to support such findings in terms of acoustic measurements, and analysis to predict important modal patterns, to justify the findings.

REFERENCES

- Farraro, Valeria.** “From Literary Texts to Musical Sounds: Mawlânâ’s Message in Italy.” *Dünyada Mevlâna İzleri – Bildiriler*, 2010: 147–187.
- Giuseppe, Fanfoni.** “Il Complesso Architettonico dei Dervisci Mavlavi in Cairo”, in *Rivista degli Studi Orientali*. Università di Roma ‘La Sapienza’, LVII, 1983: 77–92.
- Hall, Charles Francis.** *Arctic Researches and Life Among the Esquimaux: Being the Narrative of an Expedition in Search of Sir John Franklin in the Years 1860, 1861, and 1862*. New York: Harper and Brothers, 1865.
- HC., Ossebaard.** “Stress reduction by technology? An experimental study into the effects of brainmachines on burnout and state anxiety.” *Appl Psychophysiol Biofeedback* 25, no. 2 (2000): 93–101.
- JH., Williams.** “Frequency specific effects of flicker on recognition memory.” *Neuroscience*. 104, no. 2 (2001): 283–286.

- Leitner, Bernhard.** *Le Cylindre Sonore*. AEDES
Galerie für Architektur und Raum, 1990.
- Nomura T, Higuchi K, Yu H, et al.** "Slow-wave
photic stimulation relieves patient discomfort
during esophagogastroduodenoscopy." *J. Gas-
troenterol Hepatol.* 21(1 Pt 1) (2006): 54-58 .
- Raman, C. V.** "On whispering galleries." *Proc.
Indian Ass. Cult. Sci* 159, no. 7: 1921-1922.
- Till, Robert.** "Songs of the Stones: An investiga-
tion into the Acoustic Culture of Stonehenge."
*Journal of the internationa association of the
study of popular music* 1, no. 2 (2010).
- Williams, J., Ramaswamy, D. and Oulhaj, A.** "10
Hz flicker improves recognition memory in
older people." *BMC Neurosci.* 21, no. 7 (2006).

Food Opera: Transforming the Restaurant Soundscape

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Abstract

Music has become a ubiquitous element of the restaurant soundscape, one that even in the most calculated dining environments is commonly relegated to the role of a background mood enhancer. In a series of events that I call “food operas,” I have explored ways to pair food and sound more overtly, using techniques adapted from my work in the video game industry to synchronize music with different courses, to conform to the indeterminate durations of dining room states, and to provide variation over the extended length of a multi-course meal. This paper describes the challenges of building a sound deployment system for a restaurant that delivers and coordinates a customized soundtrack for each diner, while also examining the expressive potential of this new genre.

Keywords: food opera, audio-gustatory, multi-channel, responsive systems, phonography, generative music, video game music

1. Introduction

The art world has been taking increasing notice of the culinary world in recent years, in a development that in some ways mirrors its appropriation of sound in the twentieth century; examples include Ferran Adrià's G Pavilion at Documenta 12 (2007), Marina Abramović's *Volcano Flambé* (2011), and Natalie Jeremijenko and Mihir Desai's Cross[x] Species Adventure Club (2010). At the same time, modern chefs have been increasingly interested in synchronizing sound and visual information with dishes, as in Heston Blumenthal's iconic dish *Sound of the Sea* (2007), Paul Pairet's high-tech and immersive restaurant Ultraviolet (opened in 2012), and El Celler de Can Roca's "GastrOpera" *El Somni* (2013).

In any aesthetic presentation that merges sound and food, questions of acoustic ecology must be addressed. Background music while dining has become a ubiquitous component of the urban soundscape, while at the same time, the murmuring of conversation is considered a fundamental and inalienable accompaniment to any shared meal. The social institution of communal dining brings with it a host of assumptions and conventions that must be carefully negotiated.

In a recent series of events, I, along with a team that includes producer and designer JuttaFriedrichs and sound artist Stephan Moore, have collaborated with acclaimed chef Jason Bond of Bondir restaurant in Cambridge, MA, USA, to present an immersive, evening-length, audio-gustatory experience that we have termed "food opera." In these events we explore dining as a communicative medium towards a number of different expressive ends, including using the format of a meal coupled with sound to tell the story of sustainable food practices and the emerging "locavore" movement.

2. Observations on the State of the Restaurant Soundscape

It is a rare phenomenon, the restaurant without music. That a public meal should be accompanied by music has gone seemingly without question, at least since sound recording and playback technology made the deployment of music in restaurant spaces convenient and inexpensive.

In a restaurant context, music serves several functions. It entices customers to enter the restaurant, perhaps first by attracting them with desirable sounds, and also by giving the

impression of activity, which is often an indicator of a successful restaurant. Once inside the restaurant, music raises the noise floor to mask undesirable sonic by-products of food consumption and preparation, as well as to provide a measure of privacy for diners' conversations.

Choice of music conspires with interior design, restaurant name and logo, and other signifiers to establish a restaurant's identity. For restaurants specializing in a certain regional cuisine, it is common to present a corresponding musical tradition, for example, mariachi music in a Mexican restaurant. For other restaurants, music may be chosen primarily based on the demographic the restaurant is trying to lure. Conventions vary by locale; when I was living in China, a small playlist of Western hits was inescapable ("Hotel California," "Another Day in Paradise," "Right Here Waiting," "My Heart Will Go On"), and now that I live in Spain, the default restaurant soundtrack seems to belight jazz covers of old pop hits from the 80's and 90's (even at as fine a restaurant at El Club Allard in Madrid).

Most music in restaurants is recorded and delivered to diners via a sound playback system, and there is typically one soundtrack for the entire restaurant, deployed from speakers positioned unobtrusively throughout the space. By increasing the number of speakers, the sound may be more evenly distributed. As most recorded music is distributed in a stereo format, a sound system for a large restaurant must incorporate a solution for deploying two channels of sound across more than two speakers.

When live music is incorporated, it is usually presented in such a way that it is transmitted to the whole restaurant at once, typically on a stage, although even when performers move from table to table, the sound is usually audible throughout the space. Live music is therefore not synchronized with any of the events of an individual meal in a typical dining environment (in which each party dines asynchronously), and in fact it can detract from appreciation of the food, as diners stop their eating and conversations to listen to the music and accord the live musicians their due.

Certainly, music is but one determinant of the overall restaurant soundscape, and poor acoustics may be more deleterious to a fine dining experience than poor music. The size of a restaurant, and thus the number of diners it can accommodate, has an effect on the noise floor. But I have thus far limited my investigations to music curation and deployment, trusting that my architect and acoustician colleagues have succeeded in their work.

3. The Genesis of the Food Opera

I first articulated my vision for what I now refer to as “food opera” back in 2006. I had long been an aficionado of creative and experimental cuisine, as I felt that unusual juxtapositions and methods of presentation encourage greater observation and engagement from diners. It evokes an experience similar to hearing a piece of new, unfamiliar music, requiring a diner to parse and organize sensory information over time to understand the full range of what is being expressed, without necessarily assuming some historical or cultural context.

By 2006 I had already been working as a composer and sound designer in the video game industry for ten years, and I was passionately exploring solutions to the challenges of non-linear, real-time audio deployment that the medium poses. Simply summarized, these challenges are to find ways to respond to unpredictable, user-generated game events, and to find ways for music to continue indefinitely between these events. To address these challenges, I had been drawing on my background in classical music, including the aleatoric works of John Cage, Earle Brown, and Karlheinz Stockhausen, as well as the algorithmic works of Paul Lansky, Barry Truax, and Curtis Roads. By this time, I had already begun work on the video game *Tom Clancy’s EndWar* (2008) for my employer at the time, Ubisoft, and I had begun prototyping the cell-based music deployment system that would be the game’s primary audio innovation.

My epiphany was to realize that the indeterminate events of the dining room—which dish a diner chooses, how long a diner takes to finish a course, or when the next course arrives—posed exactly the same challenges that I was facing in my video game work. I began to formulate a plan to use video game music techniques to score a meal.

In my observation, music and cuisine share the quality of being inherently abstract, which makes them well suited for pairing. Generally, they convey meaning through internal relationships and references, but it’s difficult for either to be “about” anything else (excepting, of course, music that sets text, which is an incorporation of another art form, or music that involves sampling technology in some guise). I remember commiserating once with a composer friend over a meal at an Ethiopian restaurant about how the only thing worse than a bad music review was a bad restaurant review, and I believe this illustrates how far the world of the senses of hearing and taste is from the world of words. In a way, my entire project is predicated on the notion of using one sense to describe another sense, bypassing words completely.

I eventually settled on the term “food opera” because of opera’s multimedia associations; this word choice sometimes confounds those who associate opera primarily with the voice. Opera is one of the most multimedia art forms in Western civilization (a characteristic it happens to share with video games), combining music, dramaturgy, literature, choreography, visual art, sculpture, and architecture. My primary innovation has been to find a way to combine two media that have historically been problematic to couple, and so I thought “opera” an appropriate term, to draw attention to this unconventional union, and also to situate my efforts in the discourse of multimedia drama.

This project wended a slow road to realization. The first tangible evidence was a private workshop I conducted with friends in Shanghai in 2010, during which I wrote some music for woodwind trio inspired by a menu I developed with my friend, the accomplished chef Caroline Steger. After much additional work, I eventually collaborated with chef Jason Bond, of Bondir restaurant in Cambridge, MA, to bring *Food Opera: Four Asparagus Compositions* to an invited audience at the 40K Curatorial Space at Harvard’s Graduate School of Design on May 22, 2012. We presented two subsequent events at Bondir: *Sensing Terroir: A Harvest Food Opera* on November 13, 2012, and *Beside the White Chickens: A Summer Food Opera* on July 30, 2013.

4. Objectives, Goals, and Parameters

To link sound to a dining experience is to enter into a social environment that is already full of expectations and conventions. In order to aesthetically situate the scope of these food operas, I determined a set of requirements and objectives:

The sound must be deployed and coordinated and real-time. Synchronizing music to a meal with any degree of precision is a problematic proposal, but by using a computer to control the music and trigger changes in real-time, tight synchronization can be achieved.

The sound must be able to continue indefinitely. Each course may last an indeterminate amount of time, and an indefinite amount of time may elapse between courses, so the music must be able to continue indefinitely in a steady state without resorting to repetitive loops that would fatigue diners.

The sound must be electronically mediated, or acousmatic. In my conception of food opera, the plate is the stage; live musicians circulating throughout the restaurant or posi-

tioned on a stage somewhere in the restaurant would present an undesired intrusion into the dining experience, which is focused on the food, the table, and the people around it. (Although one could imagine the sound of live musicians being piped in as is done in some current Broadway productions, as a way to bring the spontaneity of live performance to the food opera experience.)

The sound must be multichannel, with one speaker per diner. While one could imagine a situation in which all diners were receiving exactly the same course at the same time, requiring only one sonic accompaniment to be deployed throughout the whole restaurant, there is a fantastic intimacy cultivated in having one's own unique culinary soundtrack, while at the same time, being part of a space in which other diners are experiencing different pieces of music creates a sense of connectivity through shared experience, as the whole restaurant is transformed into a kind of sound installation.

The sound must be spatially deployed. Critical to my notion of food opera is to support the traditional social institution of communal dining. I do not want to sequester diners with headphones, but to allow them to freely converse during the meal. The audio should not impinge on the agency of diners to act, converse, and interact. Filling the restaurant with speakers for each individual place setting means that the volume of each speaker can be relatively low, providing a high degree of spatial precision for diners.

I might make a fine distinction between the objectives listed above, which define my notion of food opera, and the objectives that follow, which represent my somewhat more subjective aesthetic stance as applied to our first three food opera events:

To meet the objectives stated above, the music must be algorithmically configured to some extent. This is necessary for smooth transitions (e.g., a note-based algorithmic deployment system can provide smoother transitions than simple crossfades) and for allowing the music to continue indefinitely without looping. This is also important for variation; the restaurant soundscape is enriched by having each instance of the same dish's accompaniment be a unique, algorithmic reconfiguration of basic sonic elements, just as the same dish must be created anew in the kitchen for each diner. Most critically, since diners will be able to overhear the music of other diners throughout the restaurant, the music must be coordinated in harmony and rhythm to avoid cacophony; with music algorithmically deployed in real-time from a single computer or network of computers, this can be easily achieved.

The music should conform to each dish's culinary contour. When food is consumed, there is a necessary reduction in culinary information over the course of each course; we start with a full plate and end with an empty plate, or at least a less full plate. Since my music made use of real-time algorithms, I was able to program my musical textures to provide-

control over the musical density of each dish's accompaniment, so that I could begin each course with high density music (when diners' attention is focused on experiencing a new dish), gradually evolving into less dense music (as diners become accustomed to the dish, and food disappears from the plate). This mirrors a kind of crossfade I have observed during a course, which begins with all attention on the food but gradually shifts from eating to conversation. How this generic density parameter was mapped onto musical parameters varied from course to course, but it typically affected parameters such as how many musical layers are playing, how long the musical phrases are, how long the pauses between phrases last, and in what pitch range the phrases are sounding.

The meal should avoid well-known dishes. In encouraging diners to explore the links between sound and food, it is helpful to present them with unconventional preparations and combinations, rather than well-known dishes with which they may already have sonic associations, to encourage them to evaluate every element of the experience without relying on easily recognized culinary tropes.

The music should be based on manipulations of acoustic instruments. This is the most subjective criterion, but for these first three food operas, I felt that by basing the music on recordings of traditional instruments, I could mirror the alchemy that happens in the kitchen when familiar ingredients are transformed into new dishes. This also helped to situate the project aesthetically in the discourse of multimedia spectacles involving music (akin to dance, theater, film, and video games).

These objectives differentiate the notion of food opera as I've elaborated it from similar forays into merging food and sound. For example, Heston Blumenthal's famous *Sound of the Sea* (2007) from his Fat Duck restaurant in Bray, England, requires diners to don headphones. I have not experienced this dish, but I have experienced Marina Abramović's collaboration with chef Kevin Lasko, *Volcano Flambé* (2011), at Park Avenue Winter in New York City, which also required headphones, and the disadvantages were numerous: I was cut off from the friends who had accompanied me, who also wanted to try my dish and interact with me while I was experiencing it; I was isolated from the restaurant itself, marooning this dish from the context of the rest of the meal; the recording was brief, about three minutes, far shorter than the time it took to consume the dish, and when it was complete, it simply looped, and of course the experience of hearing something for the second (or third or fourth) time is different from the experience of hearing something for the first time; donning the apparatus presented a minor but noticeable physical encumbrance; and the presence of this small digital device felt at odds with the rest of the very carefully appointed design elements of the restaurant. (This is not to mention the content of the recording, which consisted of

the artist's unaccompanied voice describing the dish, beginning with her intoning "This is an experiment," and ending [the recording, not the course] by thanking diners for "eating with awareness," which presumes that this is not the way we normally eat.)

5. Technical Infrastructure of a Food Opera

What follows is a description of the technical set-up we installed for our second and third food operas at Bondir restaurant in Cambridge:

Bondir seats twenty-six diners at a time, so we installed a speaker at each seat in a custom table centerpiece designed by the artist JuttaFriedrichs (who also produced the event). The speakers were small and passive, connected with long speaker wires to a control table near the entrance of the restaurant. Here they were connected to some inexpensive amplifiers, which were connected to three multichannel MOTU audio interfaces.

We controlled all of the sound from a bank of three computers, networked together, each connected to one of the MOTU audio interfaces. The computers were running custom software that I developed in Max/MSP. Each computer controlled about one third of the sound in the restaurant. Three computers were required for reasons of processing power and also for ease in connecting to multichannel audio interfaces. The computers were networked together to ensure that all of the sound could be coordinated in harmony and rhythm.

In addition to the twenty-six speakers at each seat in the restaurant, there were six additional speakers providing an ambient background drone, compensating for the lack of low frequency response in the table speakers, while also connecting the sound of each place setting to the rest of the environment. We tapped into the restaurant's existing speaker system (four speakers, one in each corner of the restaurant, designed to split a stereo signal into four channels). And on two log stools in the middle of the room, we featured two of sound artist Stephan Moore's custom-designed hemispherical speaker arrays.

Stephan also helped me operate the software during the event. The software controlled the musical textures associated with each dish. When an order was placed, a server would inform us, and we would input diners' choices into the system. As each dish arrived, we would push the corresponding button in the software, and the appropriate piece of music would play from the appropriate speaker. As mentioned earlier, each piece of music was algorithmically deployed, allowing real-time control over duration, density, harmony, and

rhythm. Harmony was particularly important, as the key of the music varied slowly over the course of the evening to provide musical variation.

6. The Content of a Food Opera

Our first food opera focused on the phenomenological links between the senses, which is a rich area of exploration on its own. As examples of the kind of cross-sensory reinforcement I explored, I linked wind chimes to foam, a woodwind trio to caramelized asparagus, a slowly undulating marimba ostinato to a creamy soup, and a detuned triangle to Sichuan pepper. The process was intuitive and fairly arbitrary; I would taste something (or often just think of a taste) and then imagine a corresponding sound (in terms of timbre, register and morphology as well as theme or gesture), and then set about replicating it some way, within my self-imposed constraint to use manipulated instrumental sounds. It's a scoring approach, composing appropriate sounds to support food, just as I would apply to a video game or choreography.

But because the sound in a food opera is electronically mediated, any recorded sound can be incorporated, and I became curious to explore other modes of expression, although I should stress that I do not feel that the approach of using purely instrumental sounds and exploring abstract sensorial connections is in any way deficient.

So for our second and third food operas, we decided to use sound to bring diners closer to the farms and farmers that produce the ingredients for meals at Bondir, exposing the entire chain of events that brings food to their tables at the restaurant, and by extension, their homes. Chef Jason Bond is passionately committed to local farmers and sustainable food practices. He makes everything in the restaurant from scratch, and he creates a new menu every day, based on what's fresh and available. So, along with project producer JuttaFriedrichs, I visited the farms that provide some of his ingredients, including Sparrow Arc Farms in Maine, Red Fire Farm in Western Massachusetts, and Pete and Jen's Backyard Birds in Concord, MA, to collect field recordings from the farms and conduct interviews with the farmers.

These recordings were incorporated alongside purely instrumental textures, such as I developed for the first food opera, to close the distance between the farm and the restaurant; diners could hear the ambient sounds of the farms, the clucking of chickens, the jokes

of farmers harvesting potatoes, alongside interviews with the farmers describing the challenges they face, their histories, their goals and dreams. Our second food opera was entitled “Sensing Terroir: A Harvest Food Opera” and took place on November 13, 2012; the harvest theme dovetailed nicely with the approach of the American holiday of Thanksgiving, as we sought to give diners a heightened appreciation for all of the people involved in providing their food.

Our third food opera built on the phenomenological and documentary strategies of our first two food operas, while linking courses through a poetic framework. Chef Jason Bond suggested showcasing his poultry providers Pete and Jen’s Backyard birds and featuring chicken as the primary ingredient for our third event. At first I wasn’t sure how to treat the topic of chicken in music, but revelation came in the form of William Carlos Williams’ poem “The Red Wheelbarrow” (1923). Our requests to obtain permission to use the poem in our food opera went unanswered, so while it provided the inspiration, we did not use the words; nonetheless, sous-chef Rachel Miller constructed a series of dishes around the four sections of the poem, with the fifth, dessert course (involving chicken foot syrup) serving as a kind of coda, and we entitled our event, “Beside the White Chickens: A Summer Food Opera.”

7. The Form of a Food Opera

The form of a food opera is complex and emergent, closer in many ways to the genre of sound installation than a traditional music concert or theatrical presentation. However it is unique in that, unlike many sound installations, users remain in a fixed position for an extended period of time.

The form of a food opera experience for each diner is as follows. When a table is vacant, a default, ambient sound plays; at our second and third food operas, this was ambient sound from one of the farms that provide Bondir’s ingredients, reconfigured in real-time to continue indefinitely. When the first dish arrives, the accompanying music plays, and when the plate is taken away, the music is replaced by an interstitial sound, a rhythmic behavior based on footstep sounds (drawing on video game techniques, as footsteps are such a staple of video game audio), incorporating footsteps recorded at the farms, suggesting not only the farm landscape activated by walking, but also the idea of traveling to the destination of the next course. Then the next dish would arrive and its corresponding music would play, and

the process would continue until the last dish was removed, and the ambient sound present at the beginning resumes until the next diner is seated at that table. While the sequence of events is fixed, the time between each transition will vary for each diner, and the specific music for each course will vary depending on the dishes chosen.

When this relatively simple sequence of sonic behaviors is multiplied across twenty-six seats, the ambient texture of the restaurant becomes quite rich. The coordinating techniques mentioned above ensure that the resultant sound is not cacophonous, but that all of the music in the restaurant plays in the same key and the same tempo. This in itself might not be sufficient to prevent an undesirably dense sonic texture, if not for the spatial deployment of each piece of music at each place setting throughout the restaurant. In effect, this ensures that for each diner, the sound designed to accompany that diner's meal will be most prominent, emanating from the speaker positioned at that diner's place setting. Simply due to the nature of sound propagation in space, the sound designed to accompany the meals of neighboring diners will be less prominent, taking on more of an accompanimental role. And sound deployed from speakers on the other side of the restaurant will blend into the general restaurant ambience, along with the drone described earlier.

Since diners are being seated throughout the evening, a unique kind of nonlinear exposition and recapitulation emerges. A diner may overhear a dish from a future course at a nearby table and glean something of its character, or later in the meal, a new party may be seated at an adjacent table and receive their first course as a diner is on her or his fourth course, and the music may trigger sensory memories from earlier in the meal that affect the diner's experience of the current course.

Recall that these musical textures are not static in terms of musical density; when a new musical texture starts, it is programmed to start at a high level of musical density, and over a certain amount of time to drop to a low level of intensity, which is then maintained until the plate is taken away. This means that each course starts with a sudden increase in intensity, followed by a gradual denouement. To have these sudden changes happening periodically throughout the restaurant results in an interesting spatial pointillism and keeps the soundscape of the restaurant in constant flux.

In a nonintrusive way, the music reinforces an awareness of other diners, heightening the sense of a shared, communal experience; each new dish that arrives becomes a small celebration, shared by the community. Each of the twenty-six speakers at each seat in the restaurant indicates a unique person, and that uniqueness is enhanced by the choice of dishes; the music emanating from each place setting does not impinge on diners' privacy, but it still allows diners to be aware of each other's presence. In fact, a full appreciation of the

event depends on the presence of other diners, to achieve the fullest sonic texture, and this interdependency can be thought of as representing our shared social responsibility in caring for the environment and making healthy and sustainable food choices.

8 Conclusions, Observations, and Directions for Future Work

I have come to feel that, with these food operas, we are establishing a new genre for audio-gustatory expression, something that has never been possible before, due to the technological requirements, and something that presents tremendous communicative and expressive potential. The feedback from diners who have experienced our food operas has been extremely positive, which further encourages me in continuing to explore this line of inquiry.

Avenues for future development include additional sensing and control systems, allowing certain elements of the music to be affected directly by diners, not only through their choices and pace of consumption, but perhaps by individual bites, sips, or biofeedback measurements. The deployment system could be enhanced by allowing servers to input diners' choices directly into the computer system via a custom app and to indicate themselves when a new dish has been delivered. There is potential for increased visual counterpoint as well, including incorporating responsive lighting systems or subtle video to match each dish.

But more exciting is the potential for new kinds of narratives, abstract or otherwise. Our focus so far has started with the purely sensorial (which, incidentally, mirrors a major strand of sound art practice) and has grown to encompass the documentary, or what might be better classified as a form of sensory ethnography. In our third food opera, we sought to provide a poetic framework for the meal, and this is the direction I envision for the immediate future, incorporating poetic text not as a descriptor, but as a third element in cognitive counterpoint with the music and the meal.

By pairing food and music, there is tremendous opportunity to increase diners' awareness of both. Perhaps more importantly, this new, communicative genre of food opera has the potential to investigate the relationships among diners, and between diners, food producers, and the wider environment.

REFERENCES

- Allen, Jennifer.** "Critics Weigh In on Documenta 12 and Art Basel; Ferran Adrià's Role in Documenta 12." *Artforum*. Accessed June 24, 2014. <http://artforum.com/news/week=200725>
- Edible Geography.** "Cross-Species Dining: An Interview with Natalie Jeremijenko and Mihir Desai." October 27, 2010. Accessed June 24, 2010. <http://www.ediblegeography.com/crossspecies-dining-an-interview-with-natalie-jeremijenko-and-mihir-desai/>
- El Somni.** "(CCR + A) X = 'El Somni.'" Accessed June 24, 2014. <http://www.elsomni.cat/en/>
- Fabricant, Florence.** "Marina Abramovic's Art Doubles as Dessert." *New York Times*, January 11, 2011. Accessed June 24, 2014. <http://www.nytimes.com/2011/01/12/dining/12art.html>
- Houge, Ben.** "Cell-based Music Organization in Tom Clancy's EndWar." Paper presented at the Eighth Annual AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment, Stanford University, Palo Alto, California, October 9, 2013.
- . "Food Opera: A New Genre for Audio-Gustatory Expression." Paper presented at the Ninth Annual AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment, Northeastern University, Boston, Massachusetts, October 14-15, 2013.
- . "Food Opera Manifesto." *Aesthetic Cartography*, October 18, 2012. Accessed June 24, 2014. <http://www.benhouge.com/writings/?p=855>
- . "Food Opera: Merging Taste and Food in Real Time." *New Music Box*, September 11, 2013. Accessed June 24, 2014. <http://www.newmusicbox.org/articles/food-opera-merging-taste-and-sound-in-real-time/>
- Kessel, Jonah.** "Ultra Dining at Ultraviolet." *New York Times*, October 15, 2013. Accessed June 24, 2010. <http://www.nytimes.com/video/dining/100000002498301/ultra-dining-at-ultraviolet.html>
- Mail Online.** "Seafood served with an ipod: Heston Blumenthal's latest recipe." April 16, 2007. Accessed June 24, 2014. <http://www.dailymail.co.uk/news/article-448840/Seafood-served-ipod-Heston-Blumenthals-latest-recipe.html>

Thinking the Environment Aurally. An Enactive Approach to Auditory-Architectural Research and Design

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Abstract

This lecture has been developed at the intersection between two research frameworks: the Auditory Architecture Research Unit¹ and Architecture of Embodiment², both at the Berlin University of the Arts. The Auditory Architecture Research Unit is a platform devoted to developing a new conceptual approach and new practices of architectural research and design based on auditory experience. The Architecture of Embodiment is a research environment dedicated to establishing an enactivist perspective of the build environment.

I have structured this paper in two sections. First I will briefly introduce the most relevant concepts of the enactive approach to cognition implemented in the auditory research and design of the environment. Second, I will present the outline of a research and design practice—the *auditory mapping*—developed in this conceptual framework.

Keywords: enactivism, environment, architecture, research and design practice

1. http://www.udk-berlin.de/sites/auditive-architektur/content/index_ger.html

2. <http://www.architecture-embodiment.org/>

The enactive approach to cognition was formulated 1991 in the context of *theories of embodied and situated cognition*.³ This cognitive approach provides a new description of the relationships between living beings and their environments that implies and, at the same time, produces a new understanding of these two items. In this formulation, living beings and environments are conceived as entities that are not pre-determined independently from each other. Instead their interactions are thought to be *constitutive* of each other. Living beings and environments are in a fundamental relation of *reciprocal specification*. The enactive approach concretizes this general view through the concept of *co-emergence*. Living beings and environments co-emerge. They constitute one system, one closed network of relations, in virtue of, and just in virtue of which, both are continuously specified. Environments and living beings emerge out of the *enabling conditions* they establish through their interactions, creating through their respective emergences *constraints* for their mutual specification. The enactive approach is, therefore, radically *relational*, *processual* and *transformational*. It is radically relational, because the emergence of living beings and environments depends exclusively on the very particular connections both establish to one another. It is radically processual, because these relations change constantly in time, and furthermore, because living beings and environments are not the result of processes: they *are* themselves processes. And it is radically transformational, because these processes are nothing other than a ceaseless modulation of their own course.

The process of the co-emergence of living beings and environments is also denominated the process of *sense-making*. This results from the idea that this process implies the appearance of two senseful entities: a *self* and a *correlative otherness*. The process of sense-making can be outlined as the transformation of a living being and its surroundings into a *self* and its *environment*, respectively. In this formulation, the transition from a *biological* perspective to a *phenomenological* one, or, formulated in enactivist terms, the fundamental circularity between life and mind, finds a clear expression: due to the very specific form of systemic topological, chronological, material and energetic relations between two items their *phenomenal presences* arises.

3. Varela, F, Thompson, E and Rosch, E. *The Embodied Mind. Cognitive Science and Human Experience*, Cambridge, MA 1991. For an exhaustive account: Thompson, E. *Mind in Life. Phenomenology, and the sciences of mind*. Cambridge, MA 2007.

There are basic distinctions that can be made in the emerging phenomenal sphere. There are, as Alva Noë posit, different *varieties of presence*.⁴ These distinctions are fundamental in order to define precisely what an environment is and how we can cognitively access it. The most relevant distinction is the one between objective and non-objective presences.

The self and the things around it appear as objects, that is, as clearly contoured presences, which allow a non-ambiguous differentiation between them and the rest. I can clearly differentiate between myself and others and between an object and another one standing, for example, above it. These objects are constituted primarily through perception. They appear to us, first and foremost, spontaneously, in virtue of our capacity to perceive. Among all emerging objects, the self appears as a very special and unique one. Although this distinction is fundamental, I am not going to address it in this paper. Instead I am going to face another fundamental differentiation: the one between objects and wholes.

This distinction can be outlined in two steps. The first refers to the *container* in which objects appear. I and all objects around me appear somewhere, in a common space. Although the contours of this container are eventually less precisely defined than the ones of the objects it contains, we still can set its borders. The container, therefore, appears as well as an object.

It is in a second distinctive moment, attending to other qualities and forms of relations, that the difference between objects and whole can be established. All the objects I perceive share not only a containing topo-chronology but also and more fundamentally the *manner* in that they *all* appear *at once*. They share not only a where and a when but most fundamentally a *how*. They all appear in a very specific qualitative *kind* of simultaneity. They not only appear at the same time, but rather as *coalescent presences*: as presences sharing *coalescent dynamics*. Simultaneously to their single, objective presences they all appear as a whole determined not only by their synchronic presence in a common space but primarily by the very spontaneous *dynamic coherence* in which all they appear. They do not appear as a simple group of objects. They all spontaneously conform one single *coherent processual presence*, a subtle but pregnant presence that *makes sense*.

This dynamic, relational and transformational wholeness, which emerges out of the coalescence of all phenomenal objects but, as an emergent entity, can be reduced neither to any of them nor to them as a group, is what I call *environment–Umwelt*, the *world around*. The environment is not an object, it is even not a phenomenon, and therefore it is not perceivable. We do not perceive the environment but, nevertheless, the environment is present for

4. Noë, Alva. *Varieties of Presence*. Cambridge, MA 2012.

us. Places are invisible. Not because we can address them by listening but basically because they, although present, are *as such* non-perceivable.

On this conceptual ground, I would like to present a research and design practice conceived in order to achieve cognitive access to the environment through the performance of different varieties of listening. We call this practice *auditory mapping*. The strategy underpinning this practice is defined as a pragmatic response to two of the basic ideas I already outlined. First: environment and listener *co-emerge*. They continuously and simultaneously emerge constituting conditions for their mutual specification. And second: the environment is present for the listener but not perceptually. The listener can perceive conditions for the emergence of the environment but not the environment itself. The strategy underlying the practice of auditory mapping correlates to the most primary strategy that underpins the phenomenological method: to gain access to what is not perceptually accessible through what is perceptually accessible—the phenomenon itself, *die Sache selbst*. The practice of auditory mapping intends to achieve access to the sound environment, that is, to an environment co-constituted by the performance of different varieties of listening, through auditory objects, that is, perceptual objects, whose emergence is conditioned as well through the performance of various forms of listening.

As a base for this practice we have compiled a list of auditory objects possible to be constituted by listening in different manners. We have identified four varieties of listening: analytical, emotional, associative and imaginative listening. After characterizing in detail each of these varieties as concrete forms of action, we have identified those auditory objects that can emerge by practicing each variety of listening. Thus, it is possible, for example, that we hear the time structure of a specific sound if and just if we listen analytically. It is possible to hear the level of differentiability between single objects, the grade of diversity of auditory phenomena or their topological configuration if we listen as well analytically. It is equally possible that phenomenal objects like “oppressive”, “delicate”, “sweet”, “boring” or “chaotic” emerge if we listen emotionally. And similarly objects like “my childhood in South England” or “a space for fruitful social interchange” arise if we listen respectively in an associative and imaginative manner.

The performance of the practice itself consists in the linguistic notation of all these emerging auditory objects, bringing them in relation to each other through their respective

position on a surface, and recognizing their respective relevance in the emerging context marking it by changing their size in the emerging map.

According to this practice, to map an environment aurally means to engage *adaptively* with its process of emergence. What it is intended is to access the form the environment takes by listening, *reflecting* it through a minimal mediation: the process of realization of the map and the map itself. The arising map *mirrors* the emergence of the environment for the listener. It *reflects*, it *bends* the ongoing interaction between environment and listener *back* to the listener in order to make this interaction accessible for her as a *geography of linguistic signs*. Listening in this context is not understood as the apprehension of an outer reality and its representation in an inner mind but, in a noetic sense, as the performance of different perceptual actions all them focused on what emerges as listened – as something I hear – and, in a noematic sense, as a field of perceptual emergence, in which the environment can be accessible through the interaction with discrete entities. In this field of emergences, the environment not only appears in its actuality but also in its potentiality. The practice of auditory mapping, therefore, constitutes the first step in a possible transformation of the environment through design.

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In this paper, I showed succinctly how the concepts of sound environment and listening can be reinterpreted according to the enactive approach to cognition. Then, I described a research and design practice – the auditory mapping – conceived within this framework.

In this context, research is not understood as the generation of explicative artifacts about the object of research. Accordingly, design is not understood as the addition of objects onto a terrain, conceived independently of its transformative *phenomeno-logic*, that is, the manner in which the terrain emerges as environment. Research and design can be conceived and practiced as two varieties of a single process of *understanding the environment*, as two slightly different but intimate interlocked forms of reflective engagement with its emergence.

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Urban Reverberation: Juxtapositions Between Sound and Space

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Abstract

This paper aims to discuss sound and space conversational relationship, combining theoretical research and the practice “Urban Reverberation”, a sound intervention held in public space. First, the paper introduces the context of the intervention briefly and after presents its theoretical framework concerning space, interfaces and sound interventions. Then, the article presents the sound intervention discussing its concepts, methods, the interface role and the reactions and comments of the audience, gathered by video recording, photos, and semi-structured interviews. At last, the paper presents its findings and theoretical reflection about the sound intervention.

Keywords: public space, sound interfaces, hybrid environments, sound intervention

1. Introduction

Sound and space interplay goes beyond acoustical features. From certain subjective, the sound environment is ubiquitous: sounds never cease to hearing and is impossible to deprive listening completely as it is possible to close the eyes to not see. Sounds, as a result of physical vibrations, reflect our own actions, movements, habits, and ways of living.

In this paper, we do not consider space as a delimiting package or a container of physical objects; space owns reflexive and heterogeneous character and is formed by social and cultural dynamics and also physical instances. The sound environment is part of it, formed by a set of different sounds and it is influenced by the physical space through acoustics and also modifies the apprehension of space. Thus, sound environment is an element of space and both have an intrinsic relationship, which can be more complex by the use of sound interfaces.

This article discusses the juxtaposition between physical spaces and sound environments through the use of sound interfaces in public spaces. In order to discuss these theoretical matters, the article includes practical contribution: a sound intervention accomplished by Nomads.usp (Centre of Interactive Living Studies, University of São Paulo, Brazil), named Urban Reverberation, held in a public square at São Carlos, São Paulo State, Brazil. The intervention was accomplished as part of an experiment of a broader research which discusses the juxtaposition of sound and physical environments by the use of sound interfaces and collective listening in public spaces.

“Urban Reverberation” consists in the relocation of train’s sounds, recorded in a peripheral neighborhood, into a square located at the commerce centre of São Carlos, São Paulo State, Brazil. The train is part of historical and current context in this city and nowadays the railroad is only used for cargo. The railroad had a great role on the city development in the first half of 20th century but until today the railroad crosses the city and is present in the daily life of several people who lives nearby, imposing its rhythm in several passages. Therefore, due its meaning to several city inhabitants, the train’s sounds had its meanings altered by the exchange of context as well as the apprehension of the public square itself through the intervention.

As a part of an experiment of a research, “Urban Reverberation” addresses three constituents: the Waldomiro Lobbe Sobrinho social housing complex, informally called as CDHU by city dwellers; the Municipal Market Square and, finally, the railroad which crosses the city.

2. Theoretical framework: elaborating hybrid environments

2.1. Space and sound: conversational relationship

Kevin Lynch (1980, p.11) starts his book arguing that moving elements, people and their activities are so important as the physical elements of the city: not only physical features of the city are relevant. Following and expanding this argument, space can be not only considered as formed by its physical objects but also all its actions that occur in it and determine it. Thus, in this paper is argued that space is formed as much by physical bodies as well as by dynamics specific to it; not only by its inert matter, but also by elements which give life to it.

Physical settings make possible or delimit certain actions in space, however two physical spaces with the same characteristics can have completely different uses by distinct communities. In this way, the idea of Milton Santos (2011) is reassured: the space is formed by the relation of set of fixed and fluxes. In other words, space is the relation between the system of objects and the systems of actions; the interaction of physical instances, movements, and dynamics. Thereby it is an interdependent process in which one changes the other. Actions and objects interact inseparably leading to dynamicity of processes and situations (Santos 2001, p.61). As Milton Santos argues:

Systems of Objects and systems of Actions interact. On the one hand, systems of objects condition how the actions occur; on the other hand, the system of actions leads to the creation of new objects or held on pre-existing objects. This is how space has its dynamics and changes. So, from this perspective, space is not limited only by its character determined by physical instances, even though such instances may own different categories. The actions are of people themselves and are results of natural needs or created in diverse scopes: materials, immaterial, economics, social, cultural, moral, affective. (Santos 2001, p.82)¹

1. Translated by the authors. "Sistemas de objetos e sistemas de ações interagem. De um lado, os sistemas de objetos condicionam a forma como se dão as ações e, de outro lado, o sistema de ações leva à criação de objetos novos ou se realiza sobre objetos preexistentes. É assim que o espaço encontra sua dinâmica e se transforma. Tem-se a partir dessa perspectiva de que o espaço, portanto, não está somente limitado ao seu caráter determinado por instâncias físicas, ainda que tais instâncias possam possuir diversas categorias. As ações são próprias das pessoas e são resultantes de necessidades naturais ou criadas de diversos âmbitos: materiais, imateriais, econômicas, sociais, culturais, morais, afetivos."

The variety of human activities depends on contexts from complexes of segregation, social and historical conflicts, to physical space conditions. According to Edward Hall (1977) the use of space is a specialised elaboration of culture: culture is responsible for the use of space and its organization; and the human sense of space is result of various sensorial syntheses. Space is heterogeneous and reflexive; and sound play a role in the apprehension of space.

Due to these discussed aspects sound is considered a conversational element of space: it is 'shaped' by acoustical phenomena as well as it is produced by several actions and dynamics that occurs and forms space. It is a mutual and interdependent interaction, one affects the other. The apprehension and interpretation of space can change according to the result of this interaction. Listening can be considered beyond a complementarity of view and beyond its physiological sense: it acts in the apprehension of space, evokes feelings, memories, and creates engagement.

The sound environment consists of sounds elements that may be resulted directly by sound sources or sounds obtained through processes established by interfaces: recording, reproduction, synthesis, and others which generate abstract constructions. The juxtaposition between sound and physical environments is always present in space's configuration due to the characteristic ubiquity of the sound environment. Still, the use of interfaces promotes other situations in which these combinations can be reconfigured. The processes established by sound interfaces are not neutral because they inscribe social, historical and cultural processes and purposes.

Hybrid environments are created by the combination between physical and virtual instances and can be verified in a crescent scale on daily lives. The architectural space becomes denser by the virtual instances which give to its physical nature a hybrid character (Tramontano 2007, p.49). This process of hybridization is given by the use of interfaces, information and communication technologies, electronic and digital media, and can be considered as a powerful mechanism of bringing forth not-so-noticed characteristics of space.

The use of digital and electronic media associated to the context of diverse sound arts, which are difficult to determinate among the many existing categories, strengthen the possibilities of urban space sound interventions. Interventions aggregate information or attach new manners of musical and artistic expression. It makes cultural expressions emerge, either from the group or artist, or providing and creating means for audience expression.

2.2. Sound interventions: the use of interfaces

In this paper, the term "intervention" is proposed in opposition of "installation". An intervention may be considered as an intentional change which has previous contextual dimen-

sion. An intervention is inscription in a broader and more complex flow which is the urban dynamics and implies to understand the city as something in motion (Peixoto, 1998). Being space formed by physical instances and also its own dynamics, an intervention should consider space's previous context to act.

Interventions may take into account different meanings that space may already have. It is a contextualized relationship with the city. Considering interfaces as connectors that form a field of interchange where parts communicate, interventions which make use of interfaces provide a change of certain situation in space as well as are relevant in an epistemological aspect: they may foster questions and thinking among people involved. Thus, interfaces have the potential to provide a field where representations and interlocutions happen, beyond action and consequence, providing and creating hybrid environments. Therefore, there is a broader and less technological approach to the meaning of interface.

Regarding interface, Bolter and Gromala (2003) consider interface as the form a dispositive presents itself to its users, which should be adaptive and visible. The authors use metaphors of windows and mirrors to argue that interfaces should transit between transparency and reflexivity: windows by framing perspective, allowing the user look *through* and not at the interface, and maybe also as an extension of what can be seen; mirrors because reflects the context, assisting the users to perceive themselves and understand their own context.

Considering sound interfaces as only sound generators or reproducers may offer a technical concept, besides crowding a multitude of physical and virtual instances, placing acoustic, electronic and digital media into a single category. Nor is appropriate considering sound interfaces as transducers, coding and decoding sound data, and describe them only as technological mediation tools, not considering the whole inscribed process. Sound interfaces are considered as connectors which build a field for interlocution and interaction, consisting in elements which sound plays an important role. Sound interfaces change and transform modes of listening as well as sound production. Depending on the desired results at the end of the process, production may be directed to this end. Thus, sound interfaces contain an interdependent process which is not neutral but guided by intentions, purposes. Sound interfaces can also increase the diversity of sound environments through its technological mediations: the listener is no longer limited to its surroundings, i.e., is no longer required proximity between listener and sound source at the same time, despite the differences caused by its process and by its technological nature.

When held in public spaces in the city, interventions are immersed in a site that is not impartial and has its own context and dynamics. Thus, there is a two-way communication between public space and intervention: space's contextual dimension that should be consid-

ered in the concepts of the intervention; at the same time, the intervention that momentarily alters these dynamics.

Public is not only physical and social spaces of interaction: public also includes to the essence of the communication which takes place in a common social-cultural meaning, shared interests and values, transcending the private sphere (Castells 2008). According to Castells (2008), the public sphere is also “the cultural/informational repository of the ideas and projects that feed public debate”. A public space is not formed only by urban furniture or a physical space built with the intention of being a reference or meeting point. The public exists due activities, absorption and appropriation of space by people. Sound interventions, using interfaces, may foster discussions and ideas, establishing a locus of communication where the *public* happens.

Sound interventions, due to the conversational relationship between sound and space, have potential to change space’s apprehension by fostering questions and thinking that would not show up in daily situations. Moreover, being endowed with cultural content and being capable to dialogue with diverse space’s characteristics, interventions may arise propitious communication loci, which are formed only by its use for public debate and expression.

3. Urban Reverberation: sound intervention in public space

3.1. Conceptualisation and context

Inside a broader context of research, the sound intervention firstly aimed to explore and investigate relationships between sound and space through collective listening by the use of sound interfaces, enabling a dialogue between the intervention and the previous context of space and the city.

The train and the railroad are part of the historical, economical and social context of São Carlos. In a brief overview, the railroad contributed to the city economy in the late 19th century due to the coffee agriculture and directed urban expansion and promoting processes of socio-spatial segregation. There are not any passenger’s trains at this railroad for decades; its use nowadays are only directed for cargo and serves regional interests of trade integration between Brazilian states. By this scenario, it is possible to observe that the railroad had importance in São Carlos nevertheless its present path seems to be incompatible with the urban life of a city that expanded and changed. Therefore it was chosen as a matter of discussion for the sound intervention because it is a shared subject to many city residents.



Figure 1. South-central area of São Carlos, dashed line corresponds to the path of the railroad.

Night and day, the cargo trains cross the city as well as the CDHU. In order to provide a political dimension to the sound intervention, sounds of train were recorded at its passage in the CDHU. Former researches conducted by Nomads.usp involved the CDHU social housing and its dwellers, which also collaborated for this sound intervention. The CDHU is a social housing complex located right next to the railroad, in the periphery of south of the city. It has 928 apartments, divided in 6 apartment complexes, dedicated to low-income people. The railroad is next to the apartments and buildings and it crosses the street as well.

So, after this process of research, it was decided to relocate the train's sounds to the commerce centre of São Carlos, the public square of the Municipal Market. By relocating train's sounds, the periphery got into the city centre. This process in the sound intervention is considered *relocation* instead of *dislocation* (Emmerson 2012). *Dislocation* refers to a negative process, as something is where it was not supposed to be in a negative way (Emmerson 2012). Due to the sound and space conversational relationship, sound gathers different meanings through this process, instead of losing meaning. It reconfigures space and, in turn, space recontextualises sound. By reproducing the set of train's sounds collectively, a common and shared matter was introduced among those people present in the square, enabling the rise of thoughts concerning an issue that may be latent.

3.2. Recording, Editing, Reproducing

“Urban Reveberation” happened on a Wednesday, started at 9 a.m. and finished at 5 p.m.. The train's sounds were played every 20 minutes. Despite not matching the reality of the CDHU sound environment, it was decided to play more often for research purposes. The recorded

audio was edited to have a longer duration. This way, more people just passing by the square was aware of the sounds and the researchers had more time for interviewing them. Beyond that, the process of recording and editing shows the whole process carried out by sound interfaces.

First, only by recording and deciding the microphone placement, favouring certain sound elements of the train, indicates an intention and suggestion. Just the choice of recording the train and relocating its sounds indicates that this sound is worth of noticing. It is partially derived from the *objet trouvé*'s idea: the recorded sound is quotidian, but it deserves a more attentive listening. The sound also directs attention to a certain subject which is a basis for other derivations. By editing, sound is 'domesticated', 'sculpted' and combined with others. In *Urban Reverberation*, the recorded audio was edited in order to create a continuity of a longer passage and spatiality, suggesting that, sonically, a train was crossing the square.

The loudspeaker has, in effect, allowed us to set up a virtual acoustic space into which we may Project an image of any real existing acoustic space, and the existence of this virtual acoustic space presents us with new creative possibilities.
(Wishart, 1996, p.136)

This process implies virtual instances, which provides a hybrid character as a result of its reproduction, juxtaposing the physical space with sound environments and reconfiguring space. The set of selected and reproduced sounds acts as a new information in the space where it is relocated and it reconfigures space.

3.3. Methods

In order to gather information during the sound intervention there were three methods of register: two kinds of video register; photo register and semi-structured interviews.

The video register was divided in two ways: one static camera, recording two minutes before, the reproduction and two minutes after it; one moving camera, operated by a researcher. This type of video register was useful and important due the fact that one register complements the other one. While the static camera gave a panoramic view of what was happening during the intervention, the changes of reaction, the moving camera was able to record a more directional perspective, more detailed reactions. The photographic record aimed to gather the public's reactions as well as the researchers' role and organization. Therefore these registers helped the analysis of the public as well as the influence of researchers and the interface in the intervention. These registers also collaborated for providing inputs for future interventions and also for the evaluation of the intervention process.

The semi structured interviews were recorded under consent of the interviewees. This type of qualitative method favours the access of the opinions, thoughts, values and meanings the interviewees had about the intervention, its sound and the situation. The interviews aimed to approach the interpretations and thoughts derived from the juxtaposition and aided to broad the influence of the sound's relocation and its conversational relationship with space.

The basis of the questions was: 1. Have you listen the train's sound?, as strategy to initiate the conversation; 2. What do you think about the square with this sound?, intending to stimulate thinking about the current sound and space interplay; 3. This sound was recorded at CDHU, where the train passes several times, day and night, and about a thousand families lives there. What do you think about it?, with an informative character, bringing the CDHU issue and trying to stimulate the approach of different contexts or perspectives. In this article, we focus on the answers and reactions to the second question "What do you think about the square with this sound?".

65 interviews were made during the intervention: some were punctual and very short, others had complex thinking. Some explanatory leaflets about the intervention were also distributed.

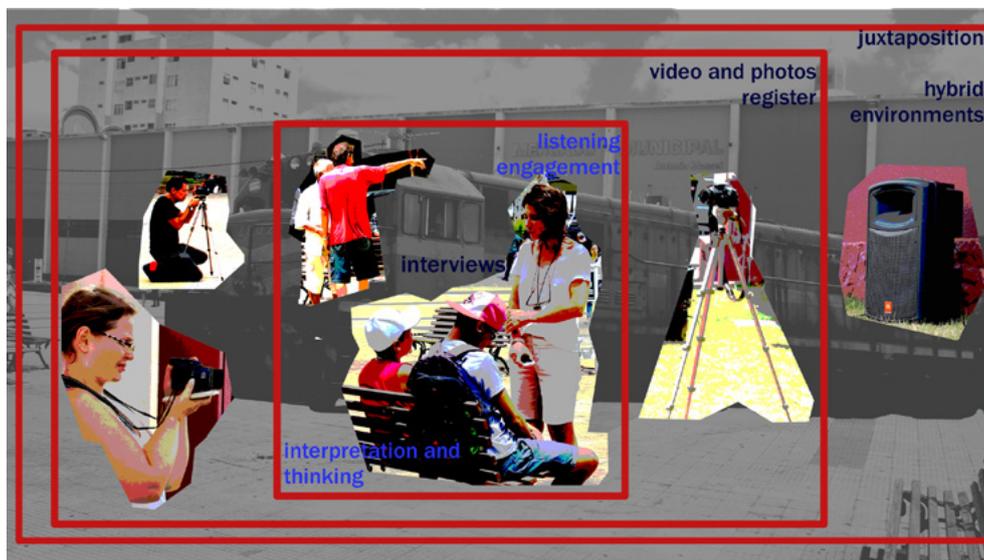


Figure 2. Diagram corresponding to the methods and the dynamics of the intervention.

3.4. Listening modes, Reactions and Interpretations

The visibility of the technological system such as speakers, cables, mixer and the computer, does not lie only in the technical aspect. Its visibility was an important factor to the intervention as a whole, denoting an intention, something new about to happen. Due to the collective listening and the ubiquitous characteristic of sound, the people present in the square didn't have to "go" to the interface. They could listen the reproduction in most part of the square.

The speakers became referential points, corresponding to the sound source. The equipments also reports the processes inscribed in interface, recording and reproduction, and suggests intentionality. The relationships between view and listening appear very intrinsically in the interviews and videos registers. The attempt of correspondence between view and listening demonstrates the referential listening as discussed by Katharine Norman (1996).

Being acousmatic because of reproduction system, the listening may reinforce the attention. Considering sound as an element which may cause mental images, memories and emotions, the set of train's sounds in *Urban Reverberation*, easily identifiable, can provide a stimulus for subjective associations according to the experience of the listener. As Michel Chion (1994) explains, the causal listening is when the listener seeks the sound source, but it also gathers an imaginative thinking when the listener can imagine physical aspects of the sound source when it cannot be seen, like in *Urban Reverberation*.

"I was searching, because there is no train here."

"I don't think it is bad, I just was searching for it, I said 'wow guys, there's a train noise, where is there a train here?'"

"I even found strange huh, I was coming here and I looked... that one said "it comes from the market!" then I said 'Not, it's not from there, I think it is the train far away from here [at the station]!"

"I think it is cool. I live far away [...] I didn't know it wasn't the sound of a real train and then I saw the speakers [...]"

However the change of context offered by the interface, some comments, photos and videos show people searching for the sound source. It is also a search for spatial reference, not in the sense of total loss of physical space referential, but searching for spatial dynamics

in order to justify the sound; to build relationships between the sonic experience and temporal reality.

Many answers to the question “What do you think about the square with this sound?” were vague or merely adjective, establishing dualities. “Noisy”, “cool”, “annoying”, “interesting”, “good”, “bad”, “odd” and others. This occurred due the fact it is a dense question: albeit the question was simplified, it still has a very abstract character and it is usually difficult to describe sounds in a qualitative way. Despite of that, many interviewees answered to the question based in their immediate context in the square and, on the other hand, their own previous knowledge and experiences.

“I don’t see many differences because next to my home, for example, the train passes and the sound gets worse every day. I felt strange because it is here downtown.”

“I like it. It remembers me. [...] I lived ten years like this...”

“It is bad. ‘Cause I have already lived in a place where the train passed. We were sleeping and, wow, woke up thinking that the house would fall down.”

“I have lived at Vila Prado [residential neighbourhood close to the railway], 19 or 20 years, I was born and raised there. So I always played at the railroad. Thus from home it was possible to hear the noise of these trains. I always liked it.”

Some comments demonstrate an association between the context of the market square and the relationship people have with their homes, which characterises the role of the interface as a mirror (Bolter, Gromala, 2003): in such cases, the interviewee makes a direct correspondence to his/her own context, since the interviewee has a past that can be related, lives near the railroad or somewhere else where the train can be heard. Moreover, is remarkable on some comments the strangeness to the situation, often due the exchange of contexts.

The contextual listening (Norman, 1996) may also be referred in Urban Reverberation. It joins reflection and reference, concerning the conceptual meanings of the sound through private and personal associations. The evaluation of the sound given by the listener joins the current context and experience, influencing the imagination about the sound and its meanings. By the exchange of context, the listener can build relationships among lived experience, context and sound material, which are inter-related and evaluated. Thus the affective mem-

ory takes part of the listening process in which the memory's qualities of subjectivity and affection motivates the engagement of listening.

Some groups indicated attitudes directly related to the sound. People began to look at each other, sometimes laughing, and many others pointed to the speakers. A woman pushed a man she was with, playing with the sound and context like there was a railroad and the train was passing. These attitudes show that the listening occasioned by the intervention caused changes in relations between some groups, also responding to the sound with their attitudes.

The set of train's sounds is a representative element which rouses listening as an active practice. The recontextualised sound brings forth shared subjects to many city dwellers: it inserts aspects which are related to the quotidian routine of many people, and it happens through the sound environment. Through sound a possible communication locus is formed, acting as a convergent point that incites thinking and reflections, which can be externalised or not.

4. Findings

Practices as sound intervention in research aids its scope by approaching it to a wider and more diverse audience and also creating opportunities to the approach of the researcher to different communities. Concerning this, in *Urban Reverberation* the researchers got access to a broad set of answers with different qualities, including people at different ages and who live in different neighbourhoods. Thus the intervention as a procedure of research allowed a situation that was an alternative and differentiated way to explore sound-space interplay, getting answers and observing different people, and also proposed a communication locus.

The inscribed processes of interfaces include social and cultural processes and the sound interfaces collaborate to a qualitative leading of sound interventions and also reelaborate conditions concerning listening and sound production and it can be availed the propose of the sound intervention.

The juxtaposition of sound environments is made possible by the use of interface, which generates in the intervention a favourable locus for various interpretations and reflections not only related to sound. It is not about a total relativism, when each one has a unique impression that generates a diversity of interpretation that undermines the achievement of

objectives, but rather singularities which and be embraced in a set of themes that shows the produced features and understandings regarding the sound and space relationship.

Denis Smalley (1996, p.86) argues that the apprehension of musical content and structure is connected to a world which is outside of the composition: not only auditory experience, as well as non-sonic experience. Although this argument refers to music, it can also be perceived in the Urban Reverberation. From various perspectives, the recontextualised sound became a material which motivates interrelations of a broad field of references. In many comments, some people related the sound intervention to their own experience, way of living, history. Making a parallel with the thought of Bolter and Gromala (2003), it is possible to understand the sound interface in Urban Reverberation as a mirror and window: as a window, it allows the contact of people to other reality through listening and it also delimitates a common subject; as a mirror, the interface proposes a field of reflection related to the train, the railroad and its use and impact likewise about their experience. The space, dynamic and heterogeneous, becomes denser by virtual instances (Tramontano, 2007), the edited sound, and gets a hybrid character.

At last, one perspective of future research can be summed up as the study of social and urban potential of sound interventions which can aid the manifestation and appropriation of what is public, opposed to its silencing.

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REFERENCES

- Bolter, Jay David and Gromala, Diane.** *Windows and mirrors: interaction design, digital art, and the myth of transparency.* Cambridge: Massachusetts Institute of Technology Press, 2003.
- Castells, Manuel.** *The new public sphere: Global civil society, communication networks, and global governance. The Annals of the American Academy of Political and Social Science,* 616(1) (2008): 78-93. Accessed September 18, 2013. doi: 10.1177/0002716207311877.
- Chion, Michel.** *Audio-vision: sound on screen.* New York: Columbia University Press, 1994.
- Hall, Edward.** *A Dimensão Oculta.* Rio de Janeiro: Francisco Alves Editora, 1977.
- Lynch, Kevin.** *A imagem da cidade.* São Paulo: Editora Martins Fontes, 1982.

- Norman, Katharine.** "Real-world music as composed Listening". *Contemporary Music Review*, 15, (1996): 1-27. Accessed May 24, 2013. doi:10.1080/07494469608629686
- Peixoto, Nelson Brissac.** *Intervenções Urbanas* in *Intervenções urbanas: Arte/cidade*, organized by Nelson Brissac Peixoto. São Paulo: Editora Senac, 1998.
- Santos, Milton.** *A natureza do espaço*. São Paulo: Hucitec, 1996.
- Smalley, Denis.** "The listening imagination: listening in the electroacoustic era." *Contemporary Music Review*, 13(2), (1996): 77-107. Accessed November 18, 2013. doi: 10.1080/07494469600640071.
- Tramontano, Marcelo.** Interactive living spaces: 12 preliminary notes in *Installing: art and digital culture*, edited by Troyano. Santiago: Lom, 2007.
- Wishart, Trevor.** *On Sonic Art*. Amsterdam: Harwood Academic Publishers, 1996.

Polyphony of the Squares: Sound and Place at Central Public Squares in Belo Horizonte (Brazil)

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Abstract

This article aims to understand and compare the use of sounds and music as a tool to disputing, sharing and lotting space in two squares in Belo Horizonte, Minas Gerais, Brazil. In order to do so, citizens manipulate sounds and their parameters, such as intensity, frequency and spatiality. We refer to research data collected by Nucleurb/CCNM-UFGM constituted by a set of methodological procedures that involve field observation, sound recording, photographs, field notes and research on archives, gathering and cross analyzing texts, pictures and sounds, in order to grasp the dynamics of conformation of “place” within the urban space.

Keywords: Sonorities, Squares, Urban Space

1. Introduction

A street cryer screams constantly, as pedestrians pass by him, advertising a cellphone chip store's services. During his intervals, another street cryer asks whether people want to have their hair cut or not. On the background, a succession of popular songs are played on a Record store, and groups of friends sitting on benches talk. An informal math teacher tries to sell a DVD in which he teaches how to solve quickly square root problems. The other side of the square, beyond the crossing of two busy avenues, Andean musicians prepare their concert, connecting microphones and speakers through cables, as street artists finish their circus presentation.

Later, in the same city, but in a different square, bossa-nova musicians start their set on a permanent stage settled in the sidewalk, just in front of the café that hired their presentation. Though the music fills the space full of tables where costumers drink, eat, talk and date, about 30 meters away the songs are not heard anymore. The bakery on the corner plays a pagode (a very popular kind of samba) CD, radio, or even soap operas on TV. A similar scene can be found on different blocks in the same square, again, the other side of the crossing of two very busy avenues, where duos present a Brazilian popular music repertoire in front of a bar, or Djs play pop and rock songs for pub's costumers.

As members of the research group 'Nucleurb/CCNN-UFGM' we've been investigating the dynamics of conformation of "place" within the urban space, mainly interested in how the uses of different media converges for such purpose. Currently, the group studies focus on four squares within the centre of Belo Horizonte, one of Brazil's biggest cities. Squares mark points of convergence in the urban fabric. Their cultural, social, economical and political centrality is shown just in everyday life as well as in specific contexts created by civic life like public celebrations, popular demonstrations or musical performances. If those scenes described above seem to confirm what is usually repeated by academic work on the problem of sound in urban space, a thesis that states that the very loud and "crowded" sonority of the city points to a distracted listening and a unawareness to the sound environment, a more close listening to those settings shows that not only "the rainforest demand and favor acute auditory perceptual skills" from which people "developed the kind of ideological and aesthetic scaffolds for these skills that humanize them and provide a coherent cultural framework for their acquisition" (Feld, 1984, 389).

This work highlights two of those squares, *Sete de Setembro* (September the 7th, Brazil's Independence Day), and *Diogo de Vasconcelos*, better known respectively as "Praça Sete" and

“Praça da Savassi”. This paper deals with the problem of identifying and understanding how, in order to take part on these urban conformation processes, sounds are very often manipulated and used as technology by the city inhabitants. Screams, loud or soft sounds, music, positioning of loud speakers among other sound practices are used as affective devices, in which, as DeNora puts it, “actors produce the aesthetic textures of social occasions, situations and action styles” (DeNora, 2004, 111), conforming a repertoire (Faulkner and Becker, 2009), through which people in the streets share, dispute or conquer property of public space. Our field work applies different ways of registering (audio recordings, digital photos, digital videos and written accounts) made during derivative walks through the squares. Taking soundscape (Schafer, 2001) as a methodological technique that allows us to access sound in its materiality, we discuss the way people manipulate its properties (intensity, frequency and spatiality) to produce place. In consequence, people give shape to mobile and transitory – but recurrent – sonic borders and ambiances. That’s what our investigation intends to capture and analyze, adopting a comparative perspective. In order to do so, we, at first, discuss the relations between sound and space, eliciting how the citizens of the city use sonorities as techniques to disputing, sharing and lotting space, by manipulating sounds and their parameters, such as intensity, frequency and spatiality. Then, we present and discuss field work made on the two referred squares in Brazil, so we can elicit how these dynamics work in Belo Horizonte, Brazil.

2. Sound and place: disputing, sharing and lotting space.

Although sound is usually associated to duration and the constitution of temporalities, spatiality is also a key feature of sonorities. The phenomenologist Don Ihde points that “Insofar as all sounds are also ‘events’, all the sounds are within the first approximation, likely to be considered as ‘moving’” (Ihde, 2007, 53) in order to conclude that if the primary feature of the audible world is temporal; a weaker, but still important, characteristic of audibility is its spatial properties. He, then, explores how we can listen to shapes, surfaces and interiors through listening to sound properties, such as the continuity/discontinuity of a rolling body sonority, the timbre produced by two objects scrubbing into one another, the reverberation and echo effects. His discussion evidences how those spatialities are heard through temporal variations, showing that “even the division of space and time are not, strictly speaking,

primitive experiential significations. Existentially there is a concrete space time that is also a signification of naïve experience in its thematized appearance” (Ihde, 2007, 61).

This interconnection of temporality and spatiality is fundamental for the understanding of place as used space, as some authors have already shown (Tuan, 1983; Certeau, 1994; Santos, 1996)¹. By social practices, that are variable depending on the hours of the day, seasons of the year, among other time spans; citizens inscribe meanings to the urban space, using its material features such as characteristics of the sidewalks, the presence of benches and buildings, etc. The city is also the place where different kinds of people meet and dispute its use and meanings, bringing to front its dimension of both space appropriation and domination, evidenced in the notion of territory (Haesbaert and Lemonad, 2007, 2). All of these dynamics require movement, and as such produce sound. Thus, in this “lived-time-space” (Haesbaert, 2004), not only “sonic materiality operates as ‘micro-epistemologies’, with the echo, the vibration, the rhythmic, for instance, opening up to specific ways of knowing the world” (Labelle, 2010, XXV), but also represents a whole scheme of acting in the world, since we understand sound, supported by Wisnik (1989), as the communication of a movement signal within the environment, as a body that resonates another. And in doing so, “the sound becomes a presence, and as that presence it becomes an essential part of the building’s [or the place’s] infrastructure” (Sterne, 1997, 23).

Tia DeNora, in her book *Music in Everyday Life* maps how people use music to do certain things, one of those being producing “the aesthetic textures of social occasions, situations and action styles” (DeNora, 2000). She then studies how slow or fast music is manipulated in a party where the host wants his guests to dance or talk, or how stores use ambient music as “a means of delineating retail territory, a way to projecting imaginary shoppers on to the aesthetically configured space of the shop floor” (DeNora, 2000, 135). Her argument is that if on the one hand the sound material manipulated by music brings about some affordances, privileging some uses instead of others; on the other hand, music does not do it by itself, it needs the agency of its users so it can produce what it was intended for, or even a contradictory effect.

Faulkner and Becker (2009) have described how different settings where jazz music is performed require not only different repertoires of songs, but also different techniques of playing those songs. In their ethnographic report, they tell us how, in an American Inn in New England, “the comfortable, rustic-feeling room, with oak and walnut floor and a large oriental rug, has a warm sound” (Faulkner and Becker, 2009, 10). They also mention the own-

1. Certeau (1999) inverts the relation among those two terms, understanding space as used place.

er's apprehension with the sound levels (intensity) a trumpet player would produce, disturbing his clients in the dining room. In their proposal of understanding the repertoire in action, as they are practiced by its users, they try to shorthand sound elements involved in the production of music, as event, which congregates "a list of possible tunes to perform, asking another player what he wants to play, deciding (before or during a performance) what to play and when" (Faulkner and Becker, 2009, 194). One of those elements are the performing situations musicians are in, that delineate what the public expects to hear, in terms of what songs and of how they are performed, with the objective of making the music in a certain setting happen.

For our intention in this article, we find it useful to articulate both DeNora's and Faulkner and Becker's ideas in order to understand how the city inhabitants use sounds in order to occupy space, being in a disputing, sharing or lotting way. In this tasks citizens use not only certain sounds, but manipulate them, by intertwining sound properties, such as intensity, frequency and spatiality. On an article about Jazz in the City of New Orleans, Sakakeeny, tells us how "Buddy Bolden – widely regarded as the first jazz musician in New Orleans at the turn of the century – (...) would point his trumpet to the heavens and blow loud and 'hot', enticing the audience to leave nearby Lincoln Park" (Sakakeeny, 2006, 41), where another musician played a different kind of music. In this example, the musician manipulates the directionality and intensity of his blowing horn in order to make a call. Further in his article, he reports how, during Mardi Gras, brass bands responds to the passage of the Zulu parade underneath a bridge "by blowing their horns as loud as possible, the sound careening off the concrete infrastructure" (Sakakeeny, 2006, 43). In doing so, they manipulate the intensity and the reverberation produced by a specific place to defy social exclusion, since the mentioned overpass was built in the 1960's to segregate an African section in the town.

On a similar way, we believe that some sound properties are manipulated by people, most of the times, in order to make certain appropriation and domination of the space: disputing space is the tonic when the main parameter of sound manipulated is intensity – the urge of making loud noises is necessary to silence opponents; frequency (both in terms of melodies, or in terms of the period in which a repetition occurs, or even duration) is mostly used when one wants to share space – since as Lefebvre argues, "for there to be a change, a social group, a class or a caste must intervene by imprinting a rhythm on an era, be it through force or in an insinuating manner" (Lefebvre, 2004, 25) it brings about the potential of entraining and synchronizing different bodies, so sounds accommodate to one another; and spatiality (be it in the arranging of the position of sound fonts, the reverb of a space, or the direction of the sound) is usually accessed when comes to lot space, inserting in place a

fixed, though sometimes ephemeral, border, that states where a certain territory begins and ends – the manipulation of these properties make possible to control the range of a certain sound. We are not arguing, though that those parameters are used only for those tasks, but that they afford those uses that are virtual and need to be accomplished by its users. What we delineated here represent some guidelines, that can be changed according to the situation, to how people access them, and to what other parameters are also in play. As Augoyard and Torgue put it, “as soon as it is perceived contextually, sound is inseparable from an effect, as subtle as it can be, a particular colouration due to collective attitudes and representations or to individual traits” (Augoyard and Torgue, 2011, 11).

3. Sharing and disputing Praça 7

September the 7th Square, also known as Praça 7 is one of the main areas of interest in the city and is an excellent example of some of the contradictions present on the modern urban tradition, namely the one that offers up the city only to those few who enjoy the rights of citizenship (Maricato, 2000). It is estimated that every day around 10,000 people travel the square’s streets and sidewalks during peak hours (2:00 pm to 3:15 pm), because it is one of the main traffic articulators for the city. At Christmastime, it is estimated that 800,000 people per day circulate through this place. The space also serves as host to certain bank headquarters and government buildings responsible for issuing official documents such as identification cards and passports. At the same time, various commercial and recreational activities (street trading and services, as well as artistic and circus presentations, for example) can be found in the Seventh of September Square. The Square is also known as a place for criminals to acquire illegal guns and false documents.

During 2003 and 2004 the square was reformed under the argument that it was a dead place, even though it still attracted a large number of people everyday. In order to implement such marginalizing policies, and just before those urban interventions occurred, a series of derogatory news stories about downtown Belo Horizonte were published in the newspapers and broadcast by media, reinforcing an image of criminality, drug abuse, and prostitution already present in the city’s collective imagination. This media campaign contributed to the arguments supporting urban reform that built in the square 4 pedestrian zones, under four different architectural projects, named with four Indian tribes from Minas Gerais (the state

where Belo Horizonte is in), that expelled the hawkers that used to work there from its sidewalks. Some urban practices kept occupying the place, though.

We have discussed somewhere else (Franco and Marra, 2008) on how street criers can be heard as sound indicators of the levels of noise and flux of cars and pedestrians in the streets. In Belo Horizonte downtown, we found out that the longer and louder street cries are the more intense is the car flux and the less frequent is pedestrian flux. In Praça 7, with its four pedestrian zones, there are street criers advertising cell phone stores and services such as hair cut and photography for documents. They entrain themselves with the large flux of pedestrians and small number of cars in the middle of the block, emitting their screams in a not so loud fast rhythm. According to the time of the year, they also spread their occupation to the sidewalks close to the crossing of the two busy avenues, up to the corners a block away from the square's center (figure 1).

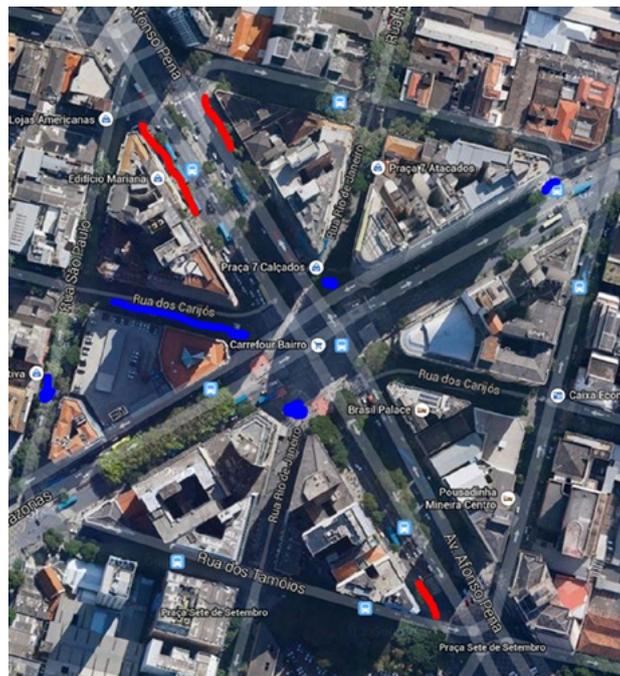


Figure 1. Localization of street criers in Praça 7. In blue, the regions where they usually are. In red regions they can occupy, according to the time of the year.

Sometimes, a math teacher is found in the middle of the street criers, teaching informal lessons on how to solve problems on the subject the easy way. He wears a headset microphone and battery small loudspeakers to amplify his speech, although it also imposes a metallic timbre to his voice. As he speaks continuously, for around 15 minutes, he demonstrates the solutions to his problems on topics such as square roots, financial math, and so on, on a white portable board he carries with him. People stop around the informal class and eventually buy the DVDs he sells with the lessons, organized by subjects, he has just taught. As the

teacher speaks, street criers keep their rhythmic screams. A strange kind of collaboration is established between those two categories of informal workers. Now and then, another person arrives the square bringing snacks and drinks for the street criers. They offer the teacher a cup of soda, as he stops his classes to rest his voice. Although informal, both kinds of tasks in fact show a loose structure, as the teacher is also helped by his wife, who brings him new DVDs every time he stops to rest.

If street criers and the math teacher seem at first to compete with each other, they in fact share the acoustic space, so everyone is heard in the noisy ambience of the square. To do so, they manipulate the intensity of their emissions – none of them sound loud – but also the frequency – the number of emissions at a time – of their emissions, as no street crier shouts at the same time and the math teacher takes a break from time to time, not only to rest, but also to talk to the costumers that stop by. This pedestrian “loitering” around the classes also helps the street criers, as they see their chances to be heard grow.

Thus, the sonorities produced in Praça 7 sound alike the “lifting-up-over” Feld found among the Kaluli people. In this style of singing, “even when the situation involves a single voice, the sound is coordinated with the surrounding acoustic features of the environment; this is particularly so when Kaluli sing at work” (Feld, 1984, 393). In a similar way, street criers adjust how often they scream to the frequency of pedestrians passing by. The layered texture of street criers and the math teacher also points to a coordinated vocal polyphony, similar in structure, but in different conditions, to the ceremonial songs sung by the people from Papua New Guinea. Each sound on the square seems to tune in as they embed to one another, manipulated in their frequency and intensity by their users, in order to share space.

Those tune in procedures can be found also on other popular manifestations that take place in the same square. The 7th of September square is also the stage for a number of popular concerts by Brazilian or Andean Indians that come about one after the other. Both groups occupy the pedestrian zone with their portable sound equipment and play their songs – the Andeans usually play global pop songs on their pipes, the Brazilians play what sounds like a mixture of indigenous and popular music. As one group unpacks, the other prepares their presentation, on an unpredictable schedule, since one group or the other can open the sessions, and as they can manage their concerts in two of the four pedestrian zones in the square (figure 2). Brazilian Indians also use the place as a fair, where they sell craftwork, such as wooden spoons and bowls, necklaces, earrings, etc. The place is also shared with people that present circus numbers and challenges, such as acrobatic and clown performances, riding a defective bike, or kicking a ball in order to make it pass through two empty bottles without hitting none of them – the space between the two bottles is just enough for the ball. All of those people use their voice to announce their work.

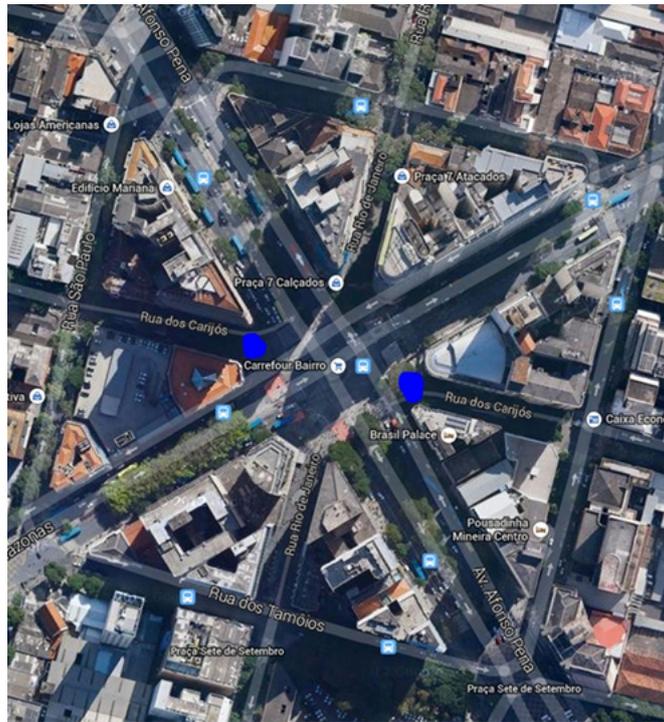


Figure 2. Localization where Peruvian and Indian musical and circus presentation happen.

The 7th of September Square is, as we have already described in this article a very busy and important place to the city, as it concentrates in it and around a large number of bus stops and as it is located in the borders of a popular and a fancier commercial zones. In some of their benches, people remain seated, talking a language full of incomprehensible slangs and carrying bags with different kinds of objects, apparently stolen. The commercial negotiations in the stores turn to negotiations of space in the sidewalk. Once in field work, one of the researchers saw, early in the morning (around 8 a.m) a record store opening while homeless people that use to sleep in the square were waking up (figure 3). The store was playing songs such as boleros, as the homeless people were banging on benches in the rhythm of samba. The insistence of the banging made the store attendants change the record they were playing to a samba one, tuning in with the homeless people who showed satisfaction as they saw their rhythms intertwine with the store's. What was previously "a flow of music [...] established through song compatibility and cross-facing so that all transitions from song to song are seamless" (Sterne, 1997, 32) abruptly becomes "handling of spatial difference [...] intimately tied to its handling of social difference" (Sterne, 1997, 41)



Figure 3. Localization of the record store in blue. In red, area where homeless people use to sleep. On the right, picture of the record store facade.

This kind of interaction can also be found on another pedestrian zone in the square, where hippies sell their craftwork: one of the buildings in this block is occupied mainly by stores that sell rock, punk and heavy metal records, but also some instruments, clothes related to those music genres, and skate board equipment as well, also known as Galeria do Rock (figure 4). The sound of the skaters maneuvers and of the small wheels rolling on the sidewalks can also be heard during some hours of the day (usually the late afternoon and early evening) as there are steps, plain and upper areas in the pedestrian zone that can be used as obstacles to the sport practice (figure 5). Tuning in to this “rebellious tonic”, we find the protests that usually take place in this pedestrian zone. They arrive at certain arranged times, usually at noon or late afternoon, around 5 or 6 P.M, with cars equipped with loud speakers that can be heard almost two blocks away, as some recordings the group made in the place show. Here, the loud sound is used as a manifestation of power, defying the sacred noise (Schaeffer, 2001, 114) of the traffic jam, spreading messages by workers on strike, and other social movements in favor of better public transportation, houses for homeless people, etc. In doing so, they manipulate intensity, in order to dispute the square’s space and take possession of it.

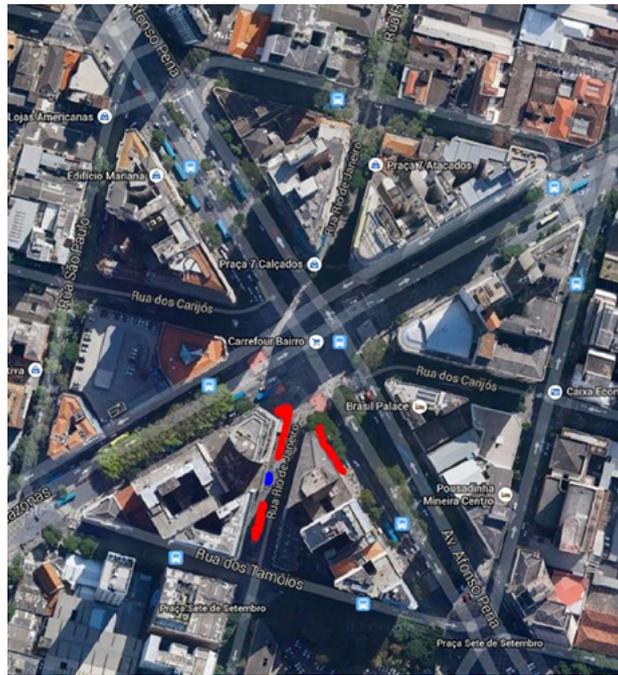


Figure 4. Localization of Galeria do Rock in blue. Localization of hippies selling craftwork in red.



Figure 5. Pedestrian zone in front of Galeria do Rock, with its steps and plain areas. Picture taken from the internet, http://www.arqbh.com.br/2007/04/praa-sete-revitalizao_2448.html.

Those manifestations, though, don't take long in the square and are usually moved to the front of the city hall. This also happens when big protests burst into the city streets and close the square, causing traffic jams. And during manifestations, street criers don't stop their adverts, although they also become louder. These observations evidence that any

practice that intends to get fixed in the 7th of September Square in Belo Horizonte has to deal with the sharing of the space. The place is occupied by a great diversity of people and groups, what makes it difficult, most of the times, to conquer it for a long time. The solution for this dilemma is finding ways to live together with the other forms of the occupation of the place. Listening to its sonority is one of the ways to sense its layered polyphony in order to find a gap where you can fit in. Labelle, writing about the Muzak and the ambient music on Shopping Malls, advocates that “introducing ambiguity into the equation, and letting the ear *mishear*, I hope to accentuate background music as one of many auditory experiences through which we still may learn to listen”(Labelle, 2010, 200). In the case of Praça 7, hearing it right is listening to its layered background in order to understand the ambiguity and randomness introduced by the diversity inhabiting the place, so one can insert his own sounds in the square’s sonority.

A last example helps us grasp those dynamics. Every Friday, a restaurant in the pedestrian zone where the skaters train their maneuvers turns into a bar placing tables and chairs in the sidewalk in front of it and serving beer to clients. A musician playing Brazilian Popular Music on guitar and singing establish an ambience for the costumers to talk to each other, as we discussed somewhere else (Garcia and Marra, 2012). The bar, though, does not place tables in the plain area, next to it, where the skaters usually ride their boards. One Friday, Belo Horizonte downtown was busy since people were buying presents for Christmas – it was December the 20th. It was about 7 P.M. when the researchers recorded the musician playing his repertoire. In the background, you can hear the sound of the skateboards hitting the ground, as the skaters tried to jump on it. None of the music, nor the noise of the sport practice made it hard for people sitting on the tables to talk. More than a distracted listening, we believe it was a matter to listen to the background in order to fit each sonority to each practice in space, with its respective mode of hearing. As Eric Wilson wrote about cries in London’s streets, in 17th century, these sonic manifestations “avail a means of negotiating space within a particular economy, without such (romanticized consequences of exile)” (Wilson, 1995, 21).

4. Lotting and negotiating Praça da Savassi

The Diogo de Vasconcelos Square, demarcated by the intersection of Getúlio Vargas and Cristóvão Colombo avenues, is better known as the Savassi Square. At one of its corners, in the

early 1940s, a bakery was opened up that received the surname of their owners, the Savassi family, of Italian origin. The *Funcionários* district, eminently of residential character, was changing around this period:

Already in the 1950s, the first trading services have been deployed in the district and its area was the Savassi Bakery at Diogo Vasconcellos Square and, beside it, on Pernambuco St., there was São Félix Drugstore. There was also a haberdashery, near Diogo Vasconcellos Square and next to the bakery; Colombo e Trinângulo warehouses at *Cristóvão Colombo Av.* Two other services began to attract the attention of the belo-horizontino [Belo Horizonte city dwellers]: the construction of Cine *Pathé* and the first supermarket in Belo Horizonte, the *Serve Bem*, both located in *Cristóvão Colombo Av.* (Lemos, 2007, 7)

In bars, warehouses, and the bakery itself, the middle and upper class youth gathered together. At the surroundings, several public and private schools arose, becoming pathway for passing-by students, from elementary to university. As new neighborhoods appeared in the city South Zone, the Savassi region became a center to which flocked the upper and middle-class in search of sophisticated shops and social spaces corresponding to their preferences. From the 1970s, the transformations in space intensified. Celina B. Lemos points out, in her study on consumption and formation of a centrality in Savassi, the strong presence of private investment following the movement of consumers with high purchasing power, forming a “(...) locus of consumption and leisure of privileged groups” (Lemos, 2007, 8). According to interviews conducted by the author, the “noble consumers” saw the City Downtown as a deteriorated space, unsophisticated and without exclusivity, thereby “(...) growth and legitimization of Savassi coincided with the semi-saturation of the Traditional Center” (Lemos, 2007, 8). Accompanying these changes, development legislation drafted in 1976 regulated the “mixed” use (residential / commercial) within the district.

The consumption activities were articulated to forms of leisure and sociability that matched the expectations of goers in search of refinement and good taste. Not by chance in the 1980s the reemerged the bookstore *Agencia Status* in front of the main bus stop on *Cristóvão Colombo Av.*, opposite to which was the Cine *Pathé*, a movie theater by then enshrined as a meeting point for intellectuals, associated with “art movies” where attendees from the neighborhood remember having watched films of directors like Bergman, Fellini and Godard. Thus, Lemos (2007, 13) considers that there have been a continuity and use transitions between these two points of concentration and gathering on opposite sides of

the avenue. Thus, a typical ride of the inhabitant of middle or upper class by Savassi could include shopping, watching a movie, buying a book and ending the evening at one of the bars or restaurants nearby.

The practice of frequenting Savassi's bars was already integrated into the routine of working people on site, as well as people belonging to middle and high extracts that inhabited the South Zone. It is possible, therefore, to "identify frequency patterns" at bars and eateries that were in fashion at Savassi, where outlined a territoriality by means of use, based on the groups and subgroups who frequented the place. (Lemos, 2007, 17-18)

Also on that decade, part of Pernambuco and Antonio de Albuquerque streets (both cross diagonally the space that shapes the square) were turned into pedestrian zones. Flowerbeds with plants and some urban structures such as benches and public telephones (then still as relevant equipment) were built there, and the parts that remained regular streets received parking spaces. If sometimes this space was configured as "pathway", several situations could attract and retain the bystanders, as the presence of street vendors, artisans, artists selling paintings, beggars and even the police, anxious to suppress assaults and control the frequency of individuals considered threatening. As an idyllic space for empowered and enriched groups-in opposition to the social representations of the dirty, outdated, cluttered, filled with "undesirables", Center - Savassi should be an adjusted and comfortable place for its privileged consumers.

We can consider that from 1990 the scene of the square has become more complex and heterogeneous. The large number of bus lines that travels and stops at points of the avenues that intersect it, the existence of some affordable shops and eateries, the diversification of services and eventually its own centrality, significantly increased affluence and variety of people circulating and appropriating the space. It also became a place for further meeting to watch games and celebrate conquests of soccer teams from the state capital. This has not eliminated initiatives that are consistent with the image that was already consolidated about the district. We can mention the fad of "cafes and bookstores," post-modern spaces with retro atmosphere, then perceived as exquisite loci of sociability for groups of certain cultural capital. *Café 3 Corações* and *Livraria da Travessa* became poles of this type of activity, using live music-performed by small groups or even one musician with a repertoire considered of

“good taste” (jazz, MPB², choro³) – to attract and please demanding attendees used to spend more money, even on food.

Sign of the times and changes in cultural consumption habits, *Pathé Cine* would be closed. In its building were to run an evangelical church, a cheap cloth stores and a parking lot. The building was listed by the Municipal Historical and Cultural Heritage, but plans to recover it as a cultural center haven't left the drawing board yet. In the 2000s, the main corners came to be occupied by stores of multinational mobile operators operating in Brazil, in addition to the one already occupied since the previous decade by a McDonald's franchise, marking the square's insertion to the mass-produced and globalized circuit consumption while there still remained traditional shops at a regional level (Elmo [shoe store]) and local (*Centro Ótico* [eyeglass store]). Significantly, the *Claro's* store dislodged *Café 3 Corações*, which eventually returned to business on a much smaller shop behind the one occupied before, after the support by a campaign moved by traditionalists of the day before yesterday.

The Savassi Square witness in many changes and bumps the maelstrom of our time, and as pointed out by Andreas Huyssen, “Already the globalization fantasies of the 1990s have themselves become part of the memory archive and its cabinet of delusions.” (Huyssen, 2003, 6). Also do not cease to be interesting counterpoints to McDonald's the persistence of snack bars and restaurants serving snacks, cakes and “petiscos” associated with local or eventually regional cuisine, as in the case of the *Baiana do Acarajé*. Huyssen, proposes the city should be read as a palimpsest, calls attention to the nature of the changes brought about by globalization in the cityspace:

(...) national traditions and historical pasts are increasingly deprived of their political and geographical groundings, which are reorganized in the process of cultural globalization. This may mean that these groundings are written over, erased, and forgotten, as the defenders of local heritage and national authenticity lament. Or it may mean that they are being renegotiated in the clash between globalizing forces and new productions and practices of local cultures. (Huyssen, 2003, 4)

2. MPB is a trend in post-Bossa Nova urban Brazilian popular music. It is not a distinct genre but rather a combination of original songwriting and updated versions of traditional Brazilian urban music styles like samba and samba-canção with contemporary influences, like folk, rock, pop and jazz.

3. A Brazilian popular music genre, mainly instrumental, which emerged in Rio de Janeiro in the mid nineteenth century.

The last refurbishment was carried out between March 2011 and May 2012, and have cost, according to information by the Municipality of Belo Horizonte (PBH) gathered by the press, between R\$ [reais]10.4 and 11.8 million [US\$ 4,6 to 5,2 million]⁴. It became part of the mayor election campaign⁵ agenda by requested from local merchants through an alarmed rhetoric that pointed the danger of loss of the distinctive features of the square and the neighborhood. The most obvious physical changes were the creation of pedestrian zones, lifting the *Getúlio Vargas* and *Cristóvão Colombo* avenues tracks, the construction of light sources, benches (over the pedestrian zones and their edges), and changes in the gardens and lighting. The recent intervention signals the attempt to adjust the face of the square to a “gentrified” project. However, if the regulatory standards for the appearance of shops, the installation of standardized street furniture in the zones, added to the increasing of establishments’ operational costs signals the intention of selecting socially the public to attend it, “undesirable” groups still mark their presence, indicating a dispute, albeit unevenly, for the square space.

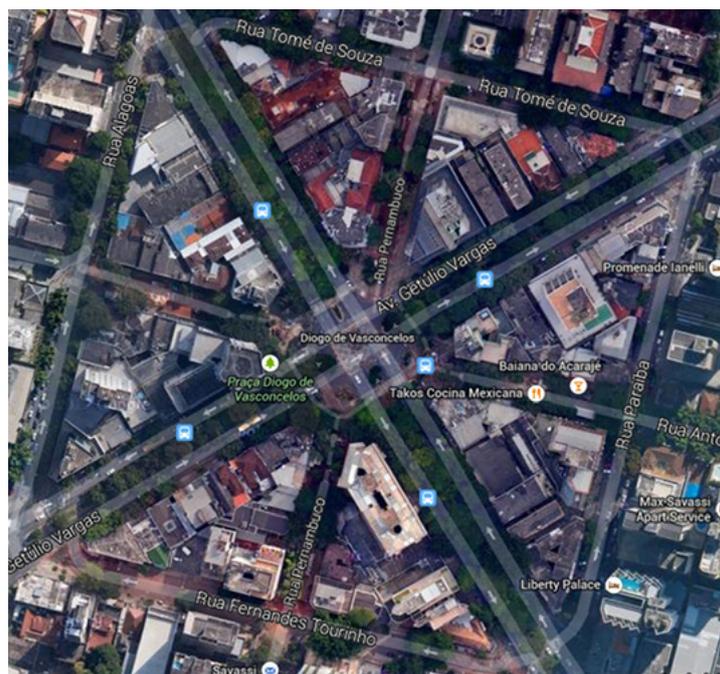


Figure 6. Google Maps view of Praça da Savassi.

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4. NOVA Praça da Savassi é inaugurada em Belo Horizonte. Portal G1. 10/05/2012; HEMERSON, Landercy; HOLANDA, Tiago de. Revitalização: enfim, a Savassi ficou pronta. Estado de Minas (on line), 09/05/2012. Access on May 29, 2014.
 5. The current mayor, Márcio Lacerda, was reelected in 2011 for another term from 2012 to 2015.

The square refurbishment took part of the dividing space of by modifying it, closing streets and setting new street furniture. However, the proposed structures are also appropriated in ways beyond the project.

I gaze at the stone bench, at the edge of the block. These structures deserve attention. This space is usually occupied by youngsters, pickers, homeless, beggars eventually. Sometimes they approach McDonald's and address other bystanders. There are no explicit conflictive situations, but it is literally as if there was an invisible "force field", and many bystanders end up avoiding the edge.⁶

This is the context in which our current research is been conducted. Our fieldworks at Savassi Square were performed in a period between May 2013 and May 2014. Using audio recorders, smartphones and notebooks, we made sound recordings, videos, photographs and notes. Although cut by two avenues with heavy traffic during peak hours, besides its proximity to another very busy avenue of the capital (*Contorno Av.*), at Savassi Square we may hear violin players indifferent to cars, the noisy atmosphere of the bars, and live music which has become a landmark.

The walks we conducted aimed to capture the production and organization of space and soundscape from parameters such as intensity, frequency, and spatiality. Each pedestrian zone has its own configuration, and is conditioned by their daily routine activities and uses performed by anyone who lives, works or passes through them. Mornings are all in relative silence until the stores and other places start to open at around 9 am. Throughout the day we watch the movement and the profusion of sounds increase by the lunch period and then decrease slightly in the afternoon until closing time at around 6 PM. At night, all week, especially Thursday through Saturday, there is intense movement of customers in bars, especially concentrated in the blocks from *Pernambuco St.* to the corner with *Tomé de Souza St.* and *Antonio de Albuquerque St.* to *Paraíba St.* In the pedestrian zone from *Pernambuco St.* to the corner with *Fernandes Tourinho St.* is the *Ateliê*, café and restaurant that usually has musical performances nightly but not as busy as the schedule it had at the time it was the *Livraria da Travessa*. An account of these type of hiking is like the following:

I walk to the pedestrian zone where is *Elmo* (*Pernambuco St.*). A violinist plays right in front of the traditional shoe store, which exists for a long time in Savassi.

6. GARCIA, Luiz H. A. Relato de campo. Praça da Savassi. Belo Horizonte, 18 de março de 2014. 1p.

It is a classical repertoire, recognizable pieces, such that you can hear on the radio or even commercials. I made a short film. Not a lot of people paying attention to the musician. The movement is already low (compared to the larger influx of people on the avenues whose intersection marks the square) and decreases. Few people are sitting in the border's stone benches and also few staying in other edge of the pedestrian zone (Fernades Tourinho St.). I believe that the design of these benches within the zones does not favor long stays. The stone benches, especially under the shadows are much more inviting. The tables of the *Ateliê* are sparsely occupied. Here, as in *Café 3 Corações* people come together to work with notebooks open on the tables. I listen to music from the café sound-system, however badly, a song by Chico Buarque. It plays *Ensaio Geral* and then *As Vit-rines* - which are remarkable songs that refer directly to the urban space.⁷

On many occasions we have followed a specific roadmap out of *Paraíba* street, inside the pedestrian zone toward *Getúlio Vargas Av.*, crossing to *Pernambuco St.* to the corner with *Tomé de Souza*. That route makes possible to see how bars and cafes use the placement of speakers to provoke certain kinds of ambiances. Their position at the top creates environments for conversation that does not conflict with the space of neighboring property. In bars where the boxes are on the floor, the sound is louder, causing the need to increase the intensity of the conversation. Those sound dynamics resemble the ones found by Sterne (1997) in the Mall of America, regarding the position of loudspeakers as strategies for differentiating inside and outside of stores, and its surroundings as well, but in a more strategic fashion: this more overt sonic interference (an attempt to transform the street in nightclub?) indicates the intention of marking an almost institutionalized division of the sidewalk space. This demarcation also makes use of musical preferences associated with the public profile that bars attract and to which they seek to identify by the menu, the decor and the forms of sociability they promote. So we have a repertoire of hard rock playing nonstop in *Vintage pub*, meeting point for motorcycles aficionados, and pulsating music and DJs playing in the *Anos 80*, with constant references to the repertoire of the new wave decade that appears on the bar's naming.

In live performances we can determine that prevalent musical genres are rock, bossa nova repertoire and voice and guitar of typical MPB mingled with jazzy, bluesy songs, or pop flavor. In the *Ateliê*, a duo with singer (voice + guitar) and instrumentalist (bass) presents

7. GARCIA, Luiz H. A. Relato de campo. Praça da Savassi. Belo Horizonte, 18 de março de 2014. 1p.

weekly, whose repertoire according to its own set includes MPB, Pop, Xote, etc., including a “proper garb” (arrangements of authorship of the duo). In Status, rock bands predominate, but there also occurs jazz ensembles, including important instrumentalists around the local scene, with singers and crooners with basic bossa-nova repertoire with a few strokes of MPB. It is noteworthy that the stage shows are strategically located so that a presentation does not compete with another. When a presentation with greater intensity happens in the biggest stages that are mounted closer to the avenues, the shows are synchronized and the other musicians keep waiting for the end of the noisier spectacle.

It should be noted that the pedestrian zones provide a proper acoustic as they configure gaps between two rows of buildings that, while not high, act as walls. The bars or cafes that promote live music performances take advantage of this architecture in the blocks, positioning improvised stages and musicians’ sound equipments with their backs to the avenues and facing the interior of the closed streets, where their tables and folding chairs are positioned. This is what happens at the *Ateliê* (where previously was the *Livraria da Travessa*) and *Café 3 Corações*. The former *Agência Status - Status Café, Cultura e Arte* in the 2000s - took a different and very effective solution, installing a stage under the awning of the building in which McDonald’s operates. This strategy points to an extension of the emporium’s space onto the street, while performing an allotment of this public space. We realize, on one side, an effort to demarcate the boundaries of the property and mark out the profile of the public who sit at their tables to eat while chatting and listening to music, and, at the other side, a number of practices which challenge or attempt to adapt to the imposed boundaries. The Status case seems particularly significant:

Overt partitions actually reinforce the division that somehow already operates in the pedestrian zone of Status and McDonald’s. The poor boys, scavengers, homeless, hippies and beggars stayed at the border, although sometimes ventured to pass between the tables and people were standing in the area bounded by them in front of the bars, usually to ask for money or picking cans. One of them interacted with me, a man carrying a bag in the back, but that was picking nothing. He drank a beer and offered to put some in my glass, but this had little *churros* I had bought at *Fujiyama*, on the next corner. I offered and he accepted one, we exchanged smiles, and he went through the midst of the people. At another point, while one of the bands (Nelson e os Besouros, a Beatles tribute band) played *Twist and Shout*, a teenager passed me by, barefoot, dirty and rag-

ged, trying to follow the song singing a “fake English” as the one used by street car washers “otcheiquirobeibe, pissensau ...” and stuff like that.⁸

The activity of picking cans marks a liminality there, in that both cans are the rest of the consumption of bar costumers and livelihood of pickers. The ‘fake English’ in turn represents a marker of difference. Appadurai (1996, 178) asks “what locality might mean in a situation where the nation-state faces particular sorts of transnational destabilization”. As he proposes, we wish to use locality as a relational and contextual category, “(...) constituted by a series of links between the sense of social immediacy, the technologies of interactivity, and the relativity of contexts” (Appadurai, 1996, 178). Although he speaks of several situations approached by the ethnographic record that can be rewritten and reread as concerned with the production of local subjects (Appadurai, 1996, 179), we wish to underline those concerned with the spatial production of locality.

The appropriation by the young man who passed by me demarcates the tension between globalized English that circulates through a lot of songs conveyed by cultural industry and its “localized” form that keeps the sound but imposes a Brazilianized diction. Singing it that way the boy manages to point out that he finds away to integrate the global flow of which the song participates, while at the same time he is devoid of the cultural and social capital that would enable him to study English regularly to appropriate precisely the words he is singing.

It is possible, without being a customer, to follow the shows sitting in the other stores (some have a more affordable menu), on the fixed seats added after the refurbishment of the square, or even on foot. It is also interesting to note the different behaviors of those who are sitting in bars in which the musicians are playing. Generally the first two lines are seated facing the stage, as an effective audience, while the rest seats with their back or side to the stage, basically maintaining an attitude of indifference, except on ends of the numbers when some also clap mechanically.

(...) Dudes, sitting in the Status table just in front of the stage, after splurge on food and drink, which are not cheap there, questioned the waiter about the *couvert* charge, for he had just notified them that they should pay R\$ 20.00 *per person*. They claimed that they had not been informed and that they expected to pay 20 for the whole table. And retorted that Aggeu [musician and responsible for organizing the event] had just flaunt the microphone that the event had no

8. GARCIA, Luiz H. A. Relato de campo. Praça da Savassi. Belo Horizonte, 14 de dezembro de 2013. 1p.

sponsorship and the bands would not receive *cache*. Apart from the fact that many are unaware of the mechanism of extortion behind *couvert* charges (the musicians do not receive all of it), it is a sad fact that the majority does not dispute the exorbitant price of food for the body, but is always willing to complain too much about the price of food for the soul⁹

In one of the last field works we observed different behavior from a homeless man who, standing right next to the stage, accompanied with the body a trio (bass, drums, keyboard) performance, playing himself alternately an imaginary keyboard or guitar in the air¹⁰. Clearly in his own world apart, no one molested him, probably because, somehow, he penetrated the partition without making his presence uncomfortable. But the “undesirables” can trigger conflict. We recorded an interesting and revealing episode at April 16th, 2014, when South Americans¹¹ strolling musicians, advanced to the fenced area of Status and played near some tables. They got some applause of those nearby them. “After the ending of their presentation the waiter comes and talks. By his gestures I deduce he is commanding the musicians not to play here anymore.”¹². A few days before they had played on stage, but it is possible that such ‘exotic’ attraction was not being considered for other presentations.

5. Conclusions

We have shown how the use of sound by the city’s inhabitants delineate different sound practices used to share, dispute and lot spaces in two squares in Belo Horizonte, Minas Gerais, Brazil. To do so, they manipulate sounds and its properties, such as intensity, frequency and spatiality, negotiating place. Further work should be spent, on comparing the cites squares, trying to elicit how musical and sonic repertoire is enacted, by choosing songs played by musicians, djs and stores, by manipulating intensity to conquer space, by entraining to the sonority of the place to find room for one’s own sounds, and by strategically placing speakers to build invisible, but stable borders in place.

9. GARCIA, Luiz H. A. Relato de campo. Praça da Savassi. Belo Horizonte, 14 de dezembro de 2013. 1p.

10. GARCIA, Luiz H. A. Relato de campo. Praça da Savassi. Belo Horizonte, 20 de maio de 2014.

11. As the World Cup approaches, their presence is increasing as the city is going to host same games.

12. GARCIA, Luiz H. A. Relato de campo. Praça da Savassi. Belo Horizonte, 16 de abril de 2014, 1p.

REFERENCES

- Appadurai, Arjun.** *Modernity at large.: cultural dimensions of globalization.* Minneapolis: University of Minnesota Press, 1996.
- Augoyard, Jean-François and Torgue, Henry.** *Sonic Experience – A Guide to Everyday Sounds.* Montreal, Kingston, Londres e Ithaca: McGill-Queen's University Press, 2006.
- Certeau, Michel.** *A invenção do cotidiano,* Petrópolis: Editora Vozes, 1994.
- DeNora, Tia.** *Music in Everyday Life.* Cambridge: Cambridge University Press, 2004.
- Faulkner, Robert and Becker, Howard.** *Do you know...? The Jazz Repertoire in Action.* Chicago: University of Chicago Press, 2009.
- Feld, Steven.** Sound Structure as Social Structure. In *Ethnomusicology*, vol. 28, no. 3, Sep., 1984, pp. 383-409
- Franco Juliana, Marra Pedro.** Som e complexidade urbana: apontamentos a partir de uma visão sistêmica das sonoridades do comércio popular no Hipercentro de Belo Horizonte. *Ciberlegenda*, 24(2), 2011, pp. 146-159
- Garcia Luiz Henrique, Marra Pedro.** Ouvir música na cidade: experiência auditiva na paisagem sonora urbana do hipercentro de Belo Horizonte. *Revista Contemporânea UERJ*, 10, 2012 pp. 43-57
- Haesbaert Rogério, Limonad, Ester.** O território em tempos de globalização. In etc, espaço, tempo e crítica – *Revista Eletrônica de Ciências Sociais Aplicadas e outras coisas* 2(1), 2007 pp. 39-52
- Haesbaert Rogério.** Territórios Alternativos. Contexto, São Paulo, 2006
- Huysen, Andreas.** *Present Pasts: urban palimpsests and the politics of memory.* California: Stanford University Press, 2003.
- Idhe, Don.** *Listening and Voice: Phenomenologies of Sound.* New York: State University of New York Press, 2007.
- Labelle, Brian.** *Acoustic Territories: sound Culture and everyday life.* London: Continuum International Publishing Group, 2010.
- Lefebvre, Henry.** *Rhythmanalysis: Space, Time and Everyday Life.* New York: Continuum, 2004.
- Lemos, Celina B.** “A formação da Savassi como uma centralidade belo-horizontina - a cultura do consumo, passagens e territorialidades.” XII Encontro da Associação Nacional de Pós-Graduação e Pesquisa em Planejamento Urbano e Regional. 21 a 25 de maio de 2007 Belém - Pará - Brasil: 1-21.
- Low, Setha M.** *Spatializing Culture: The Social Construction of Public Space in Costa Rica.* In *Theorizing the City: The New Urban Anthropology Reader.* New Jersey: Rutgers University Press, 1999.
- Maricato Ermínia.** *A cidade do pensamento único.* Vozes, Petrópolis, 2000
- Sakakeeny, Matt.** Resounding Silence in the Streets of a Musical City. In: *Space and Culture*, vol.9 no.1, February 2006, pp. 41-44

- Santos, Milton.** *A natureza do espaço: Técnica e tempo. Razão e emoção.* Editora Hucitec, São Paulo, 1996
- Schafer, Murray.** *A afinação do mundo: uma exploração pioneira pela história e pelo atual estado do mais negligenciado aspecto do nosso ambiente: a paisagem sonora.* São Paulo: UNESP, 2001.
- Sterne, Jonathan.** Sounds like the Mall of America: Programmed Music and the Architectonics of Commercial space. In *Ethnomusicology*, vol. 41. No.1. (Winter, 1999p), pp. 22-50
- Tuan, Yi-Fu.** *Espaço e lugar: a perspectiva da experiência.* São Paulo: Difel, 1983.
- Wilson, Erick.** Plagues, Fairs, and Street Cries: sounding out Society and Space in Early modern London. In *Modern Language Studies*, vol. 25. No. 3 (Summer, 1995), pp 1-42
- Wisnik, José Miguel.** *O som e o sentido: uma outra história das músicas.* São Paulo: Companhia das Letras, 1989.

Soundscape of Urban Parks

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Abstract

Cities can be aggressive environments for every sense. However they can also offer pleasant atmospheres in line with the human, social and economic dynamics. The perception of the quality of the ambient sound plays a relevant role on the sense of place and well-being. Urban parks are part of every city fabric and they are usually well appreciated by the citizens for providing restoration, some “quiet”, and more pleasant sites, at least when compared to the surrounding areas. Research on the soundscape of parks in cities in Portugal and in Brazil have been conducted in order to assess the coherence of the sound with the park dynamics and to understand what makes such areas interesting for the visitor. Work is being directed toward the differentiation of the sound components of the overall sound environment in different types of parks and to the development of techniques for mapping the perceived sound components. The work also aims at understanding effects of climate and culture on the perception of the soundscape. Results will be presented and discussed.

Sounding Thessaloniki; Architectural Representation of an Invisible City

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Abstract

This study constitutes the first attempt to architecturally represent the sounding city of Thessaloniki. The writers approach sonic urban environment as a field that has always interfered with the formation of architectural realities. The creation of a sound framework and the notion of sonic architectural ecologies construct a new approach towards the urban ecologies, concerning especially Thessaloniki. Solids, networks and communities compose an invisible urban fabric with vast amounts of information concerning the reality of a city, beyond the typical urban studies and sterile three-dimensional geometry.

Keywords: Soundscape, sound and architecture, Thessaloniki, urbanism

1. Introduction

In October 1995, angry zealots entered Rotonda, a monument that used to be a roman tomb, a christian church and an islamic mosque through the centuries (Ministry of Culture and Sports 2012) and violently interrupted a concert by breaking a piano. They believed that sounds of contemporary music did not create a suitable soundscape for a christian orthodox church (Kannelis 2005). This event created numerous questions to the writers. Is it possible for temporal and immaterial sounds to transform entirely the character and significance of a building and provoke such extreme reactions? Does a structure or a specific area have an appropriate soundtrack? And if soundscape is so important, concerning the identity of a place, why not be exploited by architects?

Due to the economic crisis, there is an existing plethora of built space and empty architectural shells searching fiercely for inexpensive architectural transformation. So, the time has come for architects to start using sound as a major factor in the transformation of the built environment. Hence, how do architects proceed if they want to use sound as an architectural material?

The reality is that architects have already used sound as a factor of the process design. Architectural design describes an architect's utopia in a detailed drawing representation. Additionally, an architectural plan by definition includes methodology and philosophy. Being an architect, means to articulate complex environments. In this paper, the writers reveal how planning and designing of a desired sonic environment, is one of them.

Furthermore, the writers support that by studying the changing urban sonic environment in the field; architects can identify the real questions concerning a city, and understand the essence of its unique residents. An urban exploration related to the older concept of the flâneur (Benjamin 2006) is significant for the formation of an architectural project that really matters.

Lastly, the writers attempt to outline the essence of Thessaloniki's contemporary architecture and highlight the plethora of deep connections with its unique sonic environment.

2. Contemporary architecture theory

Regarding the global architecture history, the twentieth century began with notes of optimism, visions of futuristic utopias and slogans like “Towards a new architecture”. It closed with pessimism, reflection and a “rethinking” of architecture (Leach 1997). Crisis has already been a reality in all the domains of art, science and real life in the past decades. Architecture, that traditionally considered to be the creation of forms, autonomous and self-sufficient in relation to other fields of studies, became uncertain towards its identity and created many issues and reconsiderations (Leach 1997). Moreover, praise of individualism over collectivism, alongside with trends having to do with escaping the reality and the city, created new challenges for architectural theory and practice.

2.1. Greek architecture theory and practice

Greek architectural reality followed the global architectural styles but there were also numerous local issues that played a role in its formation. In the beginning of the 20th century, neoclassicism was entirely set and in the 1930s modern architecture risen (Filippidis 1984). The contemporary Greek architecture began with the appearance of the first modern block of flats in the cities of Athens and Thessaloniki, with the blessings of the state. The contribution of professional architects to the formation of the rural and urban build environment was rare in this rapid spread of construction, generated because of economic welfare. Responsible for the construction of the majority of the block of flats was the businessman manufacturer who proceeded without any specialized knowledge in academia. As Y. Tsarouchis stated “Only in Athens so many beautiful, old buildings were knocked down in order to be replaced by ugly, out of context block of flats”. The culture of illegal settlements started at that time, having as a highlight the contemporary laws for settling these ongoing illegal constructions by paying a small fee (Official Gazette of the Greek Government 2013).

But what concerned Greek architects, from the beginning of the 20th century, was the structure of the identity of Greek architecture and its relation with the global architectural movements (Filippidis 1984). Furthermore, the case of continuity, concerning ancient Greek, byzantine and Modern Greek culture (Ahrweiler 2000) also played an important role in the shaping of contemporary Greek architectural aesthetics. Last but not least, the changing role and the bigger responsibilities of Greek architects towards the production of space as a whole, not just as an urban scenery, was eventually a vast demand in the 1960s. Unfortunately even until now, these demands have not been answered to a large extend.

2.2. City of Thessaloniki

Thessaloniki, the second biggest city in Greece, is located in the north part of Greece, with a waterfront facing Aegean Sea and a current population around 1.100.000 people (Greek Statistical Authority 2011). The city of Thessaloniki can be sensed as a “feeling of the other, the love of the neighbor” (Moscoff 1978) because of the numerous different religious, economic and cultural communities, Greek, Israelite, Slavic, and Muslim, that coexisted for many centuries in the city’s territory. Thessaloniki, Salonica or Selanik had a lot of different names through the history and changed fundamentally after the 1950s, when the majority of Muslims relocated in Turkey and most of the Israelites were killed by the Germans (Mazower 2004). The big fire in 1917 had already destroyed a big part of the spatial construction of Thessaloniki and, in the 1960s, the modern block of flats started to prevail over the urban landscape (Papastathis and Hekimoglou 2010).

3. The idea of sounding Thessaloniki

The idea of sounding Thessaloniki was born mainly due to the realization that no sound event can be isolated from the spatial and temporal conditions of its physical signal propagation (Augoyard 2006). Also, researching towards archetypes shaped by G. Bachelard in order to form his response at different scales, from the domestic scale to the city, in everyday shared conditions (Ballantyne 2005) and having as guides “Acoustic Territories” by B. LaBelle and “Image of the city” by K. Lynch, the writers of this paper, interpret the city as a topography of auditory life (LaBelle 2010) inextricably connected with its architecture and its residents’ spatial practices. There are many narratives of Thessaloniki, regarding mainly urban studies, capturing main monuments, infrastructural formations, changing geography, demographics, social communities and economic relationships. For the first time, the writers confront the city as a sum of dynamic, real life, sonic, architectural ecologies and not as a system of static, sterile, three-dimensional, mute objects.

Architectural ecologies, proposed by R. Banham, have nothing to do with the environment, sustainable and green politics, although many scholars believe the opposite (Banham 2009), and do not just signify how to study major buildings in relation to their geographical, social and historical contexts. In order to signify architectural ecologies, it is important to embrace all forms of human structure, from the freeway to the hotdog stand; a plurality of

expressions that is not confined only to the aesthetic codes of high architecture (Banham 2009). The writers add to this concept of architectural ecologies the notion of soundscape and they confront the city's contemporary auditory reality as a result of its architecture practices. Furthermore the writers believe that the study of this urban, sound footprint can reveal and interpret the influence of architecture towards the city's inhabitants, a hidden palimpsest of acoustic communities (Schafer 1977) and the existence of changeable temporary and fragile soundscapes of high value.

3.1. Solids

The first major category of sonic architectural ecologies has mainly to do with sounds, sonic effects (Augoyard 2009) and soundscapes (Schafer 1977) connected with closed private spaces and some intimate outdoor environments. The design of the house, cell of built space, is responsible for numerous spatial and sound practices of its inhabitants and, according to F. Guattari, architects are those responsible towards the well-being of their constructed spaces' inhabitants (Rawes 2013). Hence in Greece, like most countries of Europe, state has set very detailed instructions towards the construction of a building, depending on its use, geography and size, leaving controlled freedom regarding design. Architecture of solids, from the house to the district, is based mainly on the principles of the modern architecture movement that theoretically does not deal with an individual building but with the city as a whole (Lazaridis 1980). The writers believe that regarding the sonic environment, the modern movement truly did not distinguish the public from the private space and the soundscape of the road, unfortunately, occupies intimate areas of a house. Moreover, the absence of any kind of noise control in real life intensifies this existing stressful state. There are three categories of solids: house, block and district.

3.1.1. House

Classifying the majority of Greek residences, primarily apartments in buildings constructed by private initiative and using socioeconomic criteria, the main categories detected are: the peoples, the urban and the luxurious apartment buildings (Vlachos 1979). The layout of the block of flats and the analogy between communal and private space is almost the same in these three categories. The variable factors are size, materials and topography. The private urban apartment forms the typical Greek house divided in the main space categories: bedrooms, bathrooms, kitchen and common rooms like dining and living rooms. The soundscape of a house is usually consisted of sonic practices of the residents and filtered sounds from neighborhood apartments, which are perceived as an embarrassment. Surveys showed that

reinforced insulation blocks the sounds from the outside that could mask the neighborhood soundscape. As a result this unwanted phenomenon of filtration is being amplified (Augoyard 2009). Moreover, the height level of an apartment, whether is on the ground floor or on the highest floor, 8th floor is the highest in Thessaloniki, is very crucial towards the flux of the road's soundscape inside the spatial territory of a private apartment. Sound travels through the ground and through the air. Although it is possible, due to the proper insulation, to be protected from unwanted sounds like traffic drones, bass frequencies related to traffic are almost impossible to be cutoff. Furthermore windows stay open most of the time in Greece because of the mild climate, making the studied sound insulation almost impossible. The sound practices concerning Thessaloniki residents' cars have to do mainly with transforming keynote sounds to sound signals (Schafer 1977). Or the practice of creating a "selfie" (Adewunmi 2013) inside the sound space of a territory.

3.1.2. Block

The next category of solids is constituted by apartment buildings studied in a bigger scale than this of an individual building, the block. There is a plethora of state and private agencies responsible for urban planning of an area. The institutional framework regarding the formation of blocks and further building development is defined by laws regarding the totality of the Greek territory and settings formed by local municipal governments. The function of buildings in certain areas is being defined by Land Use Plan. Basically, the soundscape of a block is inseparably connected with defined use categories, meaning that sounds of industry, commerce, entertainment, housing and free spaces do not mix. The Greek continuous building system that used to prevail regarding urban blocks until 1985 (Aravantinos 1998) ordered apartment buildings to create a closed wall barrier around a block, behaving as a sound barrier between the street and the core of the block (Kang 2007). The design of a private apartment usually places bedrooms facing the open space in the center of the block, and common rooms facing the external part of the block. Therefore, when a resident is placed inside a bedroom, she can listen to a mixed soundscape of neighbors' private moments: sounds of sleeping, making love and personal discussions. Mixed replicated sounds of residents characterize the block's soundscape. Another common spatial practice among residents is to place their private cars in numerous open space garages existing in the core of the block, which is mainly used as a parking lot and not as a shared green space, or on the ground floor, the so called pilotis. As a result, it is questionable whether the bedrooms of an apartment building should face either the road or the core of the block in order to be suitable for relaxation, sleeping and experiencing private moments.

3.1.3. District

The last category of solids is the district. Until 1870 Thessaloniki was limited to its walls and every district corresponded to the national and religious origin of its residents, having a population around 80.000 people (Karadimou - Gerolimpou 2008). Each national group had its own sound practices concerning their usual occupation and religion. For example Muslims were responsible for a vast textile production for the Turkish army, as a result sounds of countless looms in the upper city, the Muslim district, were a common phenomenon. Another distinctive religious theme that occurred at the time being all over Thessaloniki was the calling of a muezzin, climbing a minaret to announce time for prayer, whilst now almost all the minarets have been torn down. A turning point in the course of Salonica's history was the big fire in 1917 that burnt a major part of the city center, the down town, and gave birth to a new functional, urban planning based on modern planning principles. Architect E. Hébrard commissioned by the Prime Minister E. Venizelos to design the contemporary image of the city; a big part has fortunately not changed until today. After the Second World War Thessaloniki started to spread east, west and north, but without central urban planning and design, and have not stopped until recently. The population stopped growing and remained stable at 750.000 people in the 1990s but, after recent events in neighborhood countries, it is now unofficially around 1.500.000 inhabitants (Karadimou - Gerolimpou 1999).

The contemporary districts of the city can be categorized in; upper town (old), down town (modern), east, west and north part of the town (contemporary). The upper town of Thessaloniki is the oldest part, the one that was not destroyed in the fire of 1917. This district was characterized a traditional landmark in 1979, as it has not been significantly altered by the changes occurred in the rest of the city (Technical Chamber of Greece 2010). The buildings are small in volume, the street layout is serpentine and the soundscape is characterized by direct, tangible bio and geo sounds (Pijanowski 2011) and also a notable absence of car traffic. The down town is constructed based on the planning of E. Hébrard, having an orthogonal road system and monuments as focal points. The existence of the car can be underlined by investigating the soundscape. But here is where the heart of Thessaloniki beats and the soundscape is always changeable, unpredictable and interesting.

The west, east and north districts have many similarities regarding a plethora of roads of high and low traffic, apartment buildings, blocks and their typical soundscapes. One large difference among them is that a major part of the west district is characterized by industrial and degraded areas. Nowadays very few sounds have to do with industry in contrast to the past decades. In contrary, music in large volume from low fidelity speakers and traffic dominate this soundscape. The east district is designated by the water front, many luxuri-

ous buildings and villas. The drones of traffic are of lower density, except some high speed roads, and the average environmental ambience is calmer. Lastly, the north district, placed in a higher altitude than the others, is nearer to the forest of SeichSou with a low building ratio and small structure volumes. The bio and geo sounds of the nearby forest are noticeable, the traffic is much lower and the soundscape resembles to this of a rural area.

3.2. Networks

The second major category of sonic architectural ecologies has to do with sounds, sonic effects and soundscapes connected with flows and public, open space environments. The design of roads and nodes has preceded the shaping of solids and the edge, a natural border between the city and the sea, played a major role in the formation of the city. Concerning the soundscape, sounds of the street scar urban life and mark indelibly everyday routine. The recent creation of a network of pedestrianized streets and the relief of car traffic, especially in the city centre, mitigated the intrusion of vehicle engine sounds in the daily soundtrack. But flows and places where people concentrate constitute the foundation of public urban life, the places where city's inhabitants coexist and interact. So, sounds related to networks constitute the soundscape of urbanization.

According to K. Lynch, the image of the city was defined by five elements: paths, edges, districts, nodes and landmarks (Lynch 1960) but these element types do not exist in isolation. Therefore, sonic architectural ecologies, proposed by the writers, do not have solid and inviolable boundaries but, coexist in fragile and variable relationships. The soundscape of a path is mixed with the sounds of a house; a place can be considered as a node and at the same time as a landmark. There are three categories of networks: path, node and edge.

3.2.1. Path

The first category of networks is the path, namely all the channels for directed movements. They could be roads, sidewalks, canals and railways. Thessaloniki, one might say, is a city exclusively constructed to facilitate car movement. Sidewalks are very small and usually occupied by parking cars. Urban planning uses a functional prioritisation of roads: main roads in favour of long and high speed transportation, secondary roads serving middle length and middle speed transportation, collective routes and local roads (Andrikopoulou 2007). Furthermore, the shaping of the roads, rectangular or radial, is relevant to the age of their formation and the way the city has developed over the centuries.

The soundscape of the road is characterized by a constant drone effect (Augoyard 2009) as a continuous sonic background in everyday practice. While sounds of engines prevail

for those outside a vehicle, the soundscape inside a car is a whole different situation. Radio, deep bases and popular tunes distinguish from keynote sounds of constant high speed movements of vehicles. However, the street occupied by people can be transformed entirely and bear different messages, ones that have to do with demonstrations and public requirements; a usual phenomenon in the city of Thessaloniki through the history and, especially, the last five years due to the economic crisis.

The soundscape of a sidewalk has a different formula. Sounds that have to do with the body, walking, speaking and personal stereos (Bull 2000) manage everyday movements and flows of people on foot. There are also means of public transport, like buses in this case, that create a unique soundscape for a passenger, mixing sounds of numerous people coexisting in a small, closed, moving place. Again the body is staring in this mass flow, confounded with the recorded voice through the speakers of the bus, informing the passengers in which bus stop they are being at the moment. A last addendum in this category is the occurrence of bike roads lengthwise the seafront. Petals and sounds of cycling redefined movement in the city and also the usual, monotonous soundtrack of motion. The water paths are still pending.

3.2.2. Node

The second category of networks is the node, mainly a place where flows intersect and people concentrate. A node is usually the epitome of a district and shapes its temporary identity. The sounds of the nodes play a very important role in the shaping of the districts' character (Almasy 2014). As each district has its own nodes, the writers present the main nodes of the down town, where the heart of the city beats twenty-four hours a day. The main nodes can be categorized as: a. Educational – Aristotle University and University of Macedonia, b. Cultural and commercial exhibitions – Helexpo and museums' district, c. Pedestrian Roads – Aristotelous, Dragoumi and AgiasSofias Street, d. Entertainment – Ladadika, e. Commercial – closed markets of Modiano and Kapani (Kesidis2014).

Sounds that have to do with the body prevail inside the nodes. Some nodes, like Aristotle University and Helexpo, are large free spaces with few buildings, where direct sounds of individuals fade out. On the other hand, other nodes, like Ladadika and closed markets, are part of the urban network, where the individual does not lose herself. Soundscapes of the nodes are characterized by their function. Sounds of educational nodes have to do with young people's sound practices: dialogues, concerts, music and demonstrations. Sounds of cultural and commercial exhibitions are unfolded inside the museum buildings and Helexpo buildings. The soundscape of the museums is marked by the same silence asserted inside religious buildings except for some peculiar sounds generated by works of sound art. Helexpo build-

ings are marked by the sounds of hordes of different professionals attending commercial exhibitions throughout the entire year. Pedestrian roads and Entertainment nodes have almost the same soundscapes except for the fact that roads are characterized by the notion of public street art while entertainment nodes are described by indoors private entertainment. Street musicians on pedestrian roads are being replaced by professional musicians and D.J.s inside the premises of Ladadika. Lastly, closed markets, hybrids of morning commercial life and night entertainment, create varying soundscapes. From the voices of merchants trying to sell their unique products in the morning to the post rock music genre that fills the closed stands during the night, the transformation of these places is spectacular.

3.2.3. Edge

The third category of networks is the edge. The most profound, interesting edge and impervious barrier of Thessaloniki is the waterfront. Sounds of sea and traffic mix together in a very interesting formula. After long years of political struggles, Thessaloniki acquired an amazing seafront (Nikiforidis 2014) which highlights the continuous flâneury along the sea. Cars are prohibited, so the traffic noise is calmer and the cycling roads welcome bicycle use. Ambience is calmer and relaxed, in contrast to other small green public spaces that are vanished among the urban solids, and the soundscape is truly unique. The obligatory urban void created by the sea makes urban habitation almost beautiful.

3.3. Identities

The last category of sonic urban architectures has to do with sounds, sonic effects and soundscapes which are unique and unrepeatable. There are countless studies and concepts concerning identity, given that identity is always multiple, unstable and paradoxically enduring (Andermatt - Conley 2013). The previous categories of solids and networks have many similarities with other Greek coastal cities. But this category has to do with particular sounds, acoustics and acoustic communities that shape the dynamic and changeable identities of what is called Thessaloniki today. The spatiality of this category is clearer towards landmarks and voids, but very uncertain towards communities. The difficulty, in this case, lies also towards the absence of a plethora of landmarks that exist only in the memories of older people. It is true that a cognitive map of space is a private construction that includes response to sensory stimuli modified by personal experience (Blessner 2007). So this last category attempts by design to set an impossible unified sonic framework towards individuals and groups who experience Thessaloniki either for the first time or those who have experienced it countless times. The three categories of identities: landmark, void and community.

3.3.1. Landmark

Thessaloniki's landmarks can be separated into existing and absent ones. A classification concerning existing landmarks has to do with the historical time of their construction: roman, byzantine and contemporary monuments. Roman and Hellenistic antiquities are located beneath the current urban surface, deep into the ground as large excavation groups. In order to experience these ancient buildings, the visitor has to walk below the usual height of the city's ground level. Large excavations, treated as open spaces, reveal the fragments of previous cultures that used to exist in the same territory. The listener moves from the surface of the city to the bottom of the excavation, experiencing the sonic effect of cut out. Here the drones of street vehicles are slowly disappearing. The rest of the city's soundscape is set on a lower volume and direct bio and geo sounds are clearer. On the other hand, byzantine monuments are characterized as closed spaces with mysterious, sacred acoustics. Architects during the byzantine era knew a lot about acoustics and even more about the potential of music to inspire religious devotion (Howard 2009). Circular domes, naves and secular buildings with extraordinary acoustics, in combination with exclusively vocal religious music, create a unique old soundscape contrasting today's usual sounds. Contemporary monuments, constructed by hard materials with extraordinary geometries, reflect the sound waves and create a feeling of continuous resonance. The sounds cannot be absorbed, due also to the minimal use of soft materials, and produce an infinite atmosphere of being on the cutting edge of consciousness. Contemporary architecture, cold and sharp, is more serious and unquestionable than plain and low budget architectural constructions.

3.3.2. Void

Thessaloniki's major urban voids are the sea of Thermaikos and the forest of Seich Sou. Fortunately, there has been no building construction upon the sea neither total deforestation. These voids constitute the necessary pauses inside the thick, urban fabric. The feeling of the city disappears, vision and hearing relax by focusing on bio and geo elements of the soundscape. Nature fights to dominate in the sonic and vision field. Moreover, the existence of small random voids distracts the density of the urban networks. Empty land estates and incomplete or abandoned due to the economic crisis architectural shells constitute this category. The soundscape is relieved, sound barriers are tiered down and unexpected, non-systemic uses of the abandoned buildings create new acoustic territories (small studios, galleries, self-managed groups, etc.).

3.3.3. Community

There are many concepts concerning community (Mayo 2001). In this paper, this category has to do with the notion of acoustic communities defined by M. Schafer (Schafer 1977) and not by B. Truax (Schrimshaw 2011). The writers are interested in the way a community is defined along acoustic lines, always in collision with its spatial territory. These acoustic communities can be defined by sounds concerning religious, every day and particular acoustical practices. The plethora of these acoustic communities is vast and cannot be captured in a paragraph. These unique urban soundscapes concerning individual groups existing in the city can only be highlighted and fully appreciated through the studies of sociologists, anthropologists and other humanities scholars.

4. Conclusions

Architects can evaluate urban changes that matter and decode the acoustic, spatial habits of its residents by studying the changing sonic environment and identifying, preserving and improving their sonic urban environments. The conclusions of this study can be summarised as:

- a. The significance of the sonic environment through the architectural study of a place, due to its multiple identities, is inextricably linked with its soundscapes. As a result, an architect is required to study and listen to the place she is going to modify via her practice. Solids, networks and identities reveal a hidden world of fragile relationships that contains vast amount of information worthy of manipulation or preservation.
- b. The study of the sonic environment ought to be continued after the architectural intervention as well, in order for the architect to be aware of the changes she provoked via her practice. This study ought to reveal how the architectural practice changed the identity of the place.
- c. The exact opposite process is meaningful and important as well. Studying of the changing soundscape concerning solids, networks or identities, may lead to architectural intervention that could preserve or improve not only the sonic environment, but also the sustainable function of a city.

REFERENCES

- Adewunmi, Bim.** "The rise and rise of the 'selfie.'" The Guardian. <http://www.theguardian.com/artanddesign/2013/apr/02/rise-and-rise-of-the-selfie> (accessed May 28, 2014).
- Ahrweiler, Hélène.** "The Making of Europe, Lectures and Studies". Athens: Livanis, 2000. (in Greek)
- Almasy, Ray.** "Spike Lee explains explosive-filled gentrification rant." CNN. <http://edition.cnn.com/2014/02/26/us/new-york-spike-lee-gentrification/> (accessed May 29, 2014).
- Andermatt - Conley, Verena.** Relational architectural ecologies: architecture, nature and subjectivity. London: Routledge, 2013.
- Andrikopoulou, Eleni, Athina Giannakou, Grigoris Kafkalas, Magda Pitsiava - Latinopoulou.** The city and urban planning for sustainable development. Athens: editions Kritiki, 2007. (in Greek)
- Aravantinos, Athanasios.** Urban Planning for a sustainable development of urban space. Athens: editions Simmetria, 1997. (in Greek)
- Augoyard, Jean Franc.** Sonic experience a guide to everyday sounds. Montreal Que.: McGill-Queen's University Press, 2006.
- Ballantyne, Andrew.** Architecture theory: a reader in philosophy and culture. London u.a.: Continuum, 2005.
- Banham, Reyner and Joe Day.** Los Angeles; the architecture of four ecologies. Berkeley: University of California Press, 2009.
- Benjamin, Walter and Michael William Jennings.** The writer of modern life: essays on Charles Baudelaire. Cambridge, Mass.: Harvard University Press, 2006.
- Blessner, Barry, and Linda Salter.** Spaces speak, are you listening? experiencing aural architecture. Cambridge, Mass.: MIT Press, 2007.
- Bull, Michael.** Sounding out the city personal stereos and the management of everyday life. Oxford: Berg, 2000.
- Filippidis, Dimitris.** Contemporary Greek Architecture. Athens: Melissa, 1984. (in Greek)
- Greek Statistical Authority.** "Population of Thessaloniki", 2011 http://www.statistics.gr/portal/page/portal/ESYE/BUCKET/General/A1602_SAM01_DT_DC_00_2011_02_F_GR.pdf (Accessed May 28, 2014). (in Greek)
- Howard, Deborah, and Laura Moretti.** Sound and space in Renaissance Venice: architecture, music, acoustics. New Haven: Yale University Press, 2009.
- Kang, Jian.** Urban sound environment. London: Taylor & Francis, 2007.
- Kannelis, Ilias.** "Thessaloniki that resists." Tachidromos, April 16, 2005. (in Greek)
- Karadimou - Gerolimou, Aleka.** "The series of Thessaloniki's transformations." Vima, December 19, 1999. (in Greek)
- Karadimou - Gerolimou, Aleka.** Thessaloniki's anadixis, maps of memories. Thessaloniki: Editions Ziti, 2008. (in Greek)
- Kesidis, Tolis.** "Archades of Modiano and Kapani (Closed markets of Thessaloniki)." exostis-

- press.gr. <http://www.exostispress.gr/Article/stoa-modiano--kapani-agores-tis-thessalonikis-0> (accessed May 29, 2014).
- LaBelle, Brandon.** Acoustic territories sound culture and everyday life. New York: Continuum, 2010.
- Lazaridis, Pantelis.** The evolution of the modern city- the image of the home environment. Thessaloniki: Aristotle University Press, 1980. (in Greek)
- Leach, Neil.** Rethinking architecture: a reader in cultural theory. New York: Routledge, 1997.
- Lynch, Kevin.** The image of the city. Cambridge, Mass.: MIT Press, 1960.
- Mayo, Marjorie.** Cultures, communities, identities: cultural strategies for participation and empowerment. Houndmills, Basingstoke, Hampshire: Palgrave, 2000.
- Mazower, Mark.** Salonica, city of ghosts: Christians, Muslims, and Jews, 1430-1950. New York: Alfred A. Knopf, 2005.
- Ministry of Culture and Sports.** "Rotunda, Thessaloniki.", 2012 http://odysseus.culture.gr/h/2/gh251.jsp?obj_id=1812. (Accessed May 28, 2014). (in Greek)
- Moscof, Kostis.** Thessaloniki, a compradorial city. Athens: Stoxastis, 1978. (in Greek)
- Nikiforidis Prodromos, Cuomo Bernard.** "Réaménagement du Nouveau Quai / Thessalonique - Nikiforidis/ Cuomo." <http://www.nikiforidis-cuomo.com/fr/work/urban-design/3> (accessed May 29, 2014).
- Official Gazette of the Greek Government,** "Law No 4178/2013," August 8, 2013. (in Greek)
- Papastathis, Christos and Achilles Hekimoglou.** The great fire of Thessaloniki (1917). Thessaloniki: E.N.Manos Ltd, 2010.
- Pijanowski, Bryan C., Luis J. Villanueva - Rivera, Sarah L. Dumyahn, Almo Farina, Bernie L. Krause, Stuart H. Gage, and Nadia Pieretti.** "Soundscape ecology: The science of sound in the landscape." *Bioscience* 61: 203-216.
- Rawes, Peg.** Relational architectural ecologies: architecture, nature and subjectivity. London: Routledge, 2013.
- Schafer, R. Murray.** The soundscape: our sonic environment and the tuning of the world. Rochester, Vt.: Destiny Books, 1977.
- Scrimshaw, Will.** "The Acoustic Community." [willschrimshaw. http://willschrimshaw.net/subtractions/the-acoustic-community/](http://willschrimshaw.net/subtractions/the-acoustic-community/) (accessed May 29, 2014).
- Technical Chamber of Greece.** "Traditional settlement of Upper City. Upgrade Recommendations.", 2010. http://portal.tee.gr/portal/page/portal/teetkm/DRASTHRIOTHTES/OMADESERGASIAS/oe_paradosiakos_oikismos_anw_poli.pdf (accessed May 28, 2014). (in Greek)
- Vlacos, Xenophon.** Studies on Greek housing. Thessaloniki: Paratiritis, 1979. (in Greek)

Characterization of Sonic Ambiance Generated by an Architectural Device: Case of Traditional *Gannariyya* and its Contemporary ‘Reproduction’

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Abstract

The proposed study concerns the characterization of sound ambiances produced by the traditional architectural device *gannariyya* and its contemporary reproduction, implanted in two different neighboring urban fabrics of the capital Tunis. Thus, we adopted an ambiantal multidisciplinary method based on two approaches. First, quantitative approach involves observations in situ and the processing of audio signal measurements and sound recordings taken simultaneously from both sides of the *gannariyya*. Second, qualitative approach implies interviews with users in addition to recognize their perception of the sound phenomenon. Our field of study is the traditional medina of Tunis and the neighboring modern city. The results collected through measurements, frequency analysis and interviews, show that both types of device filter the sound signal differently. They also reveal that new building materials are responsible of this gap.

Keywords: Soundscape, Sonic ambiances, *Gannariyya*, Reproduction, Sound signal, Propagation's area, Sonic characteristics, Frequency, Perception

1. Introduction

In the nineteenth century¹, new regulations established in the capital Tunis led to decisive change of the built environment, urban and architectural. At the end of the nineteenth and the beginning of the twentieth century², the urbanization and modernization operations of the city have been intensified (Ammar 2006)³. Consequently, the organization of the traditional urban tissue progressively gives way to a structured urban network. The downtown of Tunis was then marked by the juxtaposition of two contrasted urban forms [Figure 1]. On the one hand, we have the irregular tortuous tissue of the traditional medina, called Arab town too,

(...) a real labyrinth, where streets and dead ends draw a very complicated urban network, where the most magnificent paths have sometimes only two meters width. (Baraudon 1893)

On the other hand, we have the structured orthogonal plan of the modern city or *European town*.

It is in front of the existing city and the ancestral urban Tunisian culture, that a new juxtaposed city which triumphs with its rectilinear plans, its new islets square or rectangular, (...), its architectural prescriptions, its equipments and infrastructures. (Ammar 2011)

1. During the nineteenth century, industrialization and urbanization period particularly in the European countries, the city is redesigned and reinvented.

2. Establishment of the French colonization in Tunisia in 1881.

3. Tunisian architect and historian, HDR in architecture (ENAU), specialist in the fields of architectural history, urban history, and spatial analysis.

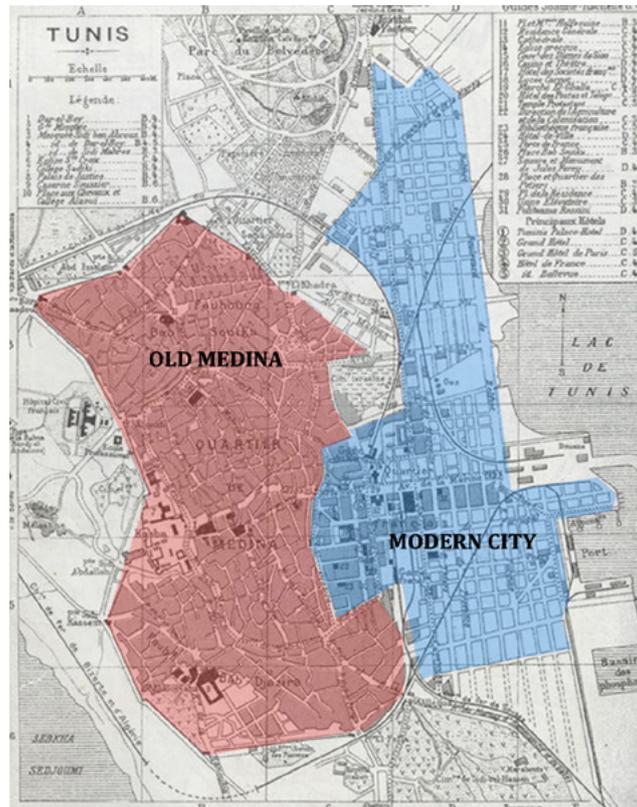


Figure 1. City of Tunis Plan in 1906 (Sebag 1998) .

Besides these urban transformations, the architecture of the city has been also affected; so modern architecture replaced the traditional architecture. However, in order to safeguard architectural heritage, the architects reused several built elements of the medina on contemporary façades in a different way (new shapes and implementation with modern materials).

1.1. New urbanism, new sounds, new soundscape

The new urban design of Tunis City is the consequence of conditions and requirements of this time with firstly the advent of the industrial revolution, and also the development and acceleration of the transport means (cars, buses, trams, trains and planes). Therefore, all these circumstances were at the origin of the appearance of new sound productions, especially mechanical sounds. These new sounds with high intensities and new physical properties are contrasting with the sonic ambiance of the old town.

We declare that the splendor of the world grew rich by a new beauty: the beauty of speed. A racing car with its ornate chest with big pipes, like snakes with an explosive breath... a car arises which looks to run on grapeshot. (Marinetti 1909)

The urban sound environment two parameters in close interaction: the human, natural, mechanical sounds and the urban space. The propagation's area qualified by the road width, the building heights and the façades materials, influences sound waves and determines traditional and modern soundscapes⁴.

To start with, the traditional medina is structured according to a mixed center called *souk*⁵ which is very bustling. Its sounds are characterized first by commercial and artisanal activities (beating of the shoemaker, rhythmic sounds of the iron forger, noises of the carts, etc.) and second, by a large, noisy human animation (screams of merchants, laughs, etc.). Around this central core, develops less noisy residential space. Here, the sounds attest especially of the presence of human (discussion, footsteps, children playing, etc.) and natural sounds (singing of birds, wind sound, etc.). The propagation's area of the medina is compound by tortuous paved roads (1 to 4 meters width) and stone constructions with one floor only.

The sound sources and the propagation's area are different in the surrounding modern city where commercial and residential activities are merged. The three types of sounds are defined otherwise. The mechanical sounds of cars and new jobs⁶ are very noisy and mask the low intensities of human and natural sounds. We then attend to a form of "progressive devocalization of the city" (Bardyn 2000). In fact the urban fabric, with wide roads and high buildings made with brick, steel and large glazed windows, offers a new propagation's area.

From this brief comparison, we note that the difference is significant between two neighboring soundscapes: distinct sounds and distinct propagation's areas. The reproduction of architectural devices of the medina on contemporary façades corresponds to submit them to new acoustic conditions different from the original sound environment. The aim of their initial design could be distorted.

4. Soundscape in a notion introduced by Raymond Murray Schafer in the 1970's, in Schafer, Raymond Murray. *The Tuning of the world*. New York: A. Knopf Inc., 1974.

5. *Souk*, arabic word, means shopping center.

6. Appeared with the industrialization.

1.2. The *gannariyya*, ambiantal device extracted from its original sound environment, reproduced in a new soundscape

The *gannariyya*, an opening device representative of traditional architecture of Tunis, is a famous example of this reproduction. Called also “light wooden balcony” (Revault 1980), the *gannariyya* is a component of the arab-islamic architecture. It appears on the façade, at the first level and overhangs the entrance door of the beautiful houses enlightening by this way the living room. It may be masonry or wooden. Its most known properties are those of light filtering through the wooden *moucharabieh*⁷ (Fathy 1986), refreshing the air and allowing women to watch outside without being seen [Figure 2]. Its sonic properties, less known, would make urban sounds more perceivable by users thanks to the tight wooden elements. In this case, its extraction from its original sound environment and its reproduction in another soundscape with new physical properties, exposed to the road traffic sounds, might be inappropriate.



Figure 2. Domestic actions and ambiances offered by the *gannariyya*.

Old streets with the voices of passers-by and merchants, the sounds of carts wheels, reflection on the “sound paving stones” (Harry 1910) and massive walls, produce a specific sonic atmosphere. These sounds propagate in the narrow street, enter by the wooden *gannariyya* and arrive amplified at the human ear. This acoustic structure is specific to the couple of parameters: old fabric, traditional *gannariyya* [Figure 3]. Contemporary Street, with its mechanical sounds, its asphalt ground below and the contemporary *gannariyya* made with modern materials presents another acoustic structure [Figure 3].

7. Wooden elements woven together at regular intervals.

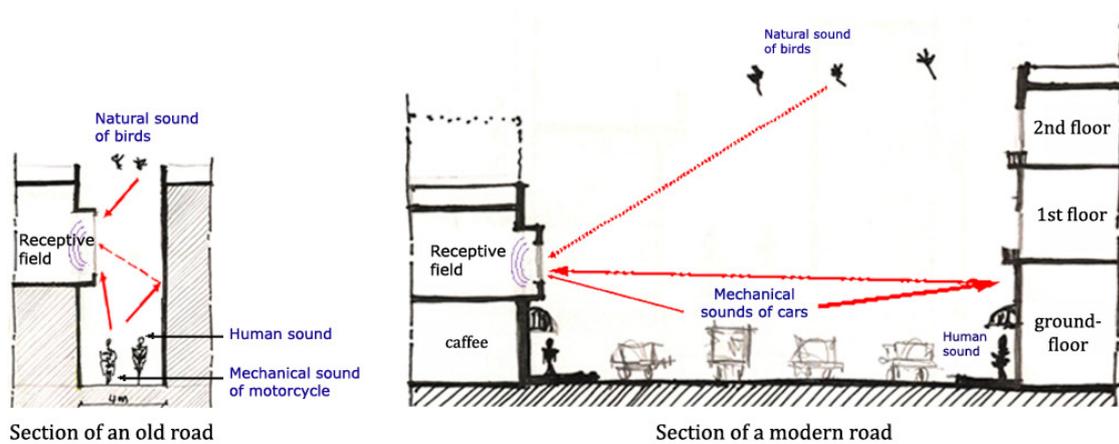


Figure 3. Examples of Sound situations in both types of tissues (drawings by the author).

Being interested on sonic properties, the goal of this research is to develop a methodology to characterize the sonic ambiance generated by an architectural device according to its materials of construction and its site of implant. We then focus on the traditional and contemporary *gannariyyas* located in two different tissues of the downtown of Tunis. We wonder if the reproduction of the *gannariyya* has modified the original extrinsic and intrinsic properties, changing so the sonic quality and the user's perception.

2. Field of study

To obtain rigorous results, we chose the same type of device, heterogeneous masonry wood *gannariyyas*, all salient, localized at the first floor and with close dimensions. In order to reduce the constraints of our experiments, we made abstraction of some criteria such as: the cutting of the *gannariyya*'s envelope, the number of its frontal or lateral spans. We studied six devices: three traditional and three new devices. We will present them according to their site of implantation: traditional or modern city [Figure 4].



Figure 4. Examples of old and new fields of study (photos by the author).

In the medina of Tunis, we chose three devices [GI, GII and GIII]. In a same street, we took a traditional device [GI] and a contemporary *gannariyya* [G.II]. The third device is traditional [G.III] located in the *Pacha*⁸ Road where exists a large number of richly decorated *gannariyyas*.

For the new city of Tunis, three *gannariyyas* have been selected [GIV, GV and GVI]. We chose an old device [G.IV] belonging to the suburb of medina where the street has been modernized and asphalted. We also retained a contemporary *gannariyya* [G.V] in a boulevard close to the medina⁹. Finally, the last device [G.VI] is originally traditional and it has been modified with modern materials (like double glazing). We will consider it as contemporary device.



Figure 5. Studied devices (photos by the author).

8. The word *Pacha* is an arabic word, it corresponds to the highest Tunisian political class in the past until the independence in 1956 (such as president).

9. The wall of the medina was demolished at the end of the nineteenth century to accommodate the new form of vehicular traffic.

3. Methodological approach

To characterize the acoustical properties of the different devices, we will adopt an ambiantal multidisciplinary approach that will cross various data. Our method consists of sound signal analysis and users' perception.

3.1. Characterizing the sonic ambiance

The sonic ambiance is the conjunction of three parameters in interaction: the sound signal associated to our sense of hearing, the area of its propagation and its perception by a user (Augoyard 2003)¹⁰. This definition allows us to identify three categories of data which require then three modalities of analysis: observations in situ, audio signal measurements and the user surveys. These types of analysis can be classified into two approaches. An objective approach includes observations in situ, collecting and processing of the sonic corpus. Subjective approach involves the testimony of the users.

Sonic corpus and equipment

We will adopt two techniques made simultaneously by two investigators to collect the sonic corpus: audio signal measurements and sound recordings. Here, the simultaneity is required for two reasons. First, sound levels must correspond to the sound sample recorded. Furthermore, the comparative study must be carried out in the same acoustic conditions (similar sound sources, same intensities and frequency composition).

Audio signal measurements

Audio signal measurements will be captured simultaneously and at equal distances from the *gannariyya*. Two investigators will be equipped with the same equipment¹¹, decibel sound meter and recorder. The first investigator placed the urban space will bypass the *gannariyya* at the same distance 'd' [Figure 6]. The second investigator will be immobile inside the receptive field at the similar distance 'd' from the center of the *gannariyya*.

The decibel sound meter will register in intervals of 10 minutes¹² in order to get the Equivalent Sound Level L_{eq} and the Maximum Sound Level L_{max} at the entry and the exit of the device. A simple comparison of the numerical values input and output the device will

10. Jean François Augoyard defined the ambiance as the combination of the physical signal related to the senses (hearing, vision, olfaction, etc.), the propagation's area, the psychology, the culture and the perception of users.

11. Equipment was provided by the unit U2S, Research Unit on Systems and Signals of the National School of Engineering of Tunis (ENIT).

12. Minimum time to get significant values of the L_{eq} and L_{max} .

allow us to know filtering properties of the *gannariyya*: reducing or amplifying the audio signal level.

Sound recordings

The sound is complex, composed by various frequencies (low, medium and high) that human hearing is unable to distinguish them. That's why an objective analysis of the physical audio signal is necessary. Therefore, we will begin by taking audio recordings which will be taken, at the same time, in intervals of 10-15 minutes by two investigators equipped with two recorders: a digital recorder Model Micro Track 24/96 outside, a digital Video Recorder Zoom Q3 inside the receptive field [Figure 6].

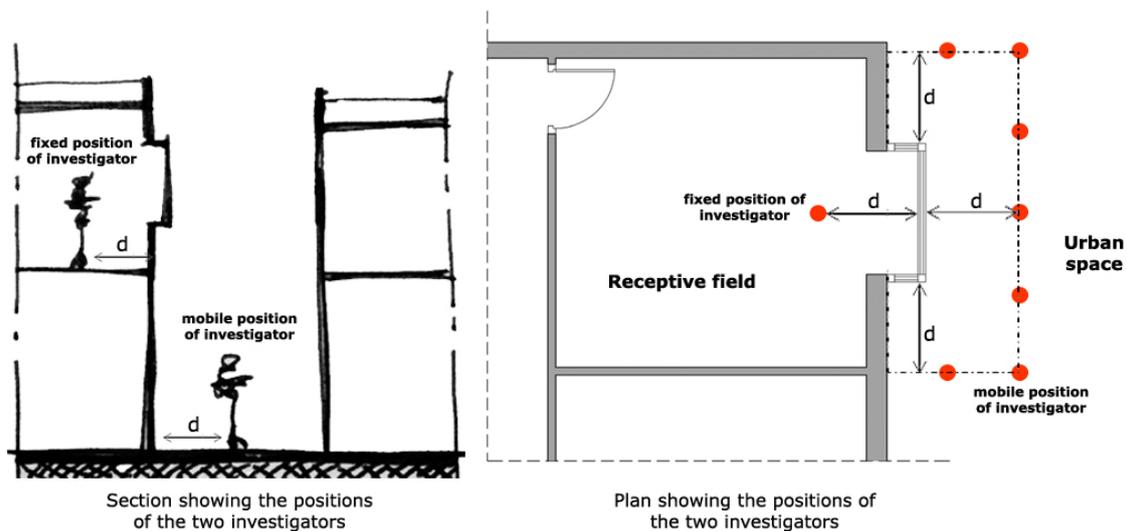


Figure 6. Survey procedure of audio sound measurements and sound recordings (drawings by the author).

Sound recordings will be analyzed by two methods. First of all, a spectral analysis will be done using sound processing software Audacity¹³. The analysis will concern sound fragments with duration of 15 to 60 seconds and with various sound signals. Exterior and interior sound fragments have to be synchronized. After superposing input and output curves corresponding to the sound fragments, we will compare it. This comparison will allow us to have preliminary results about the filtering of sound waves by the device. The filtering could be significant on low, medium or high frequencies, or be the same on the entire frequency band.

13. Audacity is 'a free software and cross-platform for recording and editing sounds', accessed, April 12, 2014, <http://audacity.sourceforge.net/?lang=fr>.

Second and for a more detailed analysis of the sound recordings, they will be subject of detailed spectral analysis¹⁴. The first stage of this work will be the choice of stationary sound fragments having a long duration and rich frequency content. Exterior and Interior fragments will be synchronized. We chose the method of averaged smoothed periodogram of Welch¹⁵ (estimator with low bias and variance) considered after several tries the best for its best results. This method will allow us to make the Transfer Functions¹⁶ of the studied devices. The different curves will be then superposed and used for the comparative analysis.

Perception and qualification of the space with *gannariyya*

We will interview the users to define their positive or negative appreciation of the sonic atmosphere inside the space with *gannariyya*. We will ask them the following questions:

What do you think of this room with *gannariyya*? How can you qualify its sonic ambiance? (Investigators)

The user will appeal to his memory to answer and will try to describe his perception of the sonic ambiance. Using the different testimonies, we will write a short text summarizing the real life experience of each user. This text will be then analyzed: key words that expose the sound quality, description of the sonic atmosphere of the receptive field (quiet/noisy), remarkable sound sources, etc.

3.2. Cross-analysis

The sequel of the study will concern the confrontation of the different quantitative and qualitative methods. This cross-analysis was proposed by two researchers of the CRESSON¹⁷, G. Chelkoff and J-F Augoyard in 1981, (Chekoff 2008). First, we will compare the results obtained from the sound processing and the frequency analysis. Second, we will correlate the physical results with the survey among the users.

14. This part of the proposed study was developed in the framework of international cooperation CMCU which associates ENAU by its research team ERA, ENIT by its research unit U2S and UMR 1563 of CNRS composed by CERMA and CRESSON in an interdisciplinary research project titled '*Perception altérée des ambiances sonores en milieu urbain. Corrections et caractérisations: apports des textures audio*', 2012.

15. Duration of analysis: 5.6s with a sampling frequency $F_s = 44.1$ kHz, choice of the analysis window: Bartlett type (good power of spectral resolution), length of the analysis frame: 256 samples ($F_s = 44.1$ kHz), average on 976 sequences, overlapping percentage 50%.

16. $H(t) = S(t)/E(t)$, with $E(t)$: the sound at the entrance of the device, $S(t)$: the sound at the exit.

17. CRESSON: Centre for Research on the Sound Space and the Urban Environment, Grenoble.

4. Multidisciplinary results

4.1. Listening and exploring the fields of study

The experimental work has been made in the same way in all studied fields during two weeks. The first observations in situ allowed describing the sonic signals of the urban sound environments of the study. The three sites in the medina are residential; we noticed that human voices and singing of birds were very perceivable. Nevertheless, in the neighboring modern city, human sounds were less heard and bird sounds were heard a little bit. However, the sounds of car engines and car horns were much more perceivable.

For a better understanding of the six receptive fields, we made architectural statements [Figure 7] and drew the organisation of furnitures in the different spaces with Autocad software. We also determined the habitual places of interviewed users, near or far from the *gannariyya*.

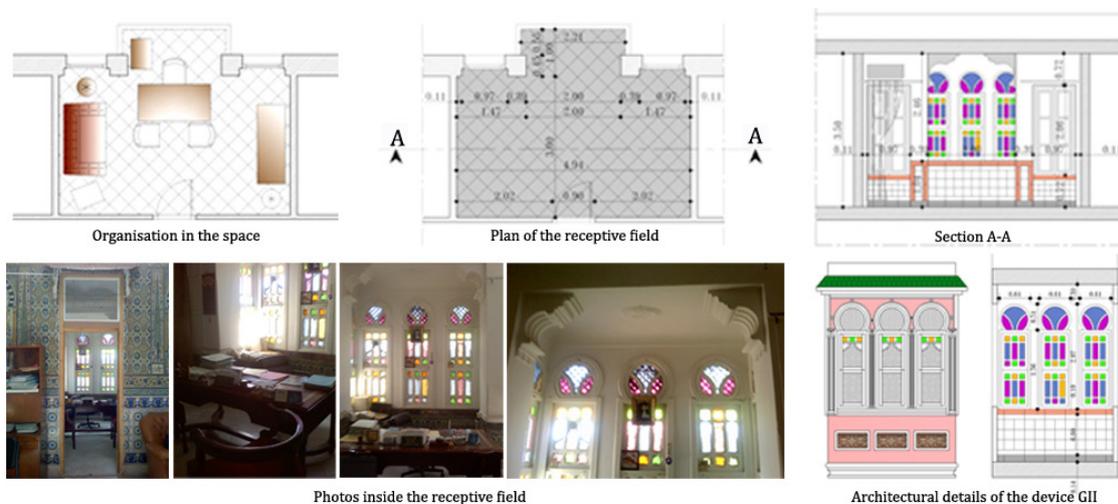


Figure 7. Example of architectural corpus: Traditional device G.II (drawings by the author).

During audio sound measurements inside and outside the receptive field, we described the sound events and the corresponding intensities measured by the decibel sound meter. We noticed that the sound level rose considerably in the presence of the mechanical sounds such as car or motorcycle. We prepared tables which reproduce the values of the L_{eq} , L_{max} and the remarkable sound events inside and outside the receptive fields (example: Table1).

Table 1. Example of audio signal measurement: Field of study 1 in the medina, traditional device G.I.

Device GI	Leq dB(A)	Lmax dB(A)	Remarkable sound events
Outside	66	54	<ul style="list-style-type: none"> • Most of the time, the sound level is under 60 dB (A) • Continuous sound of hammer • Continuous singing of birds • Passage of people • Sound of the shoes heels of girls • Passage of a noisy motorcycle • A knock on neighboring door, door slamming • Keys sound • Ring of mobile phone • Music, sound of a musical instrument • We hear sounds coming from other streets • Passage of a wheelbarrow clean.
Inside	49.1	47.1	<ul style="list-style-type: none"> • More than 50% of the time, the sound level is between 39 and 40 dB (A) • At the passage of a motorcycle, the sound level increases • The sound level drops gradually after the passage of the motorcycle • We listen clearly discussions of people. • Door opening, door slamming.

The analysis of indoor and outdoor sound levels showed that the exterior sound levels decreased for all cases in the receptive field. The reduction of L_{eq} for the contemporary devices was significant (reduction of 30 and 21 dB (A) of the exterior L_{eq}) if we compare it to the values L_{eq} input and output the traditional *gannariyyas* (reduction with 16 and 20 dB (A) of the exterior L_{eq}).

The first step of the audio signal processing made by Audacity software allowed drawing the audio spectrums of indoor and outdoor sound fragments [Figure 7 and Figure 8]. The audio spectrum presents the sound levels (kHz) according to the time (minute and second). The pink color represents the sound events and the blue color is the background noise. The comparison of the interior and exterior spectrums of the three contemporary *gannariyyas* showed that the sound levels decreased considerably [Figure 8]. However, this decrease is less important for the three traditional devices [Figure 9].

The confrontation of the results obtained from these two first analyzes showed that, on the one hand they coincide, and on the other hand they attested of the considerable reduction of the sound levels by the three contemporary devices. We can deduce that the devices made with modern materials offer a sound insulation compared to the traditional materials.

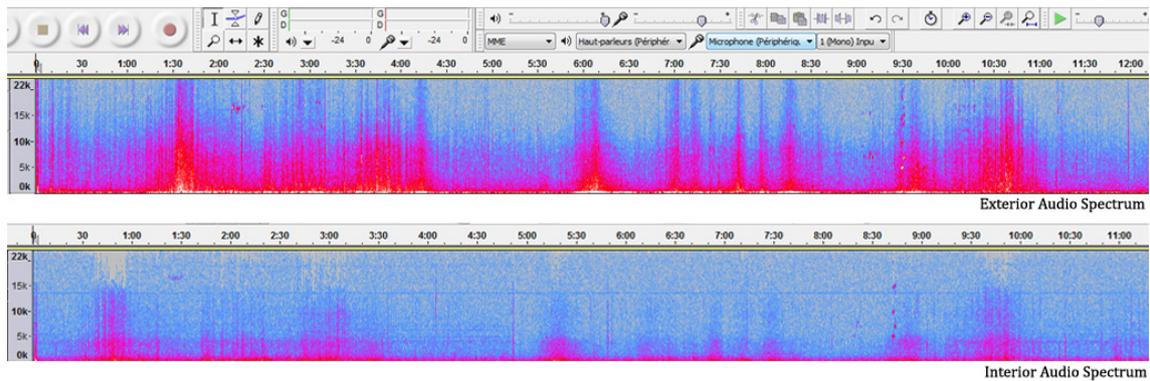


Figure 8. Exterior and Interior Audio Spectrums of traditional device G.II, field of study 2: old medina.

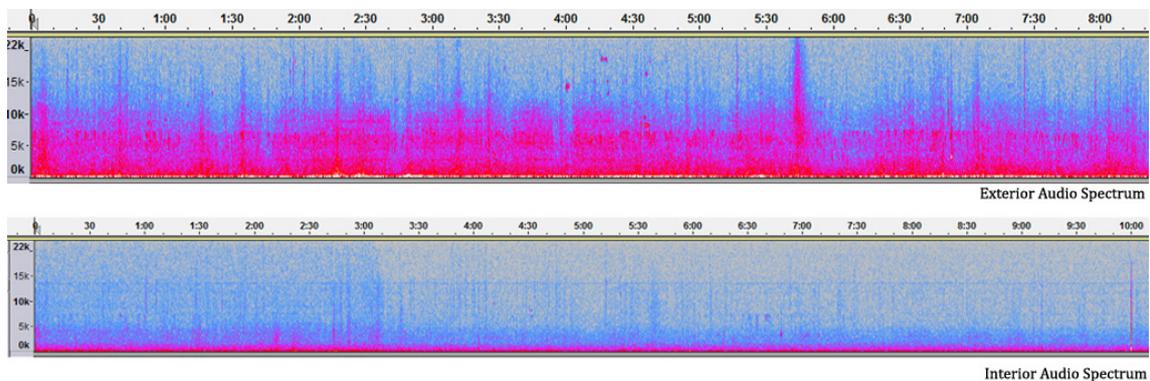


Figure 9. Exterior and interior Audio Spectrums of contemporary device G.V, field of study 5: modern town.

4.2. Frequency analysis

At this stage of study, it appears indispensable to refine the analysis of the sound recordings. To start with, we used the Audacity software to do the frequency analysis of the chosen sound fragments. The obtained interior and exterior sound spectrums have been superposed using Photoshop software. The comparison of the audio spectrums superpositions of the traditional *gannariyyas* gave similar results. Indeed, the profile of the interior spectrum didn't decrease very much; the bass, medium and high frequencies of the interior spectrum were moderately high comparing to the exterior spectrum. Therefore, we can say that traditional devices greatly didn't affect very much these types of frequency. Concerning contemporary devices, the graphs showed a considerable decrease in all the wave band, especially on high frequencies that disappeared beyond 6 kHz. This decrease is less important on the bass and medium frequencies.

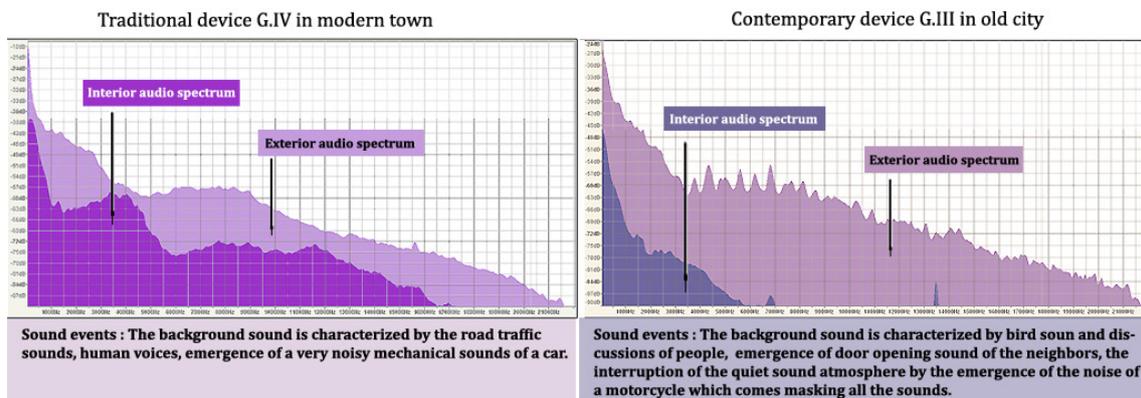


Figure 10. Superposition of interior and exterior Audio Sound Spectrums.

By this first spectral analysis, it must be pointed out that the studied traditional and contemporary devices affect differently the sound waves. This analysis was deepened by the Transfer function method. The work concerned four *gannariyyas*: two traditional devices (G.I and G.II) and two contemporary devices (G.III and G.V). Then, the transfer functions were superposed to facilitate the comparison [Figure 12].

We also tried to define some examples of sounds on the frequency band. We specified their physical characteristics by their spectrum of amplitude. The chosen sounds were motorcycle, bird, human speech and ambulance siren [Figure 11].

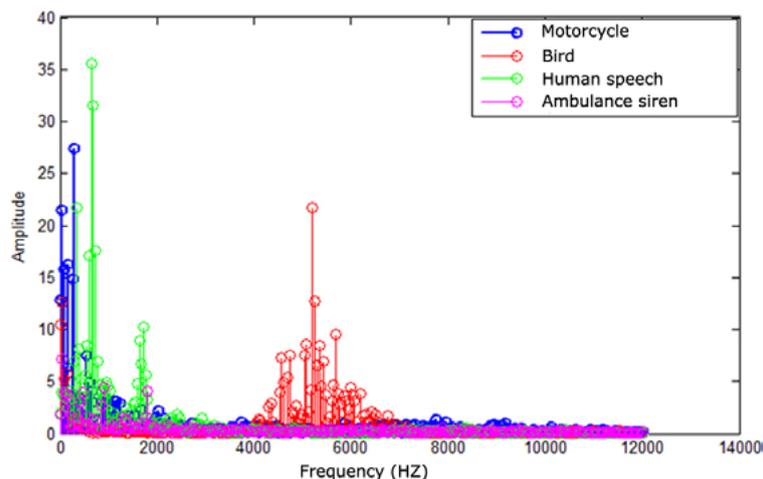


Figure 11. Spectrum of Amplitude of sounds: motorcycle, bird, human speech and ambulance siren.

The spectrum of amplitude of the studied human sound showed that it covers a frequency band [250H-3 kHz]. The spectrum of the considered bird sound proved that it is rich with

high frequencies [4 kHz-7 kHz]. The motorcycle sound has low frequencies according to its spectrum of amplitude [0-250Hz].

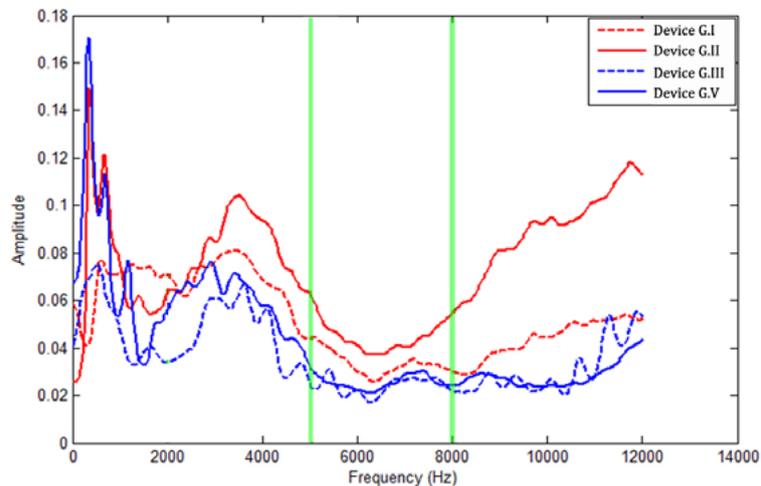


Figure 12. Transfer functions of devices G.I, G.II, G.III and G.V.

According to the appearance of different curves, the analysis was done on three areas:

- <5 kHz: several possible structures, particularly enhancement on the human sound band (250 H-2 kHz).
- [5 kHz-8 kHz]: same decrease for both types of *gannariyya*.
- >8 kHz: the high frequencies are present for the traditional *gannariyyas*. However, these frequencies are low for new *gannariyyas*.

The results obtained from the transfer functions and those reached by the first frequency analysis join. The influence of the traditional *gannariyyas* and its reproductions over the different frequencies is confirmed through this second stage of analysis. Indeed, the studied *gannariyyas* filter the sound signal on the entire frequency band focusing on particular frequency bands characteristic of some sounds. We also noticed an enhancement in the speak band (250h – 3 kHz) for both cases. The traditional examples seem to let entering the high frequencies such as the natural sound of birds which is a high frequency and can exceed 8 kHz. However for the new devices, the filtering is considerable on the high frequencies.

4.3. Users' perception

The interviews with users showed a gap in the qualification of the sonic ambiances in the receptive fields. In the medina or in the modern city, the users of the old devices judge their space noisy (examples: testimonies of the user 2 and 4). In spite of the presence of the noisy

vehicular sounds, the users of the new device consider their space quiet (example: testimony of user 5). This result confirmed the sound insulation offered by the contemporary devices that has been proved by the audio sound measurements.

This space is the office of my boss, but I spend most of my time here working. I appreciate this space especially for the light ambiance, (...). However, I find that it is **noisy, I hear a lot of sounds: discussions** of people, **screaming**, the **laughs** of children, the **carts, tractors**, etc. I understand all the discussions and I find it amusing when I take a little break. But, these sounds become annoying when I try to concentrate in my work. In fact, the **sounds are well heard; I have the impression to be outside** (...). I would say that the **sounds are now part of this space**. (User 2, trainee lawyer)

I don't stay for a long period of time in my boss's office. (...) I **live the sonic ambiance of this space through my headphones**. My boss dictates me the letters that I have to write by speaker (...). When he speaks, **I hardly badly hear his voice** even if I use my headphones. His **words are mixed with exterior sounds: the traffic sounds** (car, car or other), **discussions of men**. Sometimes, I ask him to repeat the phrases. (User 4, secretary of a lawyer)

(...) I arranged this room to a living room; all the furniture was custom designed because the standard furniture does not fit into the dimensions of the *gannariyya*. **I think that it is a very calm space. I open the shutters of the gannariyya from time to time to listen to the outside animation**. (...) I remember last year in the Ramadan month, musical evenings have been organized. So I took advantage of the show **watching people without anyone seeing me**, because I'm veiled, and then **I listened to good music. It was a real distraction** (User 5, housewife)

The testimonies of users 2 and 4 relating to old *gannariyyas* attested that the human voice is much perceivable. This result confirms the results obtained from the analysis of the transfer functions which testify to the enhancement of the human sound band. The significance of the human sounds for the perception can be explained by the fact that this type of sound source is understandable (Leobon 2011)¹⁸. This sound is more audible for the human perception in terms of phonetics than the sound of car horns or animals for example.

18. This interpretation is based on the sound classification made by Alain Leobon. He identified six sound sources as references: background sound, mechanical activities, human activities, human presence, language and

5. Conclusion and limit of the research

Using an ambiantal multidisciplinary approach, we appealed to the skills of engineer and architect. It has enabled us to handle different objective, subjective data to study the sonic ambiance provided by of the architectural device *gannariyya*. We also deduced that the simple human perception doesn't allow characterizing this sound atmosphere. It must be supplemented by the companions of sound measurements and the treatment of the physical signal by specialized softwares.

Our research protocol has been applied on two types of *gannariyyas* built with different materials and implanted in two different urban contexts. The sonic ambiance produced by the three traditional *gannariyyas*, located rather in the medina or in the modern city, is the same. The sonic ambiance generated by the three contemporary *gannariyyas* is similar too but contrasting with the old devices. We can say that the new constructive materials changed the original sonic characteristics of the traditional device *gannariyya*.

This study was conducted on a sample of only six *gannariyyas*, and the frequency analysis is still incomplete, especially *gannariyya*'s sonic response against other types of sound sources must be thorough in order to generate architectural conception rules. The acoustical analysis can be supported by the simulation of sound phenomenon using acoustic restitution such as I-Simpa platforms or Acoustica software.

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communication, natural sounds. For this case, human sound is a source of language and communication because it is a highly significant sound.

REFERENCES

- AMMAR, Leila.** "Pensée de l'urbain et transformations viaires à Tunis à la fin du XIXe siècle: Deux projets de percée dans la médina," in *Formes urbaines et architecture au Maghreb aux XIXe et XXe s*, AMMAR Leila, p. 91-105, Tunis: Centre of University Publication, 2011.
- . "La rue à Tunis, réalités, permanences et transformations : de l'espace urbain à l'espace public, 1835-1935" (PhD diss., University of Paris VIII, 2007).
- AUGOYARD, Jean François.** "Vers une esthétique des ambiances," in *Ambiances en débats*, AMPHOUX Pascal. THIBAUD Jean Paul and CHELKOFF Grégoire, p. 17-30, Bernin: Ed. A la croisée, 2004.
- BARAUDON, Alfred.** *Algérie et Tunisie. Récits de Voyage et Etudes*. Paris : Editions Plon Nourrit et compagnie, 1893.
- BARDYN, Jean-Luc.** "Conceptions sonores," in *Compositions sensibles de la ville : ville émergente et sensorialité*, THIBAUD Jean Paul and LEROUX Martine, p. 42-63, Grenoble: Cresson, 2000.
- CHELKOFF, Grégoire.** "Formes, formants et formalités : catégories d'analyse de l'environnement urbain," in *L'espace urbain en méthodes*, GROSJEAN Michèle and THIBAUD Jean Paul, p. 101-124, Marseille: Parenthèses Editors, 2008.
- . *Problématique du confort et de l'inconfort dans l'environnement construit. Pour une approche écologique des dispositifs architecturaux*. Grenoble: Superior National School of Architecture, accessed April 9, 2014, <http://www.cresson.archi.fr/ENS/ENSdea.html>.
- CHTARA, Chiraz.** "Ambiances sonores conditionnées par les *gannariyyas* traditionnelles dans le tissu ancien et celles générées par leurs 'reproductions' dans le bâti contemporain" (Master diss., National School of Architecture and Urbanism of Tunis, 2012).
- HARRY, Myriam.** *Tunis la blanche*. Paris: Arthème Fayard-Editor, 1910.
- HASSAN, Fathi.** *Natural Energy and Vernacular Architecture. Principles and Examples with Reference to Hot Arid Climates*. Beyrouth: Arabic Edition Published, 1986, in KAROUI, Hind. "Sensibilité aux ambiances lumineuses dans l'architecture des grandes demeures husseinites au XVIIIe début XIXe siècle" (PhD diss., National School of Architecture and Urbanism of Tunis, 2012).
- LEOBON, Alain.** *La cartographie des ambiances sonores*, accessed March 20, 2014, <http://www.paysage-sonore.net/methodologie.html>.
- MARINETTI, Filippo Tammaso.** *Le futurisme*. Paris: Le Figaro, 1909 in BELGIOJOSO, Ricciarda. *Construire l'espace urbain avec les sons*. Paris : Ed. L'Harmattan, 2010.
- REVAULT, Jacques.** *Palais et demeures de Tunis du XVIIIe et XIXe s*. Paris: Editions National Center of Scientific Researchs CNRS, 1980.
- SEBAG, Paul.** *Tunis : Histoire d'une ville*. Paris: L'Harmattan-Editor, 1998.

The Future Sound of Cities

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Abstract

More than half of the world's population already live in cities and this is expected to reach 75 percent by 2050. In the developed world the effect of the growth of cities has often only been considered late in the day. This paper sets out future development scenarios for cities and urban areas, in developed and developing countries, and looks at the potential impact on soundscape. An evolving toolkit for city design is discussed. Proposals are made for greater protection of humans, wildlife and tranquil areas and for the preservation of important "sound-marks" that identify a place.

Keywords: Futures, Cities, Development, Scenario Planning, Noise, Soundscape, Acoustics.

1. Introduction

The Global Health Observatory [1] has stated that as of 2010 more than 50% of the world's population now lives in cities and predicted that this proportion will reach 75% by 2050. This paper looks out how this growth and changes within our cities may affect our soundscape and presents a toolbox of design tools to help guide the sound of cities.

The burden of noise in cities affects our health and as cities grow is likely to affect greater numbers if development continues as it has done historically.

Noise has always been a problem when living in large social groups. Complaints about noise in cities are recorded as far back as Roman times. [2]

Noise in a modern city is almost always dominated by motorised transport, be it road, rail or aircraft. Of these it is road noise that is often the most pervasive, slipping into almost every corner of every major city. This is the case to the extent that where the European Noise Directive [3] has required member states to identify and protect areas of tranquillity, the UK has outlined guidance on tranquillity identification in the document National Planning Policy Framework : Planning Policy Guidance : Noise Guidance [4], stating:

There are no precise rules, but for an area to be protected for its tranquillity it is likely to be relatively undisturbed by noise from human caused sources that undermine the intrinsic character of the area. Such areas are likely to be already valued for their tranquillity, including the ability to perceive and enjoy the natural soundscape, and are quite likely to be seen as special for other reasons including their landscape. (PPG:NG, 2014)

2. The Work of the Acoustician

Acoustics as a discipline can be traced back at least as far as the Greek empire, but it wasn't until the 1970s that the fields of acoustic ecology, soundscape assessment and bioacoustics began to establish themselves, notably thanks to R. Murray Schaffer [5] and Bernie Krause [6]. Until then the role of the acoustic consultant was to reduce noise levels, ie reduce unwanted sound but reducing noise levels over all, and even today this is still very much the focus of most of our work.

Noise from transport has generally increased with time, as has the amount of travelling we do, such that what small wins have been made in reducing the noise from individual vehicles have generally been more than compensated for with the increase in numbers of vehicles and the hours of the day which they are used. This holds true for both road and air transport although rail may be a special case, at least in the UK, as it spent several decades in decline following the post-war boom in private car ownership.

3. The Impact of Noise and Uses of Sound

Noise is defined as unwanted sound. As one person's music is another person's noise it has been too easy in the past to assess overall sound pressure levels when assessing noise without distinguishing whether sources may be part of the natural environment or not (although the focus is usually on identifying and quantifying man made sources).

The health effects of noise exposure include [7] hearing loss, elevated blood pressure, elevated adrenalin levels, headaches, fatigue, stress, stomach ulcers, sleep disturbance, annoyance, reduced speech intelligibility, higher rates of birth defects and impinged cognitive development in children [8].

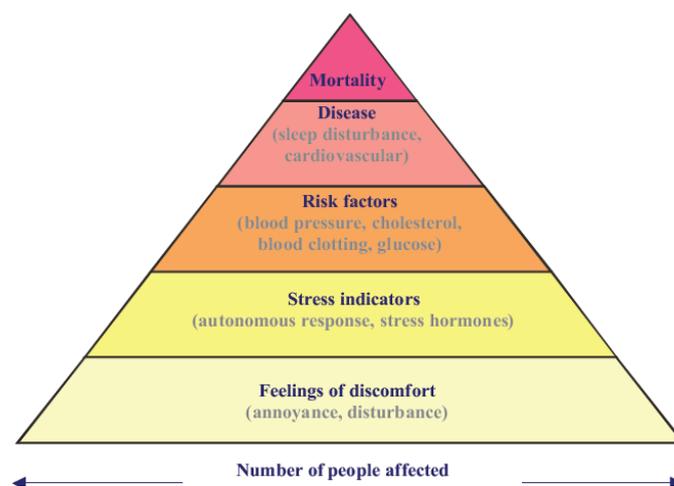


Figure 1. Babisch W. The noise/stress concept, risk assessment and research needs. [9]

However, research has shown that natural sounds and music therapy have been shown to help people overcome a broad range of psychological and physical problems. These include, although are not limited to:

To aid the blind to navigate [10]

- In treatment of amnesia
- In treatment of Tourette's syndrome
- In treatment of Parkinson's disease
- In treatment of Dementia
- In treatment of Aphasia (loss of spoken language)
- In treatment of depression

In treatment of Autism and for children with behavioural issues [11, 12]

Of course sound is also central to our communication and without conditions conducive to verbal communication our many complex languages would never have developed the way they have. A similar case can be made for the importance of music. For example:

Music listening and music therapy have been shown to help people overcome a broad range of psychological and physical problems

Daniel Levitn, *This is Your Brain on Music* [13]

4. The Changing Sound of Transport

The building of railways between the 1830s and 1920s introduced a new and unfamiliar sound into the landscape, adding to the new machine noises recently added by the industrial revolution. Whereas the industrial revolution had added these noise sources to generally built-up areas the railways then connected these areas together, with the new source affecting some otherwise untouched areas in between. The population did become accustomed to the sound of steam engines but the widespread change to diesel locomotives in the 1950s led to another new soundscape and another acclimatization process. The sound of diesel engines is now ubiquitous and the sound of a steam engine has become a sought after experience for many.

We are currently on the verge of a similar experiential change with electric cars. At high speeds where type noise dominates there is little change but at low speeds, around towns and cities, it is the combustion engine noise which dominates. This has led to debates in many countries about what sound a car "should" make, predominately based around arguments of pedestrian awareness and safety. Add to this the driver expectation and we are

already seeing some manufactures adding artificial engine noise into the sound inside the cabin [14], EU rulings on the requirement for 'Acoustic Vehicle Alerting Systems' for electric vehicles [15], as well as the recent debate in the current Formula 1 racing season with new quiet engines causing widely reported upset among drivers, fans and officials [16].

Opportunities to lower transport noise do not come along often and should be grasped whenever they happen.

5. Living Densely

What defines a city is still often debated and changes from one geographic region to another and based on local history and governance. For the purposes of definition here a city is taken to be a developed permanent human settlement of high population density. How noise control regulation is dealt with during the process of building up an area of high population density will have a lasting outcome on the soundscape as experienced by its inhabitants.

When problem areas arise these can be dealt with through new regulation but this is generally a very slow process. The earlier in the growth of a city suitable control measures can be put in place the more successful the long-term control of its environment.

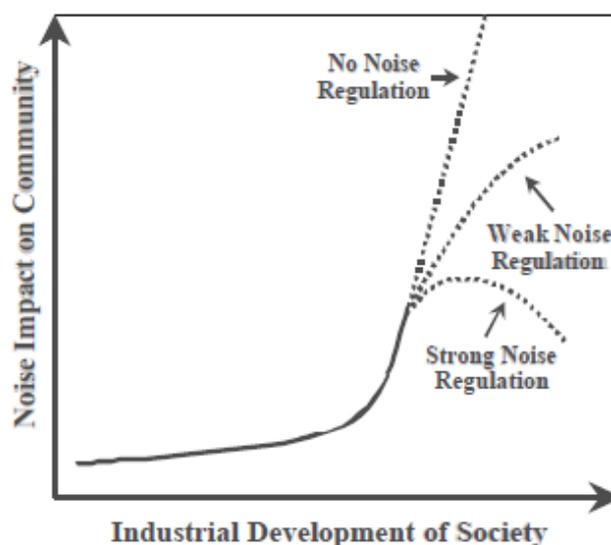


Figure 2. Noise Impact on Community versus Industrial Development of Society [7]

To pick two examples, an old city where noise levels have got out of control would be Cairo, where the noise of the city is one of its defining features in travel guides and the New York Times called “the city where you can’t hear yourself scream” [17], compared to a relatively car free city like Amsterdam, where the sound of trams, people and bicycles can be heard even in all the main plazas.

Living in close proximity leads to an increase in the likelihood of noise nuisance, where shared partition walls and floors in flats and apartments will inevitably conduct more sound than between detached dwellings, and shared circulation spaces subject us to the sounds of neighbours coming and going.

The more people are crammed into a space the more likely that noise made by one of those people will bother another. Cities also bring with them transport issues. People will often travel to work along the same routes and at similar times to many others. A well design transport system can deal with this and take advantage of economies of scale of needing to transport a large number of people in the same direction at the same time. Train, tube, tram and bus systems are all integral to existing successful cities.

6. Gaming the City

It is an interesting thought experiment that architecture student Vincent Ocasia [18] set himself the challenge of finding the maximum possible urban density within the SimCity game, and gave an interview about it. In doing this he found that the elimination of transport was a key factor, and organised the space such that every one of his virtual subjects could walk to their place of work. In reality of course this could never work, as family life will lead to people living in one location but working in another. Furthermore the focus on increasing population density only had knock on effects on quality of life and lifespan. Modelling cities in this way, using a game engine, is an interesting exercise but a lengthy process presenting a far from accurate representation of daily life. However, there is no reason that a neural network system could not be set this same task and it may come up with solutions that have not yet been considered.

7. A Brief History of Designing for the Future and the Impact on Sound

In the 1940s and '50s a post-war boom in city development and house building cleared away many slums and tenements as well as repairing war ravaged cities. This led to experimental new designs and wild speculation on future development. Predictions of flying cars were rife. Contrast this to today where there is speculation about a future of drone based delivery systems and you see that little has really moved on.

Picking some other historical examples of futurology can help to set the scene, and remind how wildly wrong ideas can be.

In his 1910 science fiction book *The Sleeper Awakes* [19], H.G. Wells predicts a future London where a “moving pathway”, like the travellers seen in airports, allows pedestrians to navigate London at speed, a circular route with concentric rings allowing passengers to move out in steps of increasing speed. The reality we saw came to be the expansion of the underground system, which had already started operating in 1863.

In architecture Le Corbusier sought to improve living conditions in crowded cities clever layout of multi-storey blocks surrounded by or surrounding green park space [20]. He produced plans for a “Ville Contemporaine” (Contemporary City) in 1922 and a “Ville Radieuse” (Radiant City), in 1924. Although never built elements of these design appeared in various locations and influenced a generation of designers and planners. For example he is credited as a major influence in Constructivist era Soviet architecture and planning.

In 1960 Geoffrey Jellicoe proposed *Motopia* [21], where roads were kept on roof tops above residencies and views from windows were always of open green spaces. Again this was never built, but the same period brought about many redesigns of existing UK city centres with split level vehicle and pedestrian circulation. Although these fell out of fashion for numerous reasons, steps and disability access among them, isolated examples can still be seen in parts of Glasgow, Birmingham and Bristol.

Other more fanciful ideas have included Archigram's *Walking City* (1965) [22], where an entire walking robotic city allowed inhabitants to be delivered to their place of work in the morning and retire to a more peaceful location at night.

The most successful piece of forward thinking can probably be credited to Ebenezer Howard's garden cities [23], which were first proposed in 1902 and as recently as 2013 continuing to be promoted as a template for eco-towns. [24]

Milton Keynes in the UK is one of the more famous examples of this approach and the zoning system employed allowed for some flexibility in changes to the town's demographics over its lifespan, although from a discussion one of the authors had with one of the towns Planners it was apparent that this flexibility could only be stretched so far and compromises would have to be made in terms of allowable land use of adjacent blocks if the town was to thrive.

In more recent years the growth of new city developments in the Middle- and Far-East has seen soundscape start to play a role in the design process. One of the author's work on King Abdullah Financial District in Riyadh included acoustic advice on market places and pedestrianised areas to create a more vibrant atmosphere, as well as placing the mosque at the centre of a web of streets that ensured the call to prayer could be heard over as large an area as possible. A very intentional design of a soundmark into a city development.

8. Future Development Possibilities

Using the experience of the above and knowledge of planned growth in cities and both transport and energy infrastructure it is possible to plot a series of scenarios for the future development of varying cities. It should be noted that these are extreme examples designed to capture as wide a range of potentials as possible and it is hoped that the majority of developments would fall somewhere within these boundaries.

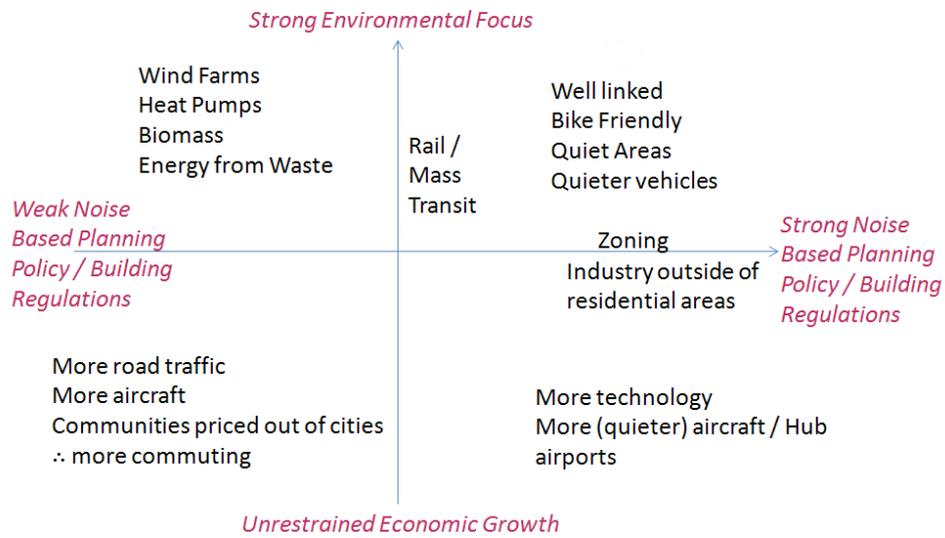


Figure 3. Scenario Planning for Future Sound in Cities.

9. Design Toolkit

Tools for improving the soundscape in urban areas have been suggested by Schfer and others, and a total of 102 non-noise related planning tools are suggested by Atkins' Future Proofing Cities report. The table below combines the most relevant of these, grouping them by area of application, as a guide to city soundscape design.

Table 1. Design Toolkit for Future City Soundscapes

Number	Tool	Description / Application	Example
1	Soundmark	Identify existing soundmarks that are unique to a place or an identifier of its character. Consider protecting them with policy. Consider incorporating new soundmarks into the design.	Maximising audible range of call to prayer in King Abdullah Financial District in Riyadh. Study into range of the Bow Bells in London and affect of changes in ambient noise [25, 26]
2	Soundscape Restoration	Where a soundscape of value has been lost due to development its restoration can be considered	Closure and grassing over of part of the A344 close to Stonehenge partially restoring original soundscape and landscape
3	Energy Policy	Moving major noise sources away from residential areas, shifting away from dependence on fossil fuels, reform of energy subsidies	Off shore wind generation, tidal energy, micro-generation

Number	Tool	Description / Application	Example
4	Labour force	Flexible working and shift working	Policies to encourage flexible working patterns can help reduce traffic congestion during peak hours, but this should be balanced against causing disturbance during rest hours.
5	Zoning 1	Mixed use zoning allowing people to live and work in the same area	Reduces transportation noise but can cause problems where noise from work activities disturbs residents.
6	Zoning 2	Sub-urban zoning	Keeping residential areas away from industrial noise sources prevents disturbance but increases transportation requirements
7	Zoning 1 & 2		Zoning policies should take care to balance potential future changes of use as well as initial plans
8	Mass transit development plans	Areas of high population density should be provided with good public transport links	Reliance on cars should be reduced and rail, tram and/or bus infrastructure built. Eg Dubai Metro. It is important to consider end to end journeys and provide effective interchanges between transport modes for longer journeys.
9	Pedestrian and bike orientated development plans	Encourage use of bicycles and of walking routes	Land design practices should encourage non-motorised transport
10	Increasing density standards	Where densification is planned standards should be put in place to prevent increase in noise complaints	Improvement of building regulations and control of neighbourhood noise. For example, smart city technology like ShotSpotter(R) [27] uses microphones in lampposts to pinpoint locations of gun fire, used in several major US cities. This technology could be expanded to identify other noise sources but must be balanced against civil liberties.
11	Infill and brownfield incentives	Reusing previously developed areas to take pressure off of undeveloped land	This would help to preserve soundscapes in undeveloped areas. There is potential to assess offsetting of soundscapes / noise levels in the same way ecological sites are considered.
12	Transit orientated nodes	Major transit interchanges, such as train and/or bus stations, should be placed within a community to encourage people to walk to them	New towns and cities should be designed with rail access in mind and connectivity of residential areas maximised.
13	Restricted development on vulnerable land and relocation from vulnerable areas	Development should be limited to low density / low intensity uses on areas at high risk of flooding / extreme weather / sea level rise	Noise should be considered as a similar risk and noise sensitive development avoided in areas of high noise
14	Buffer zones	Non-noise sensitive areas should be placed between noise sources and noise sensitive receptors	Open spaces, retail units, and offices (used as barrier blocks) can all be used to reduce noise impacts on residents / schools / hospitals etc.

Number	Tool	Description / Application	Example
15	Greenbelt / growth boundaries	Defining management boundaries can be used to protect areas from inappropriate development	Can be used to safeguard land uses, soundscape, and tranquil areas
16	Improvements to public transport systems	Numerous options are open for both new and existing cities to reduce the reliance on personal car transport	Examples include: Bus Rapid Transport (BRT) / Park and Ride / Metro Systems / Public Transport Lanes / Smart Transport Information / Driving and Parking Restrictions / Car Clubs / Hybrid and Electric Vehicle Incentives
17	Recycling and Waste Management	Efficient use of local resources	Although some overhead in collection and sorting of recycling is required this is compensated for with reductions in raw material usage and transportation, manufacturing noise, disposal etc.
18	Building codes	Robust standards for new buildings encouraging energy efficient buildings and high standards of insulation	Reducing energy consumption will generally lead to reduction in noise generation too (e.g. passive ventilation rather than mechanical ventilation) and improved thermal insulation standards can be used to improve acoustic insulations simultaneously.
19	Eco-villages / neighbourhood schemes	Schemes to combine energy generation, heating, cooling, waste handling etc at a local level	Making individual areas more self-sufficient can help reduce wider infrastructure and reliance on large scale industrial areas. This can include micro generation, use of waste as biofuels, Combined Heat and Power (CHP) and district heating and cooling, Smart Grids etc.
20	Biodiversity	Monitoring and protection of habitats and important species	This should include further research into the effects of human noise sources on wildlife behaviours
21	Reforestation	Tree planting programs and reforestation	Wind in trees and long grasses are important elements of the natural soundscape and should be identified, preserved, and can be used as tools in soundscape creation. Wind noise can also help to mask unwanted noise sources. The associated areas of soft ground also provide better attenuation of noise than hard surfaces.
22	Sustainable and affordable housing	Slum upgrades and affordable housing improve living conditions	Preventing factors that price certain tenants out of areas has knock on effect of reducing commuting thereby reducing transportation noise

Number	Tool	Description / Application	Example
23	Absorbent building facades	Building facades are generally acoustically hard and highly reverberant, improvement in urban areas possible	Although difficult to hear the effect of this in cities where road traffic is the dominant noise source occasions when traffic is stopped (public events, marathons etc) present an opportunity to appreciate how much worse the reflections from building make the auditory environment.

10. Conclusion

The importance of considering soundscapes and noise control in cities has been shown with reference to growing numbers of people in cities, impacts on health from noise and the benefits to both listeners and to wildlife from better balanced soundscapes.

Future development possibilities for cities and urban areas, in developed and developing countries, have been explored and are shown in Figure 3.

A design toolkit for both new and existing cities has been tabulated, giving multiple options for investigation in any future city work. This includes examples of schemes and of benefits as well as highlighting other future city design measures which can have knock-on effect in respect to sound.

REFERENCES

- [1] Urban population growth, Global Health Observatory (GHO), 2010 (http://www.who.int/gho/urban_health/situation_trends/urban_population_growth_text/en/, accessed 23.02.14)
- [2] **Hendy, David**, *Noise: A Human History of Sound and Listening* (Profile Books), 2013
- [3] The Environmental Noise Directive (“END”) European Parliament and Council adopted Directive 2002/49/EC
- [4] National Planning Policy Framework, Planning Practice Guidance, Noise, Paragraph: 012 Reference ID: 30-012-20140306, revised 06.03.2014 (<http://planningguidance.planningportal.gov.uk/blog/guidance/noise/noise-guidance/>, accessed 09.06.2014)
- [5] **Schafer, Raymond Murray**, *Tuning of the World* (Random House) 1977
- [6] **Kraus, Bernie**, *Wild Soundscapes* (Wilderness Press) 2002

- [7] World Health Organization, Geneva, *Guidelines for community noise*. 1999 (<http://www.who.int/docstore/peh/noise/guidelines2.html>), accessed 21.07.2010)
- [8] **Goran, Belojevic, et al.** (2008). "Urban Road Traffic Noise and Blood Pressure and Heart Rate in Preschool Children". *Environment International* 34 (2): 226–231. <http://www.sciencedirect.com/science/article/pii/S0160412007001493> accessed 23.02.14] [Note: Includes interference with speech, reduced reading comprehension and "Children from noisy residences often possess a heart rate that is significantly higher (by 2 beats/min on average) than those of children from quieter homes"]
- [9] **Babisch W.** The noise/stress concept, risk assessment and research needs. *Noise & Health*, 2002, 4(16): 1–11.
- [10] **Sacks, Oliver**, *Musophilia: Tales of Music and the Brain* (Picador) 2007
- [11] The Nordoff Robbins Evidence Bank (2nd Edition, 2012) (<http://www.nordoff-rob-bins.org.uk/content/what-we-do/research-and-resources/resources> accessed 23.02.14)
- [12] **Nordoff Robbins**, *Mapping Music and Health*, 2011 (ibid)
- [13] **Levitn, Daniel**, *This is Your Brain on Music* (Atlantic Books) 2008
- [14] Review: BMW 4-Series Gran Coupe, Drive.com (via <http://www.drive.com.au/new-car-reviews/bmw-4series-gran-coupe-first-drive-review-20140602-zrupk.html>, accessed 09.06.2014) [Note: "The surge forward is accompanied by a muscular but artificial engine soundtrack. There's a slight caveat here, as engineers have 'filtered' the best sound attributes of the engine into the cabin through the optional 13-speaker Harman Kardon stereo in order to make it sound more beefy. The inferior sounds are washed out as a result, they claim."]
- [15] European Commission Press Release "Commission welcomes Parliament vote on decreasing vehicle noise" 02.04.2014 (http://europa.eu/rapid/press-release_IP-14-363_en.htm retrieved 03.04.2014)
- [16] **BBC News** "Formula 1: Are the new V6 turbo hybrid engines 'too quiet?'" (via <http://www.bbc.co.uk/sport/0/formula1/26656258> accessed 09.06.2014)
- [17] **New York Times**, "A City Where You Can't Hear Yourself Scream" (via <http://www.nytimes.com/2008/04/14/world/middleeast/14cairo.html> retrieved 09.06.2014)
- [18] **Vice**, "The Totalitarian Buddhist Who Beat Sim City" (via <http://www.vice.com/read/the-totalitarian-buddhist-who-beat-sim-city> accessed 09.06.2014)
- [19] **H.G.Wells**, *The Sleeper Awakes* (Penguin Classics)
- [20] "Le Corbusier: From here to modernity" Open2.net - BBC/Open University (<http://www.open.edu/openlearn/history-the-arts/history/heritage/le-corbusier> retrieved 09.06.2014)
- [21] **Jellicoe, Geoffrey**, "Motopia" (Studio) 1961

- [22] **Herron, Ron**, *A Walking City*, *Archigram* issue five, 1965 (via <http://designmuseum.org/design/archigram> accessed 09.06.2014)
- [23] **Howard, Ebenezer**, *Garden Cities of To-Morrow* (London) 1902 (via <http://urban-planning.library.cornell.edu/DOCS/howard.htm> accessed 09.06.2014)
- [24] **Town and Country Planning Association**, 'Creating Garden Cities and Suburbs Today - a guide for councils' March 2013 (via <http://www.tcpa.org.uk/pages/creating-garden-cities-and-suburbs-today-a-guide-for-councils.html> accessed 09.06.2014)
- [25] **24Acoustics** "Bow Bells and the London Cockney" (via <http://www.24acoustics.co.uk/bow-bells-and-the-london-cockney/> accessed 09.06.2014)
- [26] **Wired**, "Acoustic reach of Bow Bells has shrunk dramatically due to ambient noise" (via <http://www.wired.co.uk/news/archive/2012-06/25/bow-bells-cockney> accessed 09.06.2014)
- [27] ShotSpotter press release, "National gun crime report exposes the reality of illegal gunfire in America" (via <http://www.shotspotter.com/press-releases/article/national-gun-crime-report-exposes-the-reality-of-illegal-gunfire-in-america> accessed 09.06.2014)

Stream 2

Urban sounds, identity and sense of place

KEYNOTE

Sound Art as Public Art

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Abstract

This presentation explores ideas of a Sonic Public, proposing that sounds invisible mobility makes accessible, thinkable and sensible, different and pluralized notions of publicness. The ephemeral and passing nature of sound, its unreliable and uncontrollable spirit, does not deform itself into the functional architecture of place and civic purpose but proposes formless and invisible alternatives. It creates the public as sonic possible worlds, plural and colliding, performing the city in a playful antagonism of private sonic life-worlds, that meet in passing, at moments of coincidence, to create not one appreciable entirety but fragmented possibilities. The sonic city is a possible timespace environment, whose actuality is not a matter of truth and untruth, but of sonic fictions: personal narrations that realize the invisible and conjure up the inaudible, rather than settle on what can be seen collectively.

Sound Art as Public Art does neither insert itself nor superimpose itself onto this timespace environment but participates in its production. Thus it makes apparent the frames, edges and boundaries of what is considered the actual place, and implodes the singularity of that perception. Its ethics lies at once within the profession of art: to produce a good work of art; as well as in a participatory production of place: to make us listen and see the invisible dynamic of the world in whose mobile depth the visibility of the city, its architectural, political and social actuality, is produced from sonic possibilities, whose audibility and inaudibility in turn are the parameters of what that city is and what it will become.

This invisible Public Art reminds us that public is not a visual concept, a permanent institution and infrastructure, but a participatory and transitory practice. It leads us back to the production rather than the perception of publicness and opens the monumental, permanent and fixed notion of civic place to the sonic possibility of civic performance, in whose openness we as listeners open ourselves to reach and access our own possibilities.



Keynote link: <http://livestre.am/4Ugf5>. Photography: Diana Almeida & Joana Ferreira.

Performance Score

Sit down on a chair

Read: Listening to Noise and Silence: Towards a Philosophy of Sound Art, pp. 126–127, line 5 to line 5

Play: Clare Gasson, Thought and Hand 53"

Get up, walk a square around your location, singing each side of the square in a different tone – step back into the middle of the space and grunt.

Stand

Read: Sol leWitt The Location of a Circle, 1974

Sit

Read: Listening to Noise and Silence: Towards a Philosophy of Sound Art pp. 130–131, line 20 to line 3, 3rd word

Stand

Read: endnoted text, alternating between life and recorded voice¹

Sit

Read: Sonic Possible Worlds, Hearing the Continuum of Sound, pp. 49–50, line 1 to line 12

Read: Maurice-Merleau Ponty, Nature from Course notes from the Collège de France pp. 68–69, line 32 to line 17, 7th word

Stand

Read: from soundwords.tumblr.com: The waterjet, April 09, 2013, 09:39am

Read: Patrick Farmer Try I Bark from ‘fire turns its back to me...’ to ‘i have no desire too name’

Sit

Play: The Red Hook High School Cheerleaders by Jeremy Deller, 2 min excerpt

Read: Sarah Jackson Silent Running from her collection of poems Pelt

Sit

Play: Lawrence Abu Hamdan, Marches 2008, Track 2, 3 min excerpt

Read: Henri Lefebvre, Rhythmanalysis, pp19–21, line 8 to line 6 (with a slight edit), and p. 55, line 17 to line 31

Play: Simon-Steen Anderson Pretty Sound (Up and Down) for priano, from LP Pretty Sound, 3 min excerpt

Read: Listening to the Stars from Noch (What Matters Now? What can't you hear?)

Read: Sonic Possible Worlds pp. 157–158, line 1 to line 34

Play: Eisuke Yanagisawa Ultrasonicscapes track 10 street light 2, 3 min excerpt.

Read: Sonic Possible Worlds pp. 165–166, line 29–4 + p. 166–167, line 40 line 6 word 6 and pp. 168–169, line 33 to line 2, and p. 174, line 18 to line 34

Stand

Read: credits over “exactly 3 minutes”

1. This is a performance of my sonic possibilities in a public context.

Sounds invisible mobility makes accessible, thinkable and sensible, different and pluralized notions of publicness.

My public performance invites you to consider your own public performance in this same context.

The sonic public is a participatory possibility, whose actuality is not a matter of truth and untruth, but of sonic fictions: personal narrations that realize the invisible and conjure the inaudible, rather than settle on what appears to be there visibly and audibly.

Together we make a civic performance – creating an ephemeral exchange of invisible things that reframe our visible form, relationship and organization.

Listening challenges the designation of private and public. It overhears their distinction and does not follow the functional architecture of place and civic purpose but proposes formless and invisible alternatives.

I am performing my private sonic life-world that meets yours in passing, at moments of coincidence, to create not one appreciable entirety, one actuality, but fragmented possibilities of what our shared space is, or could be.

Sound is not necessarily harmonious, nor definitively antagonistic, but generates the space of an agonistic play: no ideal objective guides or precedes the action that it is.

I sang a square and talked a circle.

The public is not a visual concept, a permanent institution and infrastructure, but a transitory practice.

I made room in the visible space for my invisible possibilities

Sound makes apparent the frames, edges and boundaries of what is considered the actual place, and implodes the singularity and permanence of that perception through an invisible duration.

I made an artistic space,
I made a social space
I made a political space

They reveal the limits of actuality, produce possibilities, and hint at the possibility of impossibilities.

The Listenn Project: Acoustic Ecologies of the American Southwest Desert(s) and Transmedia Dissemination

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Abstract

The Listenⁿ Project explores remote embodied experiences of natural environments through sound. It focuses on community awareness, and sustainability, studying how rich digital media environments and acoustic ecology practices can be used to broaden discussion about the value of precious, yet fragile environments. It explores how virtual ecological engagement through sound can nurture environmental awareness and community agency. This paper introduces the conceptual grounding for the project and the preliminary outcomes from conducting two field laboratories in the American Southwest deserts. The proposed outcomes include immersive virtual reality experiences of being present in such natural environments without needing to travel and without degrading them by visitation. The prototype integrates a clear accessibility strategy and consists of a dynamic website, immersive sound installations and two mobile phone apps permitting direct community input and embodied remote walking experiences that could bring the acoustic ecologies of the American Southwest deserts to global audiences.

Keywords: acoustic ecology, field recording, ambisonics, immersion, virtual reality

1. Introduction

In our current state of ecological crisis, the Listenⁿ project is designed to explore how virtual immersive environmental engagement through sound can cultivate environmental stewardship and community agency and awareness. Listening is a critical perception that provides rich information about the surrounding environment, yet it is often overlooked in such a visually dominant society. The Listenⁿ project, founded by Dr. Garth Paine in 2013, brings together a diverse team of artists and academics working in the field of sound to explore how emerging digital technology and rich media environments can create embodied experiences of being present in remote natural environments. The project is grounded in the possibilities of ambisonics, specialist practices in surround sound recording to deliver immersive, embodied sonic experiences remotely. Ambisonics is a technique that enables the recording and diffusion of sound sources above and below the listener in addition to the horizontal plane. Ambisonics (Gerzon, 1992) is one solution to dynamic post production changes in auditory scene perspective (Benjamin, et al, 2006), and also provides options for dynamic selection of playback format (Pernaux et al, 1998) that are yet to be fully explored in virtual environments.

The Listenⁿ project will develop a prototype that examines issues relating to disseminating these integrated media streams and exploring new approaches for digital community outreach to engage a wide public audience in contemporary acoustic ecology. The prototype will deliver immersive experiences (via the internet) of being present in highly valued natural environments without needing to travel and without degrading the environments by visitation. The prototype is designed with an explicit accessibility strategy that provides open access to the experience of pristine natural environments across the globe, including for the elderly and people with disabilities who may otherwise not have access.

This prototype focuses specifically on the creation of five core audio-visual assets that will be housed on a dynamic website:

- Database of surround sound recordings that can be streamed over the internet and accessible to a global audience as remote embodied sonic experiences.
- Audio client app that will decode the ambisonic audio stream for Binaural (headphones), Stereo, 5.1/7.1 surround from a single ambisonic stream.
- A series of audio-visual experiences using virtual reality headsets, including the Oculus Rift.

- Mobile app for users to undertake GPS tracked, geo-mapped walks through one of the recorded wilderness environments while commuting or undertaking exercise (jogging, walking, etc.)
- Mobile app and digital platform for global accessibility and community outreach that enables participation in the project through user generated content. The system will integrate a series of new tools that encourage community leadership, such as dynamic tagging systems and heat maps that demonstrate community activity and focus and facilitate real-time engagement with other locations.

These proposed outcomes combine to deliver a prototype that encourages public engagement with the environment and humanities ideas related to the value of sound. This collection of proposed audio-visual assets are the result of conducting field research in the Southwest deserts and experimenting with the most captivating forms of engagement. The prototype will bring attention to these fragile ecosystems, local communities and their stewardship of the environment and also highlight the future possibilities of digital technology and rich media environments in creating immersive experiences that can generate a deeper ecological awareness and engagement globally.

2. American Southwest Deserts

The Listenⁿ project pivots on engagement and outreach programs with a series of identified communities in the USA. These communities were selected during immersive field laboratories involving ambisonic sound recordings conducted in Arizona, New Mexico and California during March and May 2014. These laboratories were supported by seed funding from Arizona State University and resulted in partnerships with five communities in Joshua Tree National Park, Mojave National Preserve, Sequoia and Kings Canyon National Park, Organ Pipe Cactus National Monument and Death Valley National Park that will be integral in developing this project. The community engagement and digital capacity building tools proposed in this project will enable the community in each location to remain actively engaged in the Listenⁿ project, and ultimately be the primary content creators on the digital platform.

The preliminary field laboratories involved researching the most appropriate ways to develop long-term relationships with the communities of the American Southwest Deserts. These forbidding landscapes are renowned for their beauty and wonderment yet paradoxical-

cally also feared by many. The Southwest deserts are governed and managed by a diversity of organisations including NPS (National Parks Service) and local associations. There is a wide range of national and international recognitions across the region, including National Monuments and UNESCO Biosphere Reserves. The Listenⁿ team was particularly interested in engaging with the communities of Biosphere Reserves, as there were clear synergies between their community engagement philosophies and the research intentions of our project.

UNESCO Biosphere Reserves are sites managed by passionate communities that are inspired to explore new approaches to the conservation of biological and cultural diversity. They differ from world heritage sites in that they encourage active community participation and are ideal locations to test and demonstrate innovative approaches to sustainability. The Man and Biosphere program was initiated by the United Nations Education, Scientific and Cultural Organisation (UNESCO) in the 1970s as a practical tool to deal with some of the most important challenges of our time: “how can we reconcile conservation of biodiversity and biological resources with their sustainable use” (UNESCO, 1995). To them the concept of Biosphere Reserves serves as an incubator for local sustainable development projects and helps share this information and learning with other Biosphere Reserves. The concept can therefore be considered as a tool for enabling respectful dialogue and knowledge sharing across a diverse set of communities.

The Listenⁿ field laboratories focused specifically on six Biosphere Reserves in Arizona, New Mexico and California representative of the richness and diversity of the southwest desert ecosystem. Capitalising on the Biosphere Reserve status within each location, this stage of the project sought to extend the existing efforts and build the capacity of the community to engage new technologies in understanding the environment. The long-term community engagement strategies will involve extensive consultation with key stakeholders in the region prior to hosting a series of workshops and sound walks. The sound walks will facilitate the process of identifying locations, which will be followed by ambisonic field recording labs directed by the Listenⁿ team. The community outreach programs will also involve installations, performances and capacity building to encourage the local community to take agency in creative outcomes and ongoing acoustic ecology practices.

The ambisonic recordings during each of the Listenⁿ field laboratories produced a rich diversity of sonic material and revealed valuable information about the local communities’ understanding of acoustic ecology. In some locations we were highly impressed with the research programs and monitoring associated with protecting and improving natural soundscapes. However, in other locations we were shocked by the level of human intervention and industrial noise apparent in the arid deserts. Unfortunately the proposed framework

of working directly with the communities of Biosphere Reserves proved difficult, primarily because there was very limited engagement and awareness of the Biosphere Reserve status in each location. The UNESCO branding was often concealed and most locations operated under a different name. While there are speculations as to why this was apparent, it was likely primarily due to national resourcing for the programs and a desire to focus on national recognition, as oppose to international associations with the UN. This dramatically changed our initial approach, but also provided the opportunity to extend our scope beyond the proposed locations and to evaluate the best methods for community engagement based on our experiences during the field laboratories. This resulted in forming partnerships with NPS (National Park Services) to facilitate permissions and research permits and a spectrum of partnerships with local organisations in Joshua Tree National Park, Mojave National Preserve, Sequoia and Kings Canyon National Park, Organ Pipe Cactus National Monument and Death Valley National Park, who are now the primary communities for the Listenⁿ project.

3. Research Questions

The Listenⁿ project engages in crucial humanities-based questions related to the notions of presence and embodiment within the natural landscapes represented by the five National Park and Preserve communities. It investigates how the perceptual mode of sound and its attendant processes of listening and hearing help achieve these moments of presence, and connection to place, when it is not possible or desirable to be physically present in the natural landscape. Drawing on scholarship from across the humanities, Listenⁿ explores relationships between a human-centered experience of the world and the complex adaptive ecosystems we seek to understand, but which continually perplex us, both as individuals and as communities. In asking the series of following questions, the project engages its audiences in critical humanities ideas about their own philosophies of place (how have people thought of place and presence within place over time, what does it mean to “be” somewhere), about how they distinguish between “sound” and “noise,” and about how their own experiences of sound make them reconsider what place means to them:

- What relationships exist between sound, sustainability, and human connection to environmental understandings of place?

- What constitutes listening? Does the sonic environment allow for a deeper understanding of human experience of place than visual or haptic encounters with such spaces?
- To what extent can human experience be “presenced” through such simulations as immersive audio recordings? In this regard, does the auditory allow immersiveness to be shaped more readily than does the visual?
- What constitutes attention in or through sound (a bird or animal call or a ‘silent’ landscape) and how does such attention through sound provide for an embodied experience for members of a larger public not immediately able to encounter such sites of environmental significance?
- How central is the sonic environment to our communal, social and global health?

At its core Listenⁿ explores this range of research questions to learn more about the role and function of sound for a deeper understanding for how communities of listeners engage their own interconnectedness to place, and to educate our range of audiences about these very interconnections (Cresswell, 2013; Cresswell 2004). In creating a set of independent and interwoven communities oriented toward issues and questions related to sustainability, we seek to imagine an embodiment within naturescapes far from the urban and suburban dwellings common to most of us. Imagination roams, thinking of an idealized wilderness or of possibilities within the wild. In hearing without sight, we are invited to visualize the wilds. The “we” here becomes individual and collective participation in the project of imagining life worlds just beyond our reach.

4. Sound, Agency, and the Intermediality of Place

Sound exists across a networked spectrum of production and reception, and enjoys a life of its own, irrespective of the object or agent involved in the multiplicity of its origination or its reception. As a perceptive mode that inherently engages an intermedial relationship to the world, sound both conveys and withholds knowledge, adopting and adapting the realms of the vocal, the textual, the spatial, and the affective, to be mediated for reception and parsing aurally, and by extension epistemologically, in the mind of the listener. When we focus on human agents, sound’s ability to capture and convey movement, spatiality, and emotion in very distinct ways works synergistically with the human mind’s ability to unify within con-

sciousness a number of perceptual inputs, such that a cognitive picture of the world and one's position within it comes to light. (LaBelle, 2006; Searle, 2002).

In his philosophy of mingled bodies, Michel Serres explores human sensory perception as shaped by the contingences of bodily experience. He writes:

Before making sense, language makes noise: you can have the latter without the former, but not the other way around. After noise, and with the passage of time, a sort of rhythm can develop, an almost recurring movement woven through the fabric of chance. The sea gives birth to a tidal flow, and this flow to Venus: a rhythmic current emerges from the disorderly lapping of waves, music surfaces to this place. In turn, this layer of music, universal before the advent of meaning, carries all meaning with it; distilled, differentiated language selects the meaning or meanings it will isolate from this complex, and then broadcast. Whoever speaks is also singing beneath the words spoken, is beating out rhythm beneath the song, is diving into the background noise underneath the rhythm. (Serres 2008, 120)

When we examine his musings on sound and hearing, we are immediately struck by two things: the descriptive way he links aurality and the natural rhythms of the world; and the siting of music as the location where meaning takes shape as a constant outgrowth of these flows and rhythms. Sound, noise, rhythm, music, language, meaning—for Serres, these are medial points that move steadily further away from a phenomenological understanding of the world. At the heart of Serres' ideas about sensation lies a critique about language – a hegemonic notion of language that has become too far removed from the network of relationships that our system of sense perception sets up with the world around us. In his mind, sensate experience is disappearing behind a newly acquired language of logic that is based in data, calculation, and isolation. It is precisely our move away from a conscious understanding of the world as a unified sensate experience, as reflective of our being in some way severed via language from an interwoven network of phenomenological experience that underlines Serres' philosophy. His comments here about sound and the function of language provide reminders about the constant play of uncertainties that lead to meaning-making, that meaning and truth are more about the sensual processes of composition that lead to language than they are about the practices of rationality, fixity, and exactitude that currently impede language. In his explication of how sound filters through noise and the complex rhythms of music to become meaning, Serres lights upon language as the requisite medium for its broadcast, and upon voice as the instrument for the realignment of language, and of human beings, within a larger world of sensation and experience. And it is here with voice and vocality that we might find a response to Serres' misgivings about language, where we

would see voice forming the entrance to and vocality the resonance of the interior surfaces of a body connected to an origin prior to language.

In his crucial work on the relationships between the environment and perception, Tim Ingold makes clear that voice forms a core element of how humans engage with and in the realm of the natural, and that human voice serves as our interface, our connection, to an existence where humans reside alongside other entities:

Non-human sounds like thunder or animal calls, the voices of other-than-human persons, and the speech of human beings are alike in that they not only have the power to move those who hear them, but also take their meaning from the contexts in which they are heard. In these respects, no fundamental line of demarcation can be drawn between the sounds of nature and of human speech. (Ingold 2000, 104-105)

The immersive sonic productions, which form the foundation of Listenⁿ, provide a palpable framework within which such a phenomenology of human experience of the world can be experienced, shared, examined, and understood. Yet these acoustic ecological recordings of varying environments also belie the full range of non-human agents (animals, atmospheres/densities, geological formations, landscapes, etc.) that exists as counterparts to, and thus also apart from, any human-centered perceptual understanding of the world. What is at stake in locating a non-human, and at times, non-sentient, origin point for the production of sound is the acknowledgement that a human-based reception of sound can never fully capture the full spectrum of sound production made available within any time-delimited space. Because we cannot truly inhabit the auditory receptors of these other, non-human sound producers, nor place ourselves inside the geological formations or atmospheric conditions that affect acoustics, we can only make theoretical assumptions about the production/transmission/reception of those sounds that comprise the acoustic composition of a soundscape. Being able to arrive at this realization is an important step in opening ourselves up to a wealth of alternative ways to encountering sound in the landscape, and seeing through them new avenues for signification and knowledge production. Whether we conceptualize it or not, and whether we perceive it or not, these environments as remote landscapes produce a wealth of acoustically interwoven sounds, and these sounds function in concert to create an inter-medial composition evocative of their atmospheric, density-driven, and geologically formed spaciousness and human and non-human co-production or sitting as place.

5. Accessibility

Accessibility is a core priority not just in terms of meeting required technical best practice standards, but in actively designing the system to support its creative use for as many different people as possible. The system will reflect and advocate for the proper recognition, respect and the active involvement of indigenous communities, elderly communities and those with disabilities that would not traditionally have visitation access to pristine natural environments.

In the year 2012, an estimated 12.1 percent of non-institutionalized, US citizens reported a disability. The Listenⁿ project values inclusivity and believes it is important to develop tools that can empower collaboration and capacity building from communities that do not traditionally have access to audio technology. The prototyped virtual reality experience is also highly valuable for the selected environmental locations, particularly as sites continue to experience the ramifications of climate change. National Parks Services advocates for promoting and maintaining an environment without human impact, yet they are often faced with contradictions when the sustainability of the park management is based on tourism and visitation. The features and technical aspects of the Listenⁿ project prototype are grounded in accessibility and inclusivity resulting in appealing digital formats that will engage the general public.

6. Transmedia Dissemination

The distinctive layers of Listenⁿ combine in a single interface and each complement the overall vision of the project. This multi-platform approach is essential in our accessibility strategy and community engagement methods. The contemporary practice of a transmedia methodology requires cultural assets that fuse not just audio and visuals but design, interactivity and a host of other disciplines. Contemporary audiences are now consciously creating and viewing the narrative of their own lives across multiple platforms (e.g. via Instagram, Flickr, Facebook, Twitter) and we believe artists and humanities researchers should consciously be aware of this when designing community outreach projects. Listenⁿ combines highly accessible outcomes (such as listening to field recordings) with technologies at the

forefront of entertainment (such as the embodied mobile geo-locating walk and Oculus Rift experiences) to enable communities to take agency in this project and contribute to the overall narrative.

The Listenⁿ project pivots on a database of surround sound (ambisonic) recordings that can be streamed over the internet and accessible to a global audience as remote embodied sonic experiences. This database provides the content for the proposed creative outcomes and underpins the development of the prototype. It is built using industry standards for programming and data management that also enable it to connect and share content with other large databases. This connectivity opens up exciting creative opportunities and helps to future proof the system. The database will be accessible through an independent streaming interface within the website, and will also be embedded in separate pages for each location and community. The database will be developed in parallel to an audio client app that will decode the ambisonic audio stream for Binaural (headphones), Stereo, 5.1/7.1 surround from a single ambisonic stream and will form the basis for the embodied sound walks application.

Each geographical location on the website will feature an embedded digital community. The community platform will be developed in collaboration with Feral Arts using PlaceStories, a dynamic software system for digital storytelling, communication and collaborations. PlaceStories provides individuals and groups with powerful, easy to use tools to create, communicate and collaborate. Along with the database, the community platform will be embedded in pages that document each location of the Listenⁿ project. Individuals can set up profiles to publish stories in the form of audio, video, documents, images and postcards. These stories are published to locations that become connected and searchable through the Listenⁿ community. Everything published in the Listenⁿ community will be geolocated in an interactive map that will be updated in real-time as content is published. While the focus of Listenⁿ is firmly grounded in auditory perception, the accessibility of images, videos and text has been identified as fundamental in generating broader environmental engagement and documenting and understanding the value of listening and remote embodied experiences. By framing the user-generated content of the Listenⁿ project as digital storytelling, we are empowering and encouraging communities to make their own contributions and have agency in the development of the project.

The community platform will be accompanied by the development of a mobile phone app for community outreach and user generated content. The app will allow the community to send updates (geo-tagged sound recordings, photographs and text) as digital stories directly to the community platform while working in the field. This app will be built for both iOS and android and will facilitate a real-time engagement and enable collaborations between the

locations. For example, community members in Death Valley National Park might observe the calls of a particular bird outside of its seasonal migration. By documenting this observation in real-time they could connect with other locations where the bird is also present and understand any behavioral and environmental changes taking place. This app will also encourage real-time storytelling, recognizing stories as valuable, often untapped community assets. This app will integrate a series of new tools that encourage leadership, such as dynamic tagging systems and heat maps that allow real-time engagement with other locations.

In addition to the community mobile apps, a secondary iOS and android mobile app will be developed so that users can undertake GPS tracked, geo-mapped walks through one of the recorded wilderness environments while commuting or exercising (jogging etc). The community app targets community members directly engaged with the Listenⁿ project locations, while the sound walks app is targeted at global communities. It is particularly aimed at those living in urban areas that would rarely have the opportunity to listen to pristine natural environments and through its somatic, embodied action, makes the engagement with the soundfield more dynamic.

The final creative outcome is a series of audio-visual experiences using virtual reality headsets. An alpha version of this experience exists for the Oculus Rift, and a version will also be developed for the Sony VR headset and others as they become present in the market place. The alpha version developed by Dr. Paine has been widely tested throughout 2014 with extremely positive feedback in creating immersive embodied experiences of remote environments. The virtual reality experiences will be developed with two purposes, the first as touring experiences that will promote further engagement in the Listenⁿ project internationally, and the second as virtual experiences available for download via the website for those with access to virtual reality headsets. While virtual reality has been an active field for a number of years, it is only now that it is becoming a viable opportunity for humanities projects to truly explore the possibilities of this technology. Previously it has been cost prohibitive and high latency caused disorientation and nausea if the visuals did not correlate with the user's head position. The Oculus Rift headset has addressed these problems and designed a system that can create the illusion of presence in another location. By combining stereoscopic 3D, 360-degree visuals, and a wide field of view, along with advanced engineering and software, the Rift can engage visual perception in ways that have not been possible in the past.

The rapid emergence of virtual reality is now evident with a number of other devices in development and the Facebook acquisition of Oculus Rift in March 2014. It has become clear that personal virtual reality is the next big market in the entertainment industry. Facebook CEO Mark Zuckerberg has publicly stated "This is about being able to share experiences." He

believes that the true promise of VR is “going beyond the idea of immersion and achieving true presence – the feeling of actually existing in a virtual space” (Rubin, 2014).

The main challenge in creating realistic VR is having the image change with head movements, precisely and without perceptible latency. The Oculus Rift fuses readings from a gyroscope, accelerometer, and magnetometer to evaluate head motion. It takes 1,000 readings per second, allowing it to create predictive motion and pre-render images. While these advances are highly innovative for visual engagement, there has been limited innovation in the potential of auditory immersion in personal virtual reality experiences. This is the core focus of the Listenⁿ VR experience, in extending and expanding the existing technology to develop auditory experiences that enhance the visual experience. The current system developed by Dr. Paine uses the headset tracking on the Oculus Rift to spatialize the ambisonic field recordings so they become embedded in the visual environment. By combining this technology with ambisonics, users can follow a flock of birds flying over their head and move through landscapes with similar visual and auditory experiences that match actually being present at that location. The next version of the Oculus Rift headset uses a small external camera and monitors 40 infrared LEDs on the headset, extending current motion tracking to include letting the user crouch, lean, or approach an object. The success of the alpha version of the Listenⁿ VR experience is largely due to the fact that the Point-Of-View (POV) of both auditory and visual streams moves without perceptible latency and produces such a tightly correlated experience as to be perceived as an embodied relation to the content. This element of the project is critical to the accessibility of the Listenⁿ project and will be essential in exploring how digital technology and rich media environments can be used to create experiences of being present in remote environments.

7. The Future

The Listenⁿ digital platform will be disseminated in the five identified communities in Arizona and California through a series of outreach and engagement workshops during 2015 and 2016. The education program is supported by Arizona State University and additional funding for community workshops will be sought from various state and national organisations. These will involve a series of activities directed at capacity building and engagement with the community platform.

The prototype phase for Listenⁿ project is proposed as two years of intensive research and development. This phase forms the initial component of a five-year strategy in creative outcomes, publications and community engagement. It is hoped that by the third year, the five selected communities will be actively facilitating the project from each location by curating activities, generating cultural assets and maintaining the community presence on the website. The fifth year of the project will see the community platform emerge as the core content provider for the database and we predict the system will continue to evolve documenting seasonal and climate changes to the acoustic ecologies of the Southwest deserts over the next decade and beyond. As a dynamic interdisciplinary project, Listenⁿ provides a platform to consider the role of sound in contemporary society and the possibilities of digital technology and remote environmental engagement through sound.

REFERENCES

- Benjamin, E., Heller, A., and Lee, R.** "Localization in horizontal-only ambisonic systems," *Audio Engineering Society Convention 121*, Audio Engineering Society, 2006.
- Cresswell, Tim.** *Geographic Thought: A Critical Introduction*. Malden, MA: Wiley-Blackwell, 2013.
- Cresswell, Tim.** *Place: A Short Introduction*. Malden, MA: Wiley-Blackwell, 2004.
- Gerzon, M. A.** "General metatheory of auditory localisation," *Audio Engineering Society Convention 92*, Audio Engineering Society, 1992.
- Ingold, Tim.** *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*, London: Routledge, 2011.
- LaBelle, Brandon.** *Background Noise: Perspectives on Sound Art*. New York: Continuum, 2006.
- Pernaux, J.-M., Boussard, P. and Jot, J.-M.** "Virtual sound source positioning and mixing in 5.1 implementation on the real-time system genesis," *Proc. Conf. Digital Audio Effects (DAFx-98)*, 1998.
- Rubin, Peter.** "The Inside Story of Oculus Rift and How Virtual Reality Became Reality" <http://www.wired.com/2014/05/oculus-rift-4/> (accessed 26 May 2014).
- Searle, John.** *Consciousness and Language*. New York: Cambridge, 2006.
- UNESCO.** *Biosphere Reserves: The Seville Strategy and the Statutory Framework of the World Network*. Paris, France: UNESCO, 1995.

River Listening: Creative Approaches to Aquatic Bioacoustics in Australian River Systems

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Abstract

River Listening is a practice-led research collaboration between independent artist Dr. Leah Barclay and the Australian Rivers Institute to explore new methods for acoustically monitoring three Queensland river systems: the Brisbane River, the Mary River and the Noosa River. The project involves the establishment of site-specific listening labs to experiment with hydrophonic recording and sound diffusion to measure aquatic biodiversity including fresh-water fish populations – a key indicator of river health. This paper introduces the foundations for the project and preliminary experimentation through the initial listening labs in Australia. *River Listening* fundamentally explores the creative possibilities of aquatic bioacoustics and the potential for new approaches in the management and conservation of global river systems.

Keywords: acoustic ecology, aquatic bioacoustics, hydrophone, field recording, rivers

1. Introduction

In our current state of environmental crisis, biodiversity assessment is critical to understanding the rapid ecological changes taking place across the globe. In the last ten years, there has been a strong emergence of non-invasive monitoring involving auditory recordings of the environment. This emerging field is commonly referred to as soundscape ecology and shares many parallels with other fields, including bioacoustics. Soundscape ecology has an array of creative possibilities that have been deeply explored by practitioners including Bernie Krause (2012) and Leah Barclay (2013). The literature suggests it will continue expanding within scientific fields, with a particular focus on the importance of soundscape conservation, the impact of noise pollution, and the value of soundscapes to assist with biodiversity analysis. There are now a growing number of international projects and scientific institutions embracing methods of bioacoustics in biodiversity analysis of aquatic environments.

In 2014, The Australian Rivers Institute (ARI) and Dr. Leah Barclay were awarded a prestigious Synapse grant to support the development of *River Listening*, a new creative project exploring aquatic bioacoustics. Synapse is an initiative of the Australia Council for the Arts and the Australia Network for Art and Technology (ANAT) that supports collaborations between artists and scientists in Australia. This project extends Barclay's long-term engagement in acoustic ecology to explore the creative possibilities of aquatic bioacoustics in collaboration with an interdisciplinary research team.

2. River Listening

River Listening is a practice-led interdisciplinary collaboration of freshwater biodiversity, virtual technologies, soundscape ecology and environmental sound art to explore methods of hydrophonic recording, soundscape analysis and virtual dissemination. The project draws on the Australian River Institute's existing work in freshwater bioacoustic monitoring (Linke, Gifford & Kennard 2013) to conduct a series of case studies and experiments on three diverse Queensland river systems; the Brisbane River, the Mary River and the Noosa River.

Despite the rapidly growing interest in emerging auditory fields such as soundscape ecology, there is yet to be standardised approaches to field recording and interpreting the

data. While scientists have developed advanced software tools for species recognition, there is a growing need to consolidate the available tools and explore the value of listening to the data in new ways. There are also exciting possibilities to make this data available for a wider audience through digital technology and creative collaborations.

The *River Listening Synapse* residency specifically involves field labs on the three identified rivers experimenting with various hydrophonic recording techniques and sound processing. The labs each involve a three-week immersive engagement process, which is based on a methodology developed during Barclay's doctoral research. The labs involve three daily recording sessions; sunrise, midday and dusk. Each recording session is approximately two hours, with a custom-made quadrophonic hydrophone rig attached to a moving kayak. These recordings are databased onsite, and made available online for analysis at the Australian Rivers Institute.

In addition to the kayak recordings, other field kits are distributed on location to capture sounds without human intervention. These include a stationary hydrophone that records from the same location during the entire field lab and a series of smaller field kits to capture the soundscapes above the water. The additional field kits are useful to analyse particularly sound sources in the hydrophone recordings that might be difficult to identify. The recording sessions are accompanied by community workshops and creative development experiments involving streaming and processing the hydrophone recordings.

The field labs are designed in an open format and encourage collaborations with the local community. The future outcomes will be made available through a virtual sound map and public listening sessions in Queensland, Australia. The database of recordings will form the foundation for a series of experiments at the Australian Rivers Institute to explore new methods in understanding and analysing the data from a scientific and creative perspective.

3. The River Listening Group

The River Listening labs in Queensland are part of a broader project in aesthetic and compositional perspectives on freshwater ecology. Whilst terms such as *ecosystem biodiversity*, *health*, *vulnerability* and *resilience* appear prominently in both scientific literature and policy debate, there is little consensus as to what these terms actually mean. Despite a widespread understanding of the importance of systems thinking in ecological ontology (Marshall, 2002),

these concepts are often studied from a reductionist perspective, with simple operationalisations – such as equating biodiversity with species counts – uncritically adopted.

At issue here is that such terms are not fundamentally scientific, but rather socio-political, even theological: “irrespective of the concept label, characterisations and assessments of ecosystems and their attendant change are inescapably dependent on values.” (deChazal 2010:4). However, formal operationalisations of scientifically measurable quantities *can* adopt a holistic perspective, and indeed holistic acoustic indices of ecosystem ‘health’ are emerging as an exciting new technique in ecology (Servik 2014).

The River Listening Group is a new interdisciplinary collaboration formed by independent artist Dr. Leah Barclay, freshwater ecologist Dr. Simon Linke from the Australian Rivers Institute, and music technologist Dr. Toby Gifford from the Queensland Conservatorium of Music. The Australian Rivers Institute (ARI) is Australia’s largest university aquatic ecosystem research group with globally recognised expertise in river, catchment and coastal ecosystems. ARI is currently leading a range of innovative projects revolving around catchment and river ecosystem processes, aquatic biodiversity and conservation, and aquatic ecosystem monitoring and assessment.

The scientific grounding of the *River Listening* collaboration is directed by ARI Senior Research Fellow Dr Simon Linke, one of Australia’s leading freshwater conservation scientists, whose pioneering work in biomonitoring and river conservation planning has been used by agencies and NGOs from South East Queensland to the Congo. Barclay and Linke are joined by music technologist Dr Toby Gifford, a world-leader in real-time audio processing, machine listening and automated musical scene description who has worked with the ARI to establish frameworks for a real-time bioacoustic wildlife population monitoring network for Australian waterways.

4. Creative Foundations

Barclay’s interest in rivers manifested in early environmentally engaged instrumental compositions such as *River of Mirrors* (2004), composed for chamber orchestra and inspired by elements of the Noosa Everglades. This work used an array of extended performance techniques to imitate the natural soundscapes, and employed repetitive textures to evoke the tannin-stained, mirrored waterways of Noosa River. The following year, in 2005, she

composed *Confluence*, her first major multimedia environmental work commissioned for the opening of Earth Song Exhibition, during the launch of the Queensland Great Walks. Although not inspired by a specific river, *Confluence* drew inspiration from the characteristics of water and rivers. The piece was composed for cello, and used live electronics, digital projections and two dancers, which created a confluence of artistic media in a constant state of change that was controlled live. These two projects informed the development of Barclay's largest rivers project *Sound Mirrors*, and the beginning of a large-body of work inspired by rivers over the last ten years.

Sound Mirrors is an interactive sound installation that responds to specific rivers across the world. During 2009 and 2010 Barclay travelled through Australia, India, Korea, and China, capturing the sound of significant rivers and their surrounding communities. *Sound Mirrors* grew out of her lifelong connection with rivers and a deep personal affinity with water. She was inspired to explore a voice for the rivers through electroacoustic composition at a time when she felt it was becoming more important to listen to the environment.

Barclay's creative inspiration from rivers is shared by a wide spectrum of electroacoustic composers who have created works inspired by rivers across the world. Among the most pertinent is *Voicing the Murray*, an immersive sound installation by pioneering Australian composer RosBandt. The work was commissioned for the Mildura Arts Festival, and was designed to give the Murray River a voice: 'A voice derived from all the voices impinging on its banks and surfaces' (Bandt, 1996).

Bandt's composition process involved several on-site recording sessions, which focused on gathering stories from the local people. She was interested in the idea of capturing endangered sounds and exploring how the soundscape of the area had changed and evolved with the impact of technology. The project was underpinned by environmental intentions; Bandt wanted to draw attention to the environmental degradation of the area, by encouraging listeners to engage in the rich soundscapes:

I was excited at the prospect, as the Murray River is such a unique and critical habitat for the whole of Australia. It is a manmade oasis which has brought with it the by-products of man's overuse of the environment, erosion, salination, and cultural dislocation for indigenous peoples. (Bandt, 1986)

The electroacoustic repertoire inspired by rivers can be divided into three relatively distinct categories: works composed in the studio inspired by rivers; works drawing on environmental field recordings from rivers; and, finally, site-specific works that involve interactivity

and community engagement. The first category includes iconic electroacoustic composers such as Richard Lainhart's *The Course of the River* (1975), Douglas Lilburn's *Soundscape with Lake and River* (1979), and Kaija Saariaho's *Trois Rivières* (1994).

Italian composer David Monacchi's electroacoustic composition *Statid'Acqua* (States of Water) composed in 2006 is a most effective sonic exploration of a river. Those fortunate to experience a live performance of the work are immersed in multichannel sound diffusion that draws the listener deep into a dense sound world that at times evokes the sensation of being underwater. The work was inspired by the multiple physical transformations of water (such as evaporation and condensation) through processed field-recordings. The composition draws on field-research in Rome on the Tiber River, ranging from its springs in the Monte Fumaiolo to its outlet in the Tyrrhenian Sea. Monacchi explored many recording techniques, including an array of microphones and movements along various sound sources, such as springs, streams, waterfalls and caves (Monacchi, 2006). The final composition is presented as a 30-minute performance on a multichannel sound array with 18 loudspeakers.

Garth Paine's composition *Present in the Landscape* (2011) is among the most pertinent of compositions that successfully explores contentious environmental issues through immersive river soundscapes. This work was composed during a residency at Bundanon in New South Wales, Australia, and is an exploration of the nearby Shoalhaven River.

Present in the Landscape specifically addresses the existence of a river, which runs across floodplains, and has had a dynamic and active life, changing direction, remapping its own presence in the landscape over centuries, as large weather events have occurred. However, a decade ago the large Tallowa dam was constructed upstream from the Bundanon property with the intention of providing drinking water to the communities on the south coast of New South Wales. (Paine, 2011)

The damming of Shoalhaven completely transformed the river and had a profoundly negative effective on the local environment, as is apparent in the damming of many rivers worldwide. Paine spent time interviewing the community surrounding the river to capture local perspectives. This included Aboriginal men who offered a critical understanding of the river from the perspective of traditional owners. His ambisonic field recordings captured the environmental soundscapes of the river, from the jumping fish to the temporal flow of the landscape itself (Paine, 2011). *Present in the Landscape* was presented as a six-channel composition and has also been published as a stereo recording.

The diverse literature inspired by rivers is impossible to capture in an introductory paper, but this collection of works would not be complete without mention of Annea Lockwood's trilogy of river sound maps. The trilogy begins with *A Sound Map of the Hudson River* (1982), and is followed by *A Sound Map of the Danube* (2005) and *A Sound Map of the Housatonic River* (2010). Lockwood has experimented with river soundscapes from the mid-60s, but the sound maps solidified her process of creating an 'aural tracing' (Lockwood, 2010) and of documenting the entire length of the river through sound. The sound maps are realised as multichannel installations with the recorded sites located on a wall map accompanied by a time-code so the listener can locate the current soundscape at any given time. Lockwood's sound maps are certainly rich creative responses to the rivers, and they are also functional and accessible insights into their respective acoustic ecologies.

As rivers across the world continue to be impacted by human activity, the *River Listening* project is designed to extend on the existing creative work in this area to explore a process that could bring attention to rivers as ecological entities that deserve respect and conservation. *River Listening* is deeply grounded in the scientific possibilities of field recording and the role of community engagement and multi-platform presentations. The process involves not just composing (in the traditional sense of the word) but collaborating with the community, listening to each river, and, at each site, responding and adapting to other processes that may emerge.

The Noosa River positioned in a UNESCO listed Biosphere of Australia, the historic Han River flowing through the city of Seoul, South Korea, and the Pamba River in the evocative backwaters of Kerala, South India, formed the foundation of Barclay's *Sound Mirrors* project. The process was mirrored at each river involving three distinctive stages: on-site research, field recording and composition. Each of the stages involved various elements specific to that environment, such as community interviews and intensive study and collaborative performances. The process of working with the three specific rivers in Australia, Korea, and India was completed over the duration of three months, working in cultural immersion in each location. In addition to the three rivers, *Sound Mirrors* involved shorter duration projects on the Huangpu River in Shanghai, China, and the Pearl River Delta in Hong Kong. The realisation of *Sound Mirrors* was just as much about the cultural immersion in the rivers' communities as it was about the creative process.

The process in the field varied from sculpting and layering sounds recorded on location to directly responding to the environment. The source materials range from hydrophone recordings deep in the Noosa River, to pilgrims chanting at dusk on the banks of the Pamba in South India. Barclay worked intuitively with these materials in each location and attempt-

ed to capture a living aspect of culture through focusing on various sound marks of the environment. This project was produced on the road – in makeshift studios on boats, trains, riverbanks, and in hotel rooms – while drawing further inspiration from the environment. Working in the cultural context provided insight into the layers of tradition that were impossible to access without first-hand experience. Although these rich webs of history and heritage raised issues of possible cultural appropriation, every effort was made to approach this material in a culturally sensitive way. The most critical process was gathering permission from the appropriate custodians and building strong relationships with the rivers' communities. By producing these works on location, as opposed to returning to the studio, Barclay was able to gain feedback from the local community and collaborators, which was invaluable for her research process.

The *Sound Mirrors* installation has been exhibited a number of times, including the Noosa Regional Gallery in Australia, the Gallery of Modern Art in Bangalore, India, and at Stellenbosch University in South Africa. Eleven of the resulting compositions were released as an album, titled *Transient Landscapes*, and these works have also been programmed at various conferences and festivals. Barclay also began performing *Transient Landscapes* as a live work where she creates a multi-channel mix of the river soundscapes in real-time in response to the performance location. This project has no doubt brought attention to the soundscapes of rivers, yet it's unlikely to have made any significant contribution to the conservation of river systems. While it was a positive learning curve, Barclay recognised the potential for creative projects to have a wider impact when combined with ongoing community engagement, interdisciplinary collaborations and multi-platform outcomes. *Sound Mirrors* was a starting point for these ideas, and laid the foundation for *River Listening*.

5. Listening to the Thames

As a pilot project the River Listening Group will develop an audiovisual installation at the 25th Anniversary Electronic Visualisation and the Arts in London, July 2014. Based on a live hydrophone audio-stream from the Thames, the installation will deliberately inhabit a liminal space at the arts-science nexus, seeking to highlight the positive contributions each domain can have on the other, and document an emerging model of aesthetic-scientific exploration.

6. Future Implications

As the international interest in the emerging auditory fields of bioacoustics and soundscape ecology continues to expand, there are clear opportunities to harness virtual technologies to develop accessible community engagement around the creative and scientific possibilities of listening to the environment. *River Listening* provides a model to develop a truly interdisciplinary approach at the critical stage of creative development and it is anticipated the future results will be beneficial to national ecosystem monitoring programs. It is also hoped that *River Listening* could become a catalyst for community engagement and interdisciplinary thinking at a time when the conservation and management of aquatic ecosystems is a critical priority. At the conclusion of the *River Listening* labs in Queensland, the research team hope to expand this project across Australia and beyond.

REFERENCES

- Barclay, L.** (2013). "Sonic Ecologies: Exploring the Agency of Soundscapes in Ecological Crisis". *Soundscape The Journal of Acoustic Ecology*, 12(1), 2013, 29–32.
- Bandt, R.** (1996). *Voicing the Murray*. Retrieved from <http://www.sounddesign.unimelb.edu.au/web/biogs/P000352b.htm>
- deChazal, J.** (2010). *Environmental Economics Research Hub*. Retrieved from https://devpolicy.crawford.anu.edu.au/research_units/eeh/pdf/EERH_RR82.pdf
- Krause, B.** (2012). *The great animal orchestra*. New York: Little, Brown and Company.
- Lainhart, R.** (1975). *The Course of the River*. [LP]. USA: Vicmod records.
- Lilburn, D.** (2004). *Complete Electro-Acoustic Works*. [CD]. New Zealand: Atoll.
- Linke, S., Gifford, T. & Kennard, M.** (2013). *Listening to the fish – Acoustic monitoring of freshwater biodiversity through audio signature recognition*. Presented at Listening in the Wild, Queen Mary University of London, June 2013.
- Lockwood, A.** (1989). *A Sound Map of the Hudson River*. [CD]. USA: Lovely Music.
- . (2004). "Sound mapping the Danube River from the Black Forest to the Black Sea: Progress report", 2001–2003. *Soundscape, The Journal of Acoustic Ecology* 5(1), 32–4.
- . (2007). "What is a river" *Soundscape: The Journal of Acoustic Ecology*, 7(1), 43–4.
- . (2008). *A Sound Map of the Danube*. [CD]. USA: Lovely Music.

- . (2010). *A Sound Map of the Housatonic River*. Retrieved from <http://www.annealockwood.com/compositions/housatonic.htm>
- Marshall, A.** (2002) *The Unity of Nature: Wholeness and Disintegration in Ecology and Science*. London: Imperial College Press.
- Monacchi, D.** (2006). *Statid'Acqua: Eco-acoustic compositions*. [CD]. New York: Electronic Music Foundation Ltd.
- Paine, G.** (2011). *Present in the landscape*. Retrieved from http://www.eartotheearth.org/artistswork/paine_110506.html
- Saariaho, K.** (2002). *Six japanese gardens & Trois-Rivières Delta*. [CD]. Paris: INA-GRM.
- Servik K** (2014). Eavesdropping on Ecosystems. *Science*, 343(6173), 834-837.

The Need to Document and Preserve Natural Soundscape Recordings as Acoustic Memories

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Abstract

Soundscapes and other monitoring recordings register the acoustical activities in a locality portraying its acoustic dimension, depicting human and animal presence. Soundscapes recordings in natural areas, including urban sites, can be used to describe biodiversity, by documenting their presence, and characterize the environment. These recordings are thus primary sources of information, and securing its conservation may guarantee the acoustic memory of habitats and ecosystems. These recordings have a potential application in future recreational, educational or research activities. Soundscape recordings, and its associated information, if organized in a long-term data-curation framework, such as sound archives or collections can ensure its preservation and maintain its value. Overall, after acknowledging the need to preserve soundscapes recordings, a road map must be developed to identify past important non-preserved recordings and to promote the inclusion of a long-term preservation strategy for recordings in starting projects.

Keywords: Acoustic recordings, sonic environment, bioacoustics, nature, Sound archives and collections

1. Introduction

1.1. Soundscapes and biodiversity

Sound is an essential component of biodiversity and we just need to listen to the great amount of different sounds present all around us to observe that fact. But animals are not the only source of sound, the acoustics of landscapes (soundscapes) are constituted from sounds of animals (biophony; e.g. birds, insects) but also by the elements (geophony; e.g. wind, water), and also humans (antropophony; e.g. stationary machines, planes, cars) (Pijanowski et al., 2011). These sounds occupy a significant portion of the frequency spectrum, from the low frequency elephants or human related sound pollution, to ultrasonic bat sounds (Fletcher 2004). Animal sounds (biophony) are an important component of the acoustical environment and are present in most localities, from very urbanized, to arid habitats, underwater or pristine terrestrial environments (Boebel et al. 2008; Obrist et al. 2010; Pijanowski et al. 2011). Within these environments a great variety of species, such as insects, fishes, anurans, reptiles, birds and mammals use sounds in activities such as mate attraction, territorial defense, food request or prey detection.

Due to the importance of sound in a species' biology, is not surprising that sound embodies an important fraction of biodiversity, that may convey important information on the other dimensions of diversity such as species, functional or evolutionary diversity (Obrist et al. 2010; Sueur et al. 2008; Gasc et al. 2013). In fact, since many species use sound in a daily basis, sound gives indirect cues of overall biodiversity, being very useful in conservation and biodiversity programs (Dawson and Efford 2009; Blumstein et al. 2011).

1.2. Soundscapes hold biodiversity information

The information about organisms, their activities, and the environment in general captured in soundscapes can be useful in understanding patterns and tendencies of biodiversity as well as individual species behavior or evolution (Sueur et al. 2008; Luther and Baptista 2010). Bioacoustics and especially soundscapes may play an important role in monitoring and assessing the effect of climate change, invasive species, or other factors related to crises related to biodiversity (Rands et al. 2010). The advantage of using soundscapes is that it is not taxonomically oriented, or at least may be recorded with enough bandwidth to register sound from elephants to bats, allowing their use in an entire community based approach.

Soundscape recordings document the acoustic dimension of reality, comprising a documental testimony of local biodiversity (Schafer 1971; Krause 2008). Many animal sounds

encodes species-specific information that can be used to confirm the presence of specific species (Aubin 2004) and sound is often used as a valuable taxonomic tool to assess new species (Biju et al. 2011). Beyond the species specific code, each species may possess a wide range of messages each with specific ethological contexts (de Araújo, Marcondes-Machado, and Vielliard 2011) allowing to assess the behavioral context of an individual within a soundscape recording.

The presence of a set of species in soundscape recordings has the observational value of placing each species in a specific location at a determined time. This information can be used for species distribution studies, to identify changes in community composition, such as the presence of new exotic species or registering changes in a species' range. Depending on the recording protocol, soundscape recordings may also be useful in determining a relative measure of species richness at a site and even as an index of abundance for some species. Additional information about the species' habits such as the breeding period or timing of migration may also be extracted from these recordings. The consistent capture of long-term soundscape recordings can also provide information which can be used to assess population tendencies, and may be especially valuable for species of conservation efforts (Gilbert, McGregor, and Tyler 1994). Soundscapes can also be used in other areas such as behavior and evolution, for studying the relationships between noise and vocal activity of animals, geographic variation of species calls or song evolution.

Soundscapes are also excellent vehicles for disseminating and promoting scientific knowledge encouraging people to discover the natural world. Recordings may be used in exhibitions to promote interaction between visitors and the natural world by illustrating different ecosystems, or natural cycles, endangered or extinct species. Pleasant, enjoyable, natural soundscape recordings also have esthetic value and listening to them may have a positive impact on a person's quality of life.

1.3. Acoustic memory of habitats and ecosystems

Soundscape recordings can preserve an acoustic memory of habitats and ecosystems. An acoustic memory is a preserved recording, or set of recordings, captured with associated data and information representing the acoustics of a place at a specific time. It is the result of a soundscape recording that registers the acoustical activity at a sensitive radius and it produces a valuable primary source of information about the species present, the acoustical environment, and the humanization of a place (see above). Time series of soundscapes may reveal the dynamics of urbanization in terms of community composition, that can be revisited to re-examine previous results and to collect new information about habitats and

ecosystems. Soundscape recordings hold information that may allow access to information related to past events, inform the listener about present events and provide information to predict future trends and the outcome of present events.

2. Collections of natural soundscapes and monitoring recordings

2.1. Collections of natural soundscapes

Soundscape recordings organized as collections with a long-term data-curation framework ensure the preservation of a soundscape and maintain their value as acoustic memories. Biological collections are subsets of the diversity of the natural world which have been developed as part of an intellectual process of sampling, preservation and ordering (Lane 2011) accessible to the outside user community either for research or public outreach (Alberch 1993; Lane 1996). Collections provide a major source of historical information, with a broad taxonomic and geographic span (Boakes et al. 2010; Lips 2011) that allow one to contrast historical information with present-day studies in a way that might otherwise be impossible (e.g. biological invasions). Collections are composed not only of preserved specimens but are combined with biogeographical, ecological, and biographical (Lane, 1996). Thus, the long-term preservation commitment, specimen documentation, scope and availability to the public for study, establishes a data curation framework to development of soundscapes collections within the concept of acoustic memory of habitats and ecosystems.

2.2. Soundscapes as scientific specimens

Animal sound recordings along within soundscape recordings pose interesting challenges to the traditional concept of specimens and broaden the concept. Traditionally biological specimens are preserved objects, characterized taxonomically, spatially and temporally in a manner which registers the presence of a species at a specific place and time (Hawks 1999). These can consist of parts of individuals (e.g. tissue collections), whole individuals (e.g. skin collections), fossils (e.g. paleontological collections) or even extended phenotypes (e.g. nest collections). Sounds are ephemeral and their recorded existence depends on a support medium (e.g. tapes, hard drives or flash memories). Soundscapes are also not taxonomically oriented but are primary sources of information that model the real world and can be re-examined to test new hypotheses.

Specimen documentation (such as metadata) is fundamental in maintaining the scientific value of a specimen (Lane, 1996). Specimens are always documented with information that describes it taxonomically, characterizing its location and date of collection among other information. In the case of soundscape recordings additional information is needed about the recording process; including information such as microphone (brand, model), recorder (brand, model), microphone filtering, sample rate, bit depth, information about editing, author of the recording and/or managing the project, recording protocol, recording duration or sound quality (Ranft 2004; Kettle and Vielliard 1991).

However, it should be noted that the capacity to preserve soundscape recordings is not infinite and it is limited by hardware capacity (e.g. storage space) and human resources. In this case soundscape recordists and archivists should select from within the initial pool of recordings a subset that best suits the soundscapes collection objectives in terms of habitat, temporal and geographical coverage in addition to rarity, historical value or recording quality.

The acoustic memory approach is currently being used in the Portuguese Natural Soundscapes Project, which aims to create a contemporary portrait of Portuguese Natural Soundscapes. The project has sampled over 20 sites with a 24 h continuous cycle of recordings using a 5 microphone array. Recordings that are being catalogued and stored to preserve its value as acoustic memory of the sites, currently with circa 1.6 TB, 1350 recordings that represent more than 2800 hours of recordings.

3. The dynamic nature of soundscapes

Soundscapes are changing all around reflecting a world in constant modification. Natural communities composition will naturally change over time, but modifications in soundscapes are especially true in cities, where mankind intensively modifies the environment to establish infrastructure such as roads, buildings, or artificial light. Such modifications in the soundscape will not only promote changes on the species composition of an area (McClure et al. 2013), but it will also introduce sounds from a panoply of evolving machinery from cars to factories. In this sense soundscapes recorded periodically may depict the dynamics of urbanization, and also as a testimonial of the presence of a specific species, community composition, or even specific machinery over time and space.

4. A road map towards soundscape recordings preservation

Creating a good acoustic memory based on soundscape recordings will require a great effort preserving existing recordings while performing new recordings.

The action towards the preservation of existing important soundscape recordings includes an identification phase, which should encompass determining its ownership and preservation status (preserved or not preserved) followed by assessing recoverability, importance and loss risk. These actions should be followed by a preservation plan to guarantee their conservation through proper storage.

Within the acoustic memory context performing new recordings to guarantee the spatial and temporal representations of sound is challenging. The preservation process of these recordings are extremely difficult in terms of storage capacity especially if we consider the needed redundancy, that will bring further difficulties. Collaborative work may reduce the difficulties, as it would reduce the weight over a single institution. In order to maximize the quality of such recordings, there is the urgent need to establish standards for the recordings' metadata, as the more additional data there is, the more valuable the recording is. Finally, due to the cost of making and keeping soundscape recordings, we must outline regional objectives, leading a series of recordings over time, which should be made in distinct localities.

5. Concluding remarks

Soundscape recordings retain valuable characteristics which clearly go beyond the value of observational data and carry information that can be best used if organized within a framework similar to an NHC framework. Soundscape recordings should be seen as part of a region's scientific and cultural heritage holding information that may allow for a better understanding not only of biological processes but also of society, and the development of the *urbis*. The establishment of soundscape collections would preserve the acoustic memory and at the same time allow for the confirmation of previous studies results through verification. Soundscapes may be used to test new hypotheses derived from technological and conceptual advances, which may have not been envisioned at the time of collection.

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REFERENCES

- Alberch, P.** 1993. "Museums, Collections and Biodiversity Inventories." *Trends in Ecology & Evolution* 8 (10): 372–75.
- Aubin, T.** 2004. "Penguins and Their Noisy World." *Anais Da Academia Brasileira de Ciências* 76 (2): 279–83.
- Biju, S. D., I. van bocxlaer, S.Mahony, K. P. Dinesh, C Radhakrishnan, A. Zachariah, V. Giri, and F. Bossuyt** 2011. "A Taxonomic Review of the Night Frog Genus *Nyctibatrachus* Boulenger, 1882 in the Western Ghats, India (Anura: Nyctibatrachidae) with Description of Twelve New Species." *Zootaxa* 3029: 1–96.
- Blumstein, D. T, D. J Mennill, P. Clemins, L. Girod, K. Yao, G. Patricelli, J. L Deppe, et al.** 2011. "Acoustic Monitoring in Terrestrial Environments Using Microphone Arrays: Applications, Technological Considerations and Prospectus." *Journal of Applied Ecology* 48 (3): 758–67.
- Boakes, E. H., P. J. K. McGowan, R. A. Fuller, D. Chang-qing, N. E. Clark, K.O'Connor, and G. M. Mace** 2010. "Distorted Views of Biodiversity: Spatial and Temporal Bias in Species Occurrence Data." *PLoS Biol* 8 (6): e1000385.
- Boebel, O., H. Klinck, L. Kindermann, and S. E. D.Naggar** 2008. "Palaoa: Broadband Recordings of the Antarctic Coastal Soundscape." *Bioacoustics* 17: 18–21.
- Dawson, D. K. and M. G.Efford.** 2009. "Bird Population Density Estimated from Acoustic Signals." *Journal of Applied Ecology* 46 (6): 1201–9.
- De Araújo, C. B., L. O. Marcondes-Machado, and J. M. E. Vielliard** 2011. "Vocal Repertoire of the Yellow-Faced Parrot (*Alipiopsitta Xanthops*)." *The Wilson Journal of Ornithology* 123 (3): 603–608.
- Fletcher, N. H.** 2004. "A Simple Frequency-Scaling Rule for Animal Communication." *Journal of the Acoustical Society of America* 115 (5): 2334–38.
- Gasc, A., J. Sueur, S. Pavoine, R. Pellens, and P. Grandcolas.** 2013. "Biodiversity Sampling Using a Global Acoustic Approach: Contrasting Sites with Microendemism in New Caledonia." *PLoS ONE* 8 (5): e65311.
- Gilbert, G., P. K McGregor and G.Tyler** 1994. "Vocal Individuality as a Census Tool: Practical Considerations Illustrated by a Study of Two Rare Species." *Journal of Field Ornithology* 65 (3): 335–48.
- Hawks, C.** 1999. "Appendix Q: Curatorial Care of Natural History Collections." In *NPS Museum*

- Handbook*, Part 1, edited by NPS. National Parks Service. Washington.
- Kettle, R., and J. M. E.Vielliard.** 1991. "Documentation Standards for Wildlife Sound Recordings." *Bioacoustics* 3: 235–38.
- Krause, B.** 2008. "Anatomy of the Soundscape: Evolving Perspectives." *Journal of Audio Engineering Society* 56: 73–80.
- Lane, M. A.** 1996. "Roles of Natural History Collections." *Annals of the Missouri Botanical Garden* 83: 536–45.
- Lane, R.** 2011. "Scientific Collections: A Vital Infrastructure for Biodiversity Studies." In *Biosystematics 2011*, edited by T Borsch, P Giere, J Hoffmann, R Jahn, C Lohne, B Nordt, and M Ohl, 224–25. Berlin: Botanic Garden and Botanical Museum Berlin-Dahlem and FreieUniversität Berlin.
- Lips, K. R.** 2011. "Museum Collections: Mining the Past to Manage the Future." *Proceedings of the National Academy of Sciences* 108 (23): 9323–24.
- Luther, D., and L.Baptista.** 2010. "Urban Noise and the Cultural Evolution of Bird Songs." *Proceedings of the Royal Society B: Biological Sciences* 277 (1680): 469–73.
- McClure, C. J. W., H. E. Ware, J. Carlisle, G. Kaltenecker, and J.R .Barber.** 2013. "An Experimental Investigation into the Effects of Traffic Noise on Distributions of Birds: Avoiding the Phantom Road." *Proceedings of the Royal Society B: Biological Sciences* 280 (1773).
- Obriest, M. K., G. Pavan, J. Sueur, K. Riede, D. Llusia, and R. Márquez.** 2010. "Bioacoustics Approaches in Biodiversity Inventories." In *Manual on Field Recording Techniques and Protocols for All Taxa Biodiversity Inventories*, edited by J. Eymann, J. Degreef, C. Häuser, J. C. Monje, Y.Samyn, and D.Vanden. Spiegel, 8:68–99. ABC Taxa.
- Pijanowski, B. C., L. J. Villanueva-Rivera, S. L. Dumyahn, A. Farina, B. L. Krause, B. M. Napoletano, S. H. Gage, and N.Pieretti.** 2011. "Soundscape Ecology: The Science of Sound in the Landscape." *BioScience* 61 (3): 203–16.
- Rands, M. R. W., W. M. Adams, L. Bennun, S. H. M. Butchart, A. Clements, D. Coomes, Ab.Entwistle, et al.** 2010. "Biodiversity Conservation: Challenges Beyond 2010." *Science* 329 (5997): 1298–1303.
- Ranft, R.** 2004. "Natural Sound Archives: Past, Present and Future." *Anais Da Academia Brasileira de Ciências* 76 (2): 455–65.
- Schafer, R. M.** 1971. *Tuning of the World*. Vancouver: Random House Inc .
- Sueur, J., S. Pavoine, O. Hamerlynck, and S.Duvail.** 2008. "Rapid Acoustic Survey for Biodiversity Appraisal." *PLoS ONE* 3 (12): e4065.

The Senses and The City: Interpreting the Semana Santa of Seville

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Abstract

The Semana Santa of Seville can be understood as a re-imagining of the city through a re-configuring of the senses: the visual, the auditory, the olfactory and the tactile. The city and the self are transformed through the Semana Santa, the city's major annual *fiesta*, in a form of multi-sensory theatre in which the urban landscape becomes the stage, co-habited by actors and audience alike. This paper will explore the soundscapes of the Semana Santa, the complex matrix of acoustic communication that underpins them, and how they are shaped by Seville's particular urban landscape, where sound and architecture take on a reciprocal and harmonious relationship.

Keywords: acoustic communication, urban soundscape, place and identity, reflexive ethnographies, religion and the senses, synaesthesia

1. Introduction

This paper is written to accompany an audio-visual presentation performed at *Invisible Places, Sounding Cities*, in Viseu (2014). The ideas explored, in both the paper and the audio-visual presentation, reflect recurring themes arising through sound-oriented studies and creative audio-visual work in Seville's *Semana Santa* (Easter Week) since 2006. The outputs of this work have ranged across audio releases, multi-channel sound and video installations, live presentations, writing and a permanent collection in the British Library¹.

The paper and audio-visual presentation present a series of observations and reflections arising from these studies, that read like an exploded view of the *Semana Santa* in which some of the pieces are missing, or given only cursory attention. The religious images and the manners in which they are arranged on their *pasos* (floats comprising a number of visual elements in harmonious arrangement), processional music, the *saetas* (a form of flamenco prayer sung to religious images of the *Semana Santa*), the roles of the olfactory and the tactile senses, and not least the social and religious, spiritual life of the brotherhoods, all warrant significant attention in a more complete interpretation of the *fiesta*.

The ideas presented here attempt to shed light on the function and effects of sound within the *Semana Santa*, within the context of a festival which is in many ways synthetic. The study is specific to the *Semana Santa* of Seville, and it is worth mentioning that it is a festival celebrated with much variation according to local custom.

1.1. The role of the senses

We will see that there is a complex matrix of acoustic communication² at play within the *Semana Santa*, and that it is situated right at the heart of the *fiesta*'s expressive language. The aural aspects of the *Semana Santa* are regarded with importance, and there is "an acoustic of noises and sounds that aren't notated on any stave, and yet they are its authentic symphony, the most unmistakable. Noises and sounds that sevillians know instinctively, without having them classified" (Cué 2006, 83-84). I propose that a sound-oriented approach to interpreting the *Semana Santa* can reveal some of the dynamic relationships between memory, the senses and the city, which mark the experience of the festival.

1. British Library collection reference C1338.

2. See Truax 2001, 49-64.

The Semana Santa is a sensuous affair, whose language has a tendency towards synaesthetic experience: it is characterised by visual, olfactory, tactile and aural elements in interplay with private and collective memory. I propose soundscape studies as useful tool in combination with other tools for an ethnography of the Semana Santa of Seville.

1.2. Perspective

The interpretation of the Semana Santa requires a constant movement between the micro and the macro, between isolated detail and the harmonic whole. As such, I have attempted to present a set of ideas with a degree of non-linearity: an *exploded view*.

2. The fiesta and the city

The city is inseparable from the Semana Santa, both spatially and temporally. One cannot be understood without the other... The history of the city is not alien to the history of the Semana Santa, and vice versa. They flow in parallel, they mutually influence one another, they reflect as if they were two mirrors situated one in front of the other. (Robles, Roldán and Torres 2012, 22-23)

2.1. Ephemerality and the Semana Santa

The Semana Santa of Seville is a religious festival whose language is essentially ephemeral. There are sixty-one Catholic brotherhoods that make their station of penitence at the Cathedral between Palm Sunday and Easter Sunday. Each corporation carries their titular religious images (sculptures representing moments of the Passion of Christ) through the streets on floats, journeying between their church or chapel and the Cathedral. The journeying presupposes a series of temporal encounters between the religious images and the city, a dramaturgy in which “the city is not a mere backdrop, rather it forms an essential part of the fiesta, of the liturgy, of its emotions.” (Robles, Roldán and Torres 2012, 22) The evanescent nature of the Semana Santa is central to the reconfiguring of the senses, and the relationships between memory and the city.

2.2. Topography of the Semana Santa

The processions of the Semana Santa take place in public, urban space. The beginning and end points of the processions are marked by the moments of entry and exit of the processions from the churches or chapels in which they reside (known as the *entradas* and *salidas*). Each participating brotherhood is obliged by rule to visit the Cathedral to make its station of penitence, passing first by the General Council of Brotherhoods³ and followed by the city hall. Therefore the majority of Seville's Semana Santa takes place within the historic centre, each brotherhood with its unique itinerary through the old town's complex network of narrow, winding streets.

The topography of Seville is crucial to understand how this celebration is manifested in its streets. Seville is a flat city that sits on the lower reaches of the Guadalquivir. There are few sloping streets, such as the Cuesta del Rosario or the Cuesta del Bacalao... which in reality are gentle inclines that would pass unnoticed in another city. This is more important than it seems, since this terrain without inclines worthy of mention facilitates the carrying of the heavy floats, which would be difficult to perform in another city [with a less even terrain]. (Robles, Roldán and Torres 2012, 18)

It can be seen that the Semana Santa has evolved in response to the specific characteristics of the city. Indeed, the practical considerations of the carriage of the *pasos* (the heavy floats that bear the religious images) through the tortuous streets of the historic centre have further evolved into artistic considerations, where the navigation of a particular street corner may be elevated to a level of artistry due to its difficulty. This is particularly noticeable in the aforementioned *entradas* and *salidas*, where the passage of the large floats through the church doorways is calculated with mere inches to spare. For example, when the brotherhood of Jesús Despojado prepares to carry its religious images from its chapel, large crowds gather to witness the complicated manoeuvre of the religious floats through the doorway of the church. Due to the dimensions of the float and the doorway respectively, the float-bearers are required to carry out the whole operation on their knees, and the successful completion of this act is typically met with an emotional outburst of applause and cries of "óle!" from the public.

3. Consejo General de Hermandades y Cofradías de Sevilla.

2.3. Lexicon of the Semana Santa

To begin any explanation of the Seville's Semana Mayor (major fiesta) is a complicated task, without making reference to the veritable, dialectal lexicon which has developed in parallel to the fiesta.

The traditions of the Semana Santa, its dialectal and ethnographic actions, are not limited to the insider world of the brotherhoods, rather they form part the speech and the traditions of the city. In Seville, anyone knows what a *trabajadera*⁴ or a *maría*⁵ is, objects and terms which strictly speaking pertain to the imitation of the initiates who are the nucleus from whence the terms were coined. (Burgos 2004, 111)

The lexicon of the Semana Santa is extensive, giving linguistic expression to any of the composite elements of the fiesta: sculpture, embroidery, silversmithing, musical composition, musical performance, and the work (one might dare to say *performance*) of the float-bearers; all of which interact in a compositional whole, completed only when experienced in fleeting configurations within the fabric of the city.

3. Synthesis

The Semana Santa synthesises in many ways, which we will begin to explore here. It is worth making brief note in particular of the term *synchresis*, a fusion of the words *synchronism* and *synthesis*, “the spontaneous and irresistible weld produced between a particular auditory phenomenon and visual phenomenon when they occur at the same time.” (Chion 1994, 63)

3.1. The tale of Stravinsky

Igor Stravinsky visited Seville during the Semana Santa of 1921, accompanied by the Russian choreographer Diaghliev. Popular legend has it that during his visit Stravinsky was hosted by Spanish journalist and poet Juan Lafita. Upon witnessing the Virgen del Refugio carried

4. A term describing the transversal wooden beams which form part of the structure of the underside of the religious floats, which rest upon the neck and shoulders of the float-bearers in order for them to lift and carry the floats.

5. A term describing the two candles mounted nearest to the image of the Virgin on the float.

through the Puerta de la Carne, whilst the band interpreted *Soleá, dame la mano*, he is said to have exclaimed to his host: “Congratulate the composer, because I am seeing what I am hearing and I am hearing what I am seeing!”

3.2. Solitude, give me your hand through the prison bars

In the mornings of Good Friday, returning from the cathedral to the neighbourhood of Triana, the Esperanza de Triana (literally, the Hope of Triana) would pass by the old prison named Pópulo in the street of Pastor y Landero. As the procession approached, the prisoners incarcerated within would press themselves up to the bars of the windows, apparently the only day of the year on which they would be permitted to do so. Upon passing by the jail, the float-bearers carrying the image of Cristo de las Tres Caídas and the Virgin nicknamed *Hope*, would detain the images, turning them laterally in the street to face the prison’s barred windows. And from behind those windows, prisoners would intone imploring *saetas*.

In film footage from the Twenties, fragments of which can be seen on YouTube today, something of these historical events remains: gesturing arms can be made out, extending through the bars of the old prison windows, though we have no way of knowing what those *saetas* might have sounded like.⁶

A curious trace of these lost *saetas* lives on today, in one of the city’s most celebrated compositions for the Semana Santa: *Soleá, dame la mano*. Manuel Font de Anta’s 1918 composition was written after Font de Anta witnessed one of these *saetas*, sung from the bars of the prison to the Esperanza de Triana, and the original sheet music bears the following inscription:⁷

Soleá, dame la mano
A la reja de la carse
Que tengo muchos hermanos
Huérfanos de pare y mare

Solitude, give me your hand
Through the bars of the prison
For I have many brothers
Orphaned of mother and father

6. Early sound recordings of the *saetas* of Manuel Centeno, Vallejo, Tomás Pavón and others might give us some flavour. It should be noted however, that these recordings from the Twenties were made in recording studios by professional flamenco singers.

7. Note the four line composition of the poem (in which line one rhymes with line three, and line two with line four) with its eight syllable per line meter. This is typical of Seville’s *saetas*.

Below which is written the dedication: “To the unfortunate inmates of Seville’s prison who, upon singing *saetas* to the Virgin during the Semana Santa, inspired me to conceive this work.”

3.3. Pasos de palio

To shed light upon the synaesthetic experience alluded to in Stravinsky’s (possibly mythical) exclamation, we should first mention that Font de Anta’s composition *Soleá* is descriptive in nature⁸. Secondly, it is useful to understand the specific manner in which Seville’s *Dolorosas*⁹ are carried through the streets during the Semana Santa. The images of the Virgin are borne upon a *paso* or float, carried by a team of float-bearers, usually numbering thirty-six in total, but varying upon the size and weight of the float. The float-bearers are located beneath the float, hidden from sight by hanging velvet drapes, and the mechanism by which the *pasos* are given motion being thus disguised, the images are given the impression of walking. Above the head of the Virgin is suspended an embroidered canopy known as the *palio*, which is supported by twelve ornate vertical poles, or *varales*. These are mounted upon the float, six to each side of the Virgin. For this reason, the floats bearing Virgins in Seville are known as *pasos de palio*, often shortened simply to *palio*. The synchronised work of the float-bearers in carrying the floats forwards also produces a rhythmic, lateral movement, causing in the canopy above the Virgin the appearance of lateral motion in the opposite direction (from the direction of movement of the float). This ingenious form of animation given to the *palio* results in a gentle and harmonic visual motion, which synthesises with the musical accompaniment provided by the processional band following behind the float. It is worth noting that as the *paso de palio* is seen approaching from the front, the processional band remains hidden from view behind the float, hence providing an acousmatic sound source¹⁰ until the float has passed-by (revealing the files of musicians following behind).

8. Curiously, the sheet music is headed by the inscription “*Soleá, dame la mano. Impression, in the form of a funereal march.*”

9. Denomination for images of the Virgin depicted in mourning for Jesus Christ. In Seville sculptures of this category are typically distinguished by glass “tears” on the cheeks of the image, and a white handkerchief carried in the right hand.

10. Chion 1994, 71-73.

4. Centripetal soundscape

The soundscapes of the Semana Santa, as we will see, are oriented around the religious floats and the religious images borne upon them. Each procession typically carries two religious floats: the first bears the image of Christ, or a collection of figures including Christ and together narrating a scene from the Passion (known as the *paso de Cristo* or *paso de misterio* respectively); the second bearing the *Dolorosa*, referred to as the *paso de palio*. The floats carried by a given brotherhood are separated spatially by a number of *Nazarenos* (literally, Nazarenos), hooded members of the brotherhood processing in files two abreast. In this way, the soundscapes of each procession can be seen as having two moving centres (or one or three, in the cases of brotherhoods who carry these numbers of floats), which wind through the city across several hours following the brotherhood's processional route. Six to eight brotherhoods process on each of the seven days of the Semana Santa¹¹, such that at any one time there are a number of processions traversing the streets simultaneously. A map of the soundscapes of the Semana Santa might give us a picture of a number of moving focal points, all passing at some point down the *Official Route* leading to the Cathedral.

4.1. Processional music

The processional bands in their numerous denominations¹² accompany the floats bearing the religious images, animating them with musical narrative and, as we have alluded previously, synthesising with the visual elements of the floats through a *syncretic* relationship. The bands can often be heard approaching (or disappearing) from significant distance, so the processional music accompanying the images is perceived as a long, slow fade leading to a climax (as the float passes by), and followed by a further slow fade-out. The religious images are therefore announced long before they are seen, giving to an anticipative sense of expectation.

It is worth mentioning that particular processional marches take on specific meaning or colour when performed in certain places. In the street of Pastor y Landero, the Virgin *Esperanza de Triana* passes by the site of the Pópulo prison in the early hours of Good Friday. As the Virgin is turned in the street to face a plaque marking where the old jail once stood (the

11. With the exception of Easter or Resurrection Sunday, when only one brotherhood has its procession.

12. principally, *Bandas de Cornetas* and *Tambores* and *Agrupaciones Musicales* in accompaniment to the *pasos de Cristo* and *pasos de misterio*, and *Bandas de Música* accompanying the Virgins, each with their distinct instrumentation and repertoire.

prison was demolished in 1932), the band accompanying the Virgin interprets *Soleá, dame la mano*. There are countless examples of other such employments of processional music that achieve this high degree of *site* or *context-specificity*.

4.2. Saetas

As has been previously mentioned, the *saetas* are flamenco prayers, sung from balconies or from the streets as the floats are carried past, forming part of the centripetal pattern that we are sketching. The *saetas* are typically sung as the floats are detained (to afford the float-bearers a rest), at which time the processional music is also detained.

Saetas are often prepared or improvised to make some specific reference to the place in which they are sung, the religious images to which they are addressed, or the circumstances in which the singer finds themselves at that time. Consider for example the two five-line verses of this *saeta* sung by Pili del Castillo in 2013. The verses describe the face of the Virgin of *Las Aguas*, to whom the singer addresses her *saeta*, then lamenting the absence of Pepe Perejil, *saeta* singer and close friend of Pili del Castillo who died in 2011:

*Madre mía de Las Aguas
Tienes la cara divina
Pero es tanto tu hermosura
Que no la quiebra la pena
Ni el llanto te desfigura*

*Si al llegar a tu capilla
Notas que te falta algo
No llores tu madre mía
Que Perejil desde el cielo
Seguro que te está cantando*

Mother of mine, of Las Aguas
Your face is divine
But such is your beauty
That pity does not break it
Nor is it disfigured by crying

If arriving at your chapel
You notice that you are missing something
Do not cry, Mother of mine
I'm sure that Perejil
Is singing to you from the Heavens

4.3. The world of acoustic communication of those below

As previously mentioned, teams of float-bearers carry out the work of bearing their Christs and *Dolorosas* through the city's streets on their shoulders. The float-bearers are enclosed by a velvet drape hanging from the wooden structure of the float, both preventing them from being seen from the outside and conversely, from seeing out. Guiding them from the street is the foreman (known as the *capataz*), who acts as the eyes of those beneath the float. He communicates with his float-bearers through a veritable lexicon of verbal commands. So important is this detail of the Semana Santa that Antonio Burgos dedicates the an entire third of his *Folklore of the Sevillian Brotherhoods* to the discussion of the terminology employed by the foremen and float-bearers.

The foreman is charged with operating the *llamador*, also known as the *martillo* (the hammer):

A more or less artistically formed knocker, whose dry and spaced knocks alert the float-bearers that the march is to be resumed, and give the signal for the lifting of the float. The "martillo" - which constitutes a complete system of communication between the foreman and float-bearers, with its opportune semantic code - knocks against the "perno", a metal support which enhances the percussive effect. (Burgos 2004, 39)

The vernacular of the foreman in Seville's Semana Santa is expressive in every facet of the carrying of his work: the giving of orders to the unsighted float-bearers (which is his principle job); encouraging and inspiring his float-bearers to overcome difficult moments; and the solemn dedications to those no longer here. The local accent of Seville finds itself exaggerated in the voice of the *capataz*, applied together with the rules of economy of Seville's dialect, to produce phrases such as:

Vámano j'otra veh, mi árma! Tos poriguá valiéente! A eeeésta é!

Which in traditional Spanish reads:

Vámanos otra vez, mi alma! Todos por igual, valientes! A ésta [vez] es!

Meaning in English:

Let's go again! All together now! This time!

This kind of exposition of the voice clearly moves beyond a closed system of communication between the foreman and his team of float-bearers, entering into the realm of the performative:

This kind of voice to order the lifting of the float, varies and multiplies into infinity. Around an invariable semantic scheme (the calling to attention of the “*patero*”¹³, the cry of “*a esta é!*”, the execution of the knock of the “*martillo*”), every discrete circumstance and the greater or lesser inspiration of each foreman gives it a special style. Each foreman gives the voice of command an inflexion with his own personal style, charging the accents melodically in each case. In this way, the ritual phrases... acquire the character of the psalms of the muezzin, almost of gypsy or flamenco song. (Burgos 2004, 48)

4.4. Silence

Not all of the religious images are accompanied by processional bands: A number of the images are preceded by a three-piece woodwind section, comprising clarinet, oboe and bassoon, which announced the arrival of the religious images with short, sombre piece of music known as a *saetilla*¹⁴. These *saetillas* have the effect of quietening the awaiting crowd, and a profound hush can fall amongst the multitude, observed in increasing rigour with the proximity of the religious image. The hush of the crowd is like an inverted reflection of the soundscape of the processional bands, fading away to an intense silence with the proximity of the *pasos*, and fading up to a sea of chattering once more as the religious images pass out of site.

13. *Patero* is the denomination given to the float-bearers positioned at each of the four corners of the float

14. Literally, a small arrow, or *saeta*.

In this quietened environment, punctuated by coughs and camera clicks, a whole set of sounds associated the *pasos* become audible and foregrounded: the unison shuffling of feet of the float-bearers, the creaking of the wooden floats, the tinkling of the twelve poles that support the canopy above the Virgin. In his chapter entitled *Sevillian Acoustic*, Ramón Cué describes the silence more poetically:

Be quiet, and you will hear the sputtering of the candles carried by the passing members of the brotherhood, all chanting with their tongues of light; and you will hear the dripping of wax, gentle and luminous, upon the streets.

And so you will be ready to hear the music of the palio of the Virgin. An angelic symphony! Sevillian carillon! The creaking of its silver poles; the tinkling of the “bambalinas”; the sound of the buzzing hive of wax that weeps knelt before the Virgin; and the carnation that doubles up wilted in the heat. (Cué 2006, 84)

REFERENCES

- Burgos, Antonio.** 2004. *Folklore of the brotherhoods of Seville* (Folklore de las cofradías de Sevilla). Seville: Universidad de Sevilla
- Chion, Michel.** 1994. *Audio-Vision. Sound on Screen*. New York: Columbia University Press
- Cué, Ramón.** 2006. *Cómo llora Sevilla*. Seville: Rosalibros
- Robles, Francisco and Roldán, Manuel Jesús and Torres, Álvaro.** 2012. *The History of the Semana Santa of Seville* (La Historia de la Semana Santa Sevillana). Spain: Editorial Jirones de Azul
- Truax, Barry.** 2001. *Acoustic Communication*. Westport/London: Ablex Publishing

What If Sound Perception Was a Matter of Touch?

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Abstract

Unlike the theoretical models of perception that separate the subject and the object and fill the distance between them with sound signal, is there another model based on contact and which reduces that distance to zero? In other words: what if sound perception was objectively an haptic modality?

Starting from concrete examples, observed in a survey of inhabitants and public place soundscape mapping, this paper shows that sound perception is a matter of touch and therefore, sound topologies.

The results confirm the intuition of Merleau-Ponty rather than Husserl (Dasture 1988) on the issue of touch in perception process and in particular in its relationship with vision. The concept of sensitive topology simplifies the model of perception beyond the sound phenomenon. Examples are shown with the questions and assumptions arising therefrom.

Keywords: perception, sensitive space, topologies, skin, touch.

1. Introduction

Starting from the premise that the perception is what provides the link with the environment, what interests us is the human environment, artificialized, urbanized, developed and built.

In this perspective, even if the human body remains the home of the sensory organs, the percepts and the representations of the perceiving subject, it is nonetheless that it is still the best instrument of capture, analysis and description of the environment that we are interested on. Then it is legitimate that the body be considered, here, the instrument of investigation on sensitive space and not its object.

In considering the subject-body-sensitive as well, the second postulate is that the body wrap becomes in its entirety the surface of contact with the environment. It is at its level that the environment is seized or not. The modality being the junction, palpation, touch or contact. But in this case, what about the so-called “remote” senses as sight or hearing?

2. What if touching was not inherent in solid forms exclusively?

The question asked here is to say: can we consider the skin, self-envelope, as a single organ of sense, complex and specialized in some parts in line with the needs to be collected, or should we continue to separate the senses each in its category, each category inherent to a physical data of the environment, light, sound,... and to each sense its specialized organ, the eye, the ear, tongue, the nose etc, and consider skin as the rest of the sensitive envelope that is in charge of other data from the environment as heat, pressure, pain, etc....?

We will see below that the perception occurs at contact level with the overall self-envelope, all senses confused. Perception in distance is only a potential perception, a contact to become, and dependent of an action strategy to be fulfilled. But first, let us take for example the view. Far from psycho-physiological approaches, certainly interesting, on the organ of sense or the subject receiving, look us on this “dialogue” between two theoretical patterns of Husserl and Merleau-Ponty which best leads us to our topic of interest.

2.1. Réversibilité des sens chez Husserl et Merleau-Ponty

The visible body, to an observer, reveals the epidermal limit to which eye has accustomed us. This bodily envelope is the tangible topology in which the body is in space. Touching one's body is browsing its topology. But for Husserl this reveals the dual function of touch, where touchieris himself touched, and where the touch sense acquires then the status of main sense in the constitution of the living body. In this way, the differentiation between oneself and the world can be. Reversibility that eye doesn't have. Merleau-Ponty, basing on this principle of reversibility of the sense, doesn't privilege the fact that a sense can be the object of its own perception.

All in all, the reflexivity of the sense in Husserl is looped on the subject himself: only touch can verify this rule. In Merleau-Ponty, reflexivity is entered in the space of visibility and is open to others: *I am visible for me as well as for others, tangible etc.* Reflexivity is here in sharing space.

The first theoretical advantage that we draw is the issue of distance in the reflexivity of the senses.

For Husserl it must be zero and only touch is capable of this sensitive closure. Sight and hearing are apart from the object that they perceive. For Merleau-Ponty there is no distance between the perceived object and perceiving subject regardless of the perceptual modality. Vision, hearing, touching occurs at the place of the subject. In other words, objects are perceptible at the level of the skin and not at the place where their physical topology are.

2.2. Distant sense or proximal sense

If the senses are localized on the carnal envelope, providing an interface with the milieu, it is commonly accepted that some senses are called remote, as vision and hearing, and others work in contact. Or considering the view, for example as remote sense, as suggested by Husserl, in reality it is remote only to the tangible object he observes. There is a bearing change in reasoning subtly from the sense of sight to the sense of touch. The distance referred to, is evident in the relationship between the seen and the potentially touched, hence the etymology of the word *con*-tact. In reality, the object is already visible at the place of the sense, the eye. The retina is also the part of the skin which function is to capture and seizure the visible world. Therefore the sight is not a remote sense, it occurs at the level of the skin, it works consequently on touch.

Is it the same for hearing?

If one considers the hearing as remote sense, we find ourselves in the same case as for sight, the same dilemma of change of register from the audible to the tangible.

What do we hear, in fact? Pierre Schaeffer responded cautiously, staying in the same area of the sound space setting the sound object. This unloads him of linking the sound object to the modality visible or tangible.

Far before everyone else, in the middle of the 17th century, Athanasius Kircher (1673) defined the focus of a sound as a phonocamptique centre. Thus placing the sound source in a geometric space, this model is as prudent as that of Pierre Schaeffer, for in situ the phenomenon is much more complex because sounds fill up with information of solid bodies that they encounter in their journey, by transmission, reflection, resonance, reverb etc, and arrive to the skin, the eardrum, as gross sounds. What does one hear then?

Between the isolated singular sound source, the sound environment in which it is transformed and the sound environment in which it is registered, only the ear as an instrument and the perception as a process of connection with the milieu can make the semantic distinction between all these components and also between the sources themselves. The language expresses these different components. Despite the distance covered, it is clear that it is at the level of the ear that occurs the feeling that reveals the object and, in this case, the distance is null. The physical distance between the source and the listening point is a distance between a point in Euclidean space where solids are arranged, and the sound space where the sense of hearing operates. This follows two consequences:

- It does not listen to the sound sources remotely, it listens to sound “topologies” by touch through this specialized part of the skin that is the ear. Listening is not a distal perception it is well a proximal.
- Sound topology, all areas of equal sensation of listening in space, is an integral part of the sound object despite the distance that separates it from the central point, which is the source.

As you will see below, the sound topologies were observed and measured first in domestic spaces during an investigation on sound comfort among residents and next, in the public areas of Lisbon, including the public gardens.

3. Sound topologies in domestic and public spaces

There is a noticeable difference between the domestic and the public sensitive space. Because of the configuration of the constructed walls that obstruct the view, the sound has

more far-reaching than the view. That is the visible topology is included in the sound topology. In the public space it is the reverse. We see further more than we listen.

3.1. In domestic spaces

In a survey on sound comfort in inhabited environment (Boubezari 2001, 2007), one of the first representations of the acoustic topology in an apartment has shown how the sound is shaped by the built space. This has allowed testing the constructed device as an attenuator of the acoustic propagation. (Figure 1)

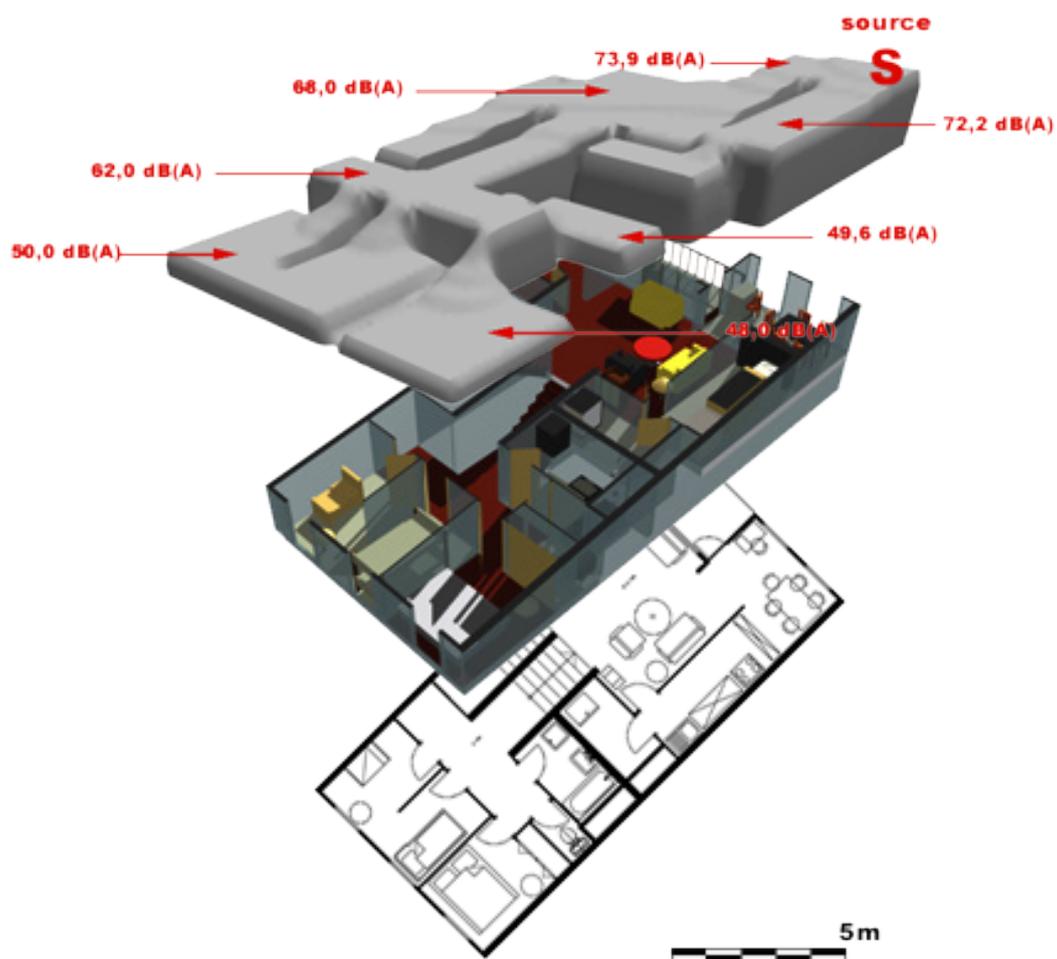


Figure 1. "Noisy" diner in an apartment, Grenoble.

This first case is simple and measured noise is the noise level of the "S" source, at different places in the apartment. This is an acoustical topology because it is not yet a matter of perception.

In a second step, the limit of audibility of a source emitting a known music was measured in an atmosphere surrounded by white noise in a confined space. The first case with a white noise of 56 dB and the second with 6dB less gain. Then, we got two curves corresponding to two sound topologies of music, as the background noise is high or low.

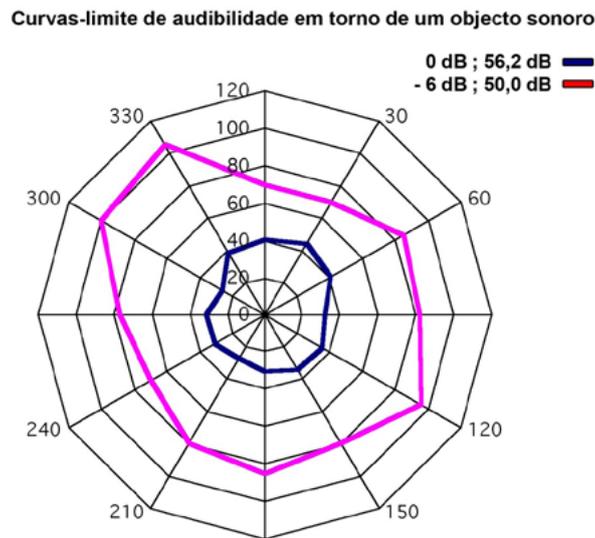


Figure 2. Sound Topologies in Housing, first test.

The sound topology is therefore Shaped also by masking noise in his presence.

However, outside experimentation, and in the presence of “naturally domestic” sources these only mask themselves only rarely between them. They add to define what the inhabitant mean. So, we have distinguish three types of configurations of the sound topologies in the domestic sound space:

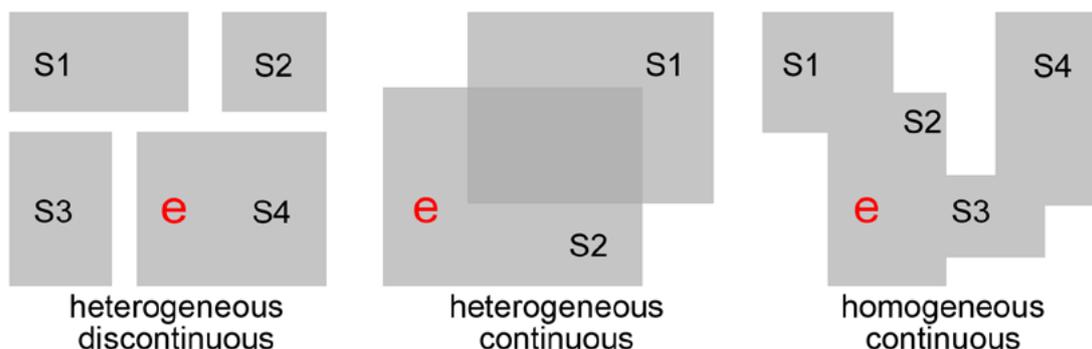


Figure 3. Sound Topologies in Housing, schematic representation.

1. The sound space is heterogeneous and discontinuous. Each sound topology “S1, S2, S3, S4,..” is separated from others, the inhabitant ‘e’ can only listen to one at a time.
2. The sound space is heterogeneous but continuous. Topologies are separated but they share a portion of the domestic space where they mix.
3. The sound space is homogeneous and continuous. The ear is in permanent contact with all topologies everywhere in space.

In the third case, the inhabitant can designate the topology sum of all and consider it as a single topology, as for example ‘a party’. He can also designate grouped topologies separately as for example focus on listening to music while other sources parasitize selective listening. In this third case we clearly understand the importance of the language by its faculty to nominate things for expressing an intention of perception. It is in this way that language and perception are linked.

3.2. In public spaces

Detection of sound topologies experience was repeated in public space, (Boubezari 2004) here at Rossio, in Lisbon, around the source “public fountain”.



Figure 4. Water sound Topologies in Rossio Place, Lisbon.

It has been shown that it was sufficient that sound of ‘water’ exceeds of 3 dB the background masking noise to become audible. Several topologies corresponding to the variation of ambient background noise were represented (Fig.4)

The experience has been reproduced in the Jardim da Estrela garden in Lisbon where there are a variety of sources all far from urban automobile traffic masking.



Figure 5. Ducks, musicians, bells and children in Jardim de Estrela, Lisbon.

By a Predictive method (Boubezari 2012), tested in advance, sound topologies of each source were represented taking into account the intermasquage between them when it occurs.

Each source has been represented in one layer separately. The superposition of layers gives a representation of the soundscape of the garden of Estrela. (Fig.6)

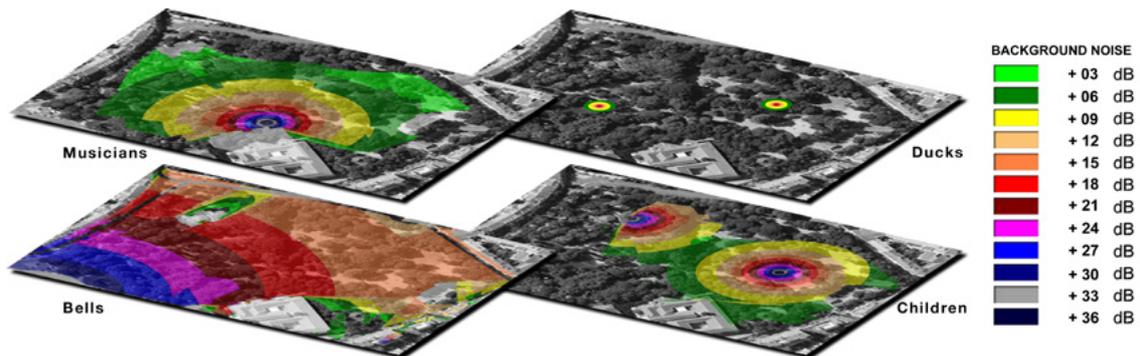


Figure 6. Soundscape Topologies in Jardim de Estrela, Lisbon.

All these topologies represent the spatial limit from which they are noticeable. Outside this limit there is no sensation of the sound because there is no contact. Within this limit, perception or more precisely the feeling intensifies itself. The acoustic pressure increases.

This allows us to say that the sound perception is a matter of touch. The ear being then that specialized part of skin.

Given this result, a question arises: what is touched? The sound of an object? Or the object itself?

4. The way that sensitive objects are shaped.

First answer by which it is commonly attempted to answer is that we listen to the sound of an object that is potentially touchable. The object boils down to its solid topology and the sound to the signal which emanates from as is the case of vision. However, there are visible topologies that contradict this 'rule ':



Figure 6. Visuo-haptictopologies of a candle flame and of water surface.

The potential haptic topology in the eyesight offers the possibility of detecting solid forms without making the effort to touch them. Even better, it offers the possibility to reveal the forms which are not solids (fig. 6) and that the touch cannot confirm. The surface of the water or the halo of flame are topologies that occupy the space, visible from far away but never close.

However, as visual topologies, they are manifested at the level of the retina. The visual topology boundary is where the retina can 'see'.

But all topologies are not visible as for example sound or thermal topologies. For the flame, there is an aureole that is perceptible to the touch but it corresponds to a thermal topology. This is the way that a birth blind person knows a candle, certainly not as pictured.

Arranged concentrically, these sensitive topologies are certainly configured specifically for each object. Is this configuration measurable? Quantifiable? Certainly as long as the distance between these sensitive topologies remains itself measurable and the intensity of the signal on the skin “pressure” is also measurable.

How these topologies interact in the sensitive space? By intermodal masking? or by solid masking?

Certainly these questions open up interesting hypotheses about the architecture of the sensitive space.

5. Conclusion

Solid topologies are not sovereign in the architecture of the sensitive space. They appear for touch in the same way they are described by language from far. They seem to be important because the human body is itself solid. But in fact, space is filled with sensitive topologies that are all pertinent.

The study of the human environment and particularly the soundscape can not settle for only physical measures from energy sources. They shall relate sensitive topologies and how they fit together and configure this if singular form that we call ambiance.

Sensitive topologies fill the epistemological gap between physical world and the sensitive one? Or, they show us that the world is still sensitive even when it is quantifiable?

REFERENCES

Athanasius, Kirsher *Phonurgia nova*, BNF Paris, 1673.

Françoise, Dasture, “Monde, Chair, Vision” in actes du colloque “Maurice Merleau-Ponty, le

psychique et le corporel” éd Aubier, Breuteuil-sur-Iton 1988

Levinas, Emmanuel, *Théorie de l'intuition dans la phénoménologie de Husserl*. Paris, Vrin, 1994.

Merleau-Ponty, Maurice. L'œil et l'esprit. Paris, Gallimard, 1996 (1e éd. 1964), collection, Folio essais

———. Phénoménologie de la perception. Paris, Gallimard, 1945.

Mohammed Boubezari, *Méthode exploratoire sur les pratiques intuitives de maîtrise du confort acoustique*, PHD in architecture, CRESSON, Grenoble; 2001. O' espaço' Sonoro e as suas topologias, ed. Parque EXPO, Lisboa 2007.

Mohammed Boubezari, José Luis Bento Coelho, “Sound topologies as a spatial description of the soundscape, the qualitative sound map of Rossio square in Lisbon”, Congrès commun CFA/DAGA '04, Strasbourg France, 22.-25 mars 2004

———. “the soundscape topography, the case study of Jardim d'Estrela”, INTERNOISE 2012, 19 to 22 august, New York, USA,

Pierre, Schaeffer, *Traité des objets musicaux, essai interdisciplinaire*, INA/GRM/ EDISUD, Éditions du Seuil, 1966 et 1976 (2nde édition).

What Can We Learn from a Database of Quotes on the Sounds of Cities Collected from Travellers' Writings?

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Abstract

This paper presents a few considerations regarding a collection of sonic descriptions on European cities found in travellers' writings.

What can we learn from a collection of more than one hundred and fifty quotes of this kind?

- 1° The astonishment of certain practices of the past,
- 2° It brings old paintings, engravings of cities back to life, in a very vivid manner;
- 3° It also shows that these accounts come closer to the contemporary world, because
- 4° in all these descriptions, the only real instrument of measurement is Man and because our sensory "instruments" have not changed in 5000 years, so that these texts speak so obviously to us.
- 5° If we have drawings that are 15.000 years of age and sculptures that much older, these quotes are the only acoustic experience prior to our modern methods of recording;
- 6° We can build sonic maps of old cities.

Keywords: travellers writings, sounds, perceptions, European cities

1. The project

The idea of creating a collection of texts concerning the sonic environment of European cities dates back to the reading of Murray Schafer's *The Tuning of the World*. This book left a profound mark on me, providing the initial spark for the development of this research.

So the evocation of the yelling street sellers in London, the tumultuous noise of Parisian streets, the complaints against street singers and the meaning of the different bell rhythms in Middle Age towns, the noise of the grinding wheels, the songs of the workers and all the sonic signals of the Middle Ages that Schafer uses in his book to illustrate what he calls "the soundscape", constituted a true discovery. At the same time, I felt he preached to the converted... The vivacity of those descriptions had moved me, as I found in them an urban life that was not spoken of in classes on the history of architecture and urban planning. It was the living reality of a given area, a given space, that often provoked my astonishment, as I said to myself "Ah, this is what it was like?"



The excitement of those descriptions encouraged me to enquire and find out more. Now, the great majority of publications concerning the role and importance of the senses in the past only mention 2 or 3 examples (therefore reinforcing the impact of Schafer's book). Coming to terms with this frustration, I decided to collect at least one hundred of such sonic descriptions with the aim to build a solid database from which we would have a more precise idea of the sonic ambiances of cities of the past and present.

(Since then, a website regrouping a considerable number of quotes has been created at the end of 2011: www.lavilledessens.net)



2. The choice of quotes

Wishing to maintain a phenomenological approach, I searched only for quotes from traveller's writings, personal letters or personal communications, excluding other literary quotes as I convinced myself that one could not trust the sonic imagery of authors of fiction, or the lyrical descriptions which originated from their excitement for sounds and noises.

On the other hand, another database regrouping literary descriptions of sonic ambiances had been built by Barry Truax: (<http://www.sfu.ca/~truax/>) "World Soundscape Project Sound References in Literature". The selection of these quotes is based essentially on novels and the Bible.

Why travellers' writings? Because it proves difficult to describe one's own town, the acoustic milieu in which we bathe all the time. On the contrary, when we travel, we are surprised by an unknown smell, by the din that reigns in certain towns, by the freshness of the canyon-like streets of Madrid. The encounter with a new town astonishes us, makes us aware of its difference, its singularity and all those things that we are not used to listening: unusual sounds, noises, surprising or even unbearable sonorities.

Lived experience, the value of direct descriptions, is what I found in these texts, even though Henry James (1900, preface, p. IV.) goes so far as to say that it is "perception of surface".

As Paul de Musset (1964, intro, p. VII) and the marquis of Beaufort (1839, introduction) explain it:

The reader will pardon me if I will not speak to him of everything. I will only choose that which has most captured my attention: I will give my opinion and not that of my neighbor. Where I say: “such thing is”, one must to understand such restriction as “according to my feeling”

I offer these letters to the public as I have written them, in the places I traversed. Quickly sketched under the fire of my impressions, I consider them of some utility, whereas any correction or elegance in style would only alter the frankness of my writings.

3. The problem of objectivity

Despite the subjectivity of these quotes, they provide, regrouped together, a more complete and sharper image of the soundscape of cities. Hyppolite Taine (1910), in his introduction to “Notes on England”, centers the essence of such annotations: “*The English have a very good habit, that of travelling to foreign countries and taking note of their impressions on their return home; these collected accounts complete each other and allow the verification of each other’s authenticity. I think it would be good to imitate our neighbors, and as for me, I try to do so. One should say what one has seen, and only that; observations, given they be personal and provided with the best of intentions, are always useful.*”

Of such descriptions written “with the best of intentions”, one can find the same sincerity in the letters of Victor Hugo, de Brosses, Viollet-le-Duc, and other authors who were never interested in publishing, like Henrica Rees Van Tets, André Jacobsen, ... whose travelling notes were only found at the end of the twentieth century. There are no effects, no exaggerations, only genuine descriptions of lived experience:

It is an astonishing thing, the immense difference that exists between seeing and hearing about: the sight of things themselves has an incomparable power on our soul; it leaves behind the tales, the descriptions and the most laborious studies. (de Beaufort, 1839, p186)

4. First impressions

Organised in sequence and in a simple chronological order, the quotes acquire a surprising form, which can be associated to a poetic of sensation and at the same time, to a long surrealist collage.

5. The effect

What do these texts provoke?

First of all, astonishment.

The astonishment to discover old customs so far from ours. I'm thinking about the case of the 30.000 dogs that prowled in the streets of Lisbon and that bothered William Beckford's sleep, something that we never see in paintings, engravings or drawings! (1986, p. 40) Also, the astonishment of things I did not know about or that I had never heard before, such as the noise complaints in Ancient Rome.

Secondly, they give new life to images of the past.

This regrouping of sonic descriptions, this physical and perceptual reading of cities, injects vivacity into the paintings we know, the engravings that everyone saw and that are silent. Assigning a quote to these silent images adds a human dimension. We all know architectural photographs and street views where people are rare, old squares photographed probably a Sunday morning to capture them empty.



Even in silent movies showing the traf-fic of Parisian streets at the beginning of the twentieth century: “we see the noise, but we don’t hear it” as Nootboom writes (1993, p. 21).

Furthermore, these quotes are truly what we could call “memory activators”:

Whether we want it or not, we have an active role in the reading of these texts, that makes us bring back life into images, offering a sonic dimension to pictures we thought we already knew very well.

Sometimes a detail can set off a series of questions or pushes us to new interpretations. For example, in 1933, a young English traveller called Patrick Leigh Fermor (2003, p. 45), writes that he is awakened by the noise of wooden shoes on the paving stone of a Dutch town. Immediately I mentally skim through illustrations, paintings, pictures of the beginning of the XX century where quite a large number of people were portrayed with wooden shoes, images where the hammering of the wooden shoes was absent.

When I read Victor Hugo (s.d. p. 414), who, looking at the city of Mayence along the Rhine one evening when all the noise had vanished, noted that only the sound of the 17 watermills was still functioning, I’m persuaded to look differently at the old engravings of this river.

Those texts tell of other lived experiences that have the ability to make us dream, to waken other memories, to recall other aspects of the urban space that do not appear in photo-graphs.

This equally pushes us to reinterpret and to question certain buildings of the past. Con-fronted with the famous Falling Water House by Frank Lloyd Wright, how many architects ask themselves if this site is not in fact a highly noisy environment?

In what way do these accounts come closer to the contemporary world than one would think at first sight? How can they speak to us so directly?

This is the domain of perception, and refers mainly to 2 things:

1. we are in the domain of the human, “of the lived, perceived, felt” as psychologists say, and above all, in all these accounts, Man is the measure, the only instrument of perception. That’s why we feel so close to the authors, why these texts speak so obviously to us.
2. our sensory “instruments” have not changed in 5000 years. It’s because we have the same eyes, the same ears, the same nose that we can live again the same way certain colour experiences described by Goethe; experience the focalisation of sounds in the centre of a cupola, as in the hall of the Altes Museum in Berlin; feel the scale of the gesture in the paint-ings in Lascaux; live again the smell of the humid earth after the rain or the smell of freshly cut grass described by so many authors; or trace back the intentions of Greek architects when we look closely at the optical corrections of the Doric temples.

It is the same man that we find in those quotes, speaking of ancient cities, of disappeared areas and forgotten professions.

These accounts are the only sonic archives that we possess from distant periods in history.

If we have drawings that are 15.000 years old and sculptures that are much older, these quotes are the only evidence of acoustic experience prior to our modern methods of recording, which are little more than one hundred years old. We have an abundance of pictures showing life scenes in old towns, it is astonishing however, when looking at ancient paintings, drawings or old photographs showing streets populated by crowds of horses, onlookers, hawkers or market places full of people, to find them so silent and odourless. Those facts, so present in reality, once painted or depicted on paper, lose these characteristics and intensity. Crowds and horse hooves on paving stones become silent, streets become odourless and buildings lose the heat radiation of the sunrays.

All these characteristics so present in life, because invisible and transparent, they find themselves erased due to the fact that we are not able to represent them visually.

Hence the interest of those descriptions from travellers, of the complaints registered through the epochs and the fact that people were already complaining in Ancient Rome!

Finally, today we can build sound maps of old cities, tools that could help historians unveil aspects of daily living in earlier times.

REFERENCES

- Beckford William.** *Journal intime au Portugal et en Espagne, 1787-1788*. Paris: Librairie José Corti, 1986, p. 40.
- Fermor Patrick Leigh.** *Les temps des offrandes – A pied jusqu'à Constantinople: de la Corne de Hollande au moyen Danube*. Paris: Petite Bibliothèque Payot / Voyageurs, 2003, p. 45.
- James Henri.** *A little tour in France*. Cambridge: Printed at The Riverside Press, 1900, preface, p. IV.
- Hugo Victor.** *Le Rhin – lettres à un ami, Lettre XXIII*. Paris: ed. Nelson, s. d., p. 414.
- marquis de Beaufort. *Souvenirs d'Italie par un catholique*. cinquième édition, Bruxelles: Société des Beaux-Arts, 1839, introduction, p. 186. [trad. Laura De Caro]
- de Musset Paul.** *Voyage pittoresque en Italie*. Paris: Belin-Leprieur et Morizot, Editeurs, 1964, introduction, p. VII. [trad. Laura De Caro]
- Nooteboom Cees.** *Chemin d'Espagne*. Arles: Actes Sud, 1993, p. 21. [trad. Laura De Caro]
- Murray Schafer.** *Le paysage sonore*. Paris: J.-C. Lattes, 1979.
- Taine H.** *Notes sur l'Angleterre*. Paris: Hachette, 1910, introduction [trad. Laura De Caro]

Urba(n)Ear, Approaching, Walking and Listening the City With Notours, Augmented Aurality, in the Project Passeio Branco (White walk) in Lisbon

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Abstract

A research of the walk in the works of Saramago and Stefaan van Biesen in Lisbon: in a theoretical approach, a research emphasizing on representations of the city in a promenadological discovery and in a practical approach, where this urban discovery is concretized in a space of artistic and social transformation. As an urban intervention project it investigates, documents and enhances the aural heritage of the city through participation of residents, materialized in the composition of a soundwalk, building a locative media instrument based on the noTours platform, referring to the *Spaziergangwissenschaft* (the science of walking) implying the community, in a kinetic esthetics, in the planification of their own city through minimal interventions and by going on foot, in this project elaborated as a public artistic laboratory in the space of Lisbon as a reconstruction of the urban space harmonizing its own sensoriality out of literary texts and artistic works.

Keywords: urban sounds, sense of place, sound walk, promenadology, locative media, literature, visual arts, sensoriality, society

“Most people don’t see what’s going on around them. That’s my principal message to writers: for God’s sake, keep your eyes open. Notice what’s going on around you!” (William S. Burroughs)

1. Introduction

In this project we propose a study of walking in the city of Lisbon through a literary, sonic, social and artistic interpretation of the literary works of José Saramago and the artistic oeuvre of Stefaan van Biesen.

The title *Passeio Branco* (*White Walk*) refers to the harmonization of the connected representations of walking in the city based on the novels *The Year of the Death of Ricardo Reis* and *Blindness*. Building on these thoughts, it is the white of blindness that accentuates the sensorial potential of the body during the straying of the blind people in any urban space, as well as an association with the image of the “white” capital Lisbon, the city landscape for the day-to-day walks of Ricardo Reis. The pedestrian dynamics that refine the image of Lisbon through a promenadologic stylistics are presented as an archive of the atmosphere, the history and the presence of the events of the city, not only as a visual mental map of the character Ricardo Reis, but above all, as a sensorial map of the organic reflexes of the body in the urban space.

In this sequence of thoughts, we emphasize on the substitution of the “visual turn” of the city with this “sensorial turn” in a reconstruction of the city of Lisbon, mapping olfactory, haptic, sonic, gustatory and kinaesthetic landscapes. This intense phenomenological exploration transforms the walk to a “footnote” in the veined texture of the city, filled with folds where the urban heartbeat reaches the surface, the social microclimate and the historic patina of Lisbon. The general objective of our proposal views the idiosyncratic recuperation of the literary and the artistic image of the city of Lisbon through the kinetics of the walk in the novel *The Year of the Death of Ricardo Reis* and in the artistic vision of the works about this novel by Stefaan van Biesen, and as well the creation of a public and artistic laboratory in the space of Lisbon within our project *Passeio Branco* that concentrates on the reconstruction of the urban space harmonizing its own sensoriality out of the literary texts of Saramago and the artistic works of Stefaan van Biesen.

2. The science of walking

“Passeio Branco” presents itself as a poetic disorganization of space, a “white blindness”, a suspension of the hegemony of seeing in order to recuperate the residual use of the other senses. On this manner, the project will be a critical confrontation against the excessive politics of seeing, a *promenadography*, a simultaneous writing and reading of the city through the body:

Na realidade, existe uma diferença entre a visão e o tacto: ela separa o primado da visão do primado da sensação, quer dizer, separa a expressão da impressão. A visão é expressiva porque retém do que vê a expressão das coisas. Estabelece uma semiótica que lhe permite reconhecer-se no mundo. Enquanto a sensação do tacto é impressionista porque dá um eco interior à exterioridade. O tocar torna táctil o que escapa à visão. O tacto introduz-nos numa sensorialidade eufórica, em lugares cegos e fechados, onde se produzem prazeres a três dimensões.¹ (Andrieu, 2004:69)

This exploration of space, through walking as a sensorial kinesthetic experience connects itself with a recent scientific and esthetic vision, *Spaziergangwissenschaft* (Promenadology), introduced in the eighties by the sociologist, urbanist and art historian Lucius Burckhardt (1925-2003). But, before we go into detail on this new tendency of walking, crystalizing itself as a science, we synthesize a short history of walking as an artistic and philosophical tool.

Walking as an aesthetic practice goes as far back as the end of the 18th century. Bases were laid by thinkers and writers as Wordsworth and Jean Jacques Rousseau whose daily walks resulted in the *Rêveries of a Solitary Walker*. But also Charles Darwin created a circular “sand walk” path around his house so he could think without interruption. Some illustrious examples of poets being renowned as passionate walkers who integrated their walking practices in their works were Wordsworth, Machado, Whitman and Kerouac. Methods such as ‘wandering’ are found already in Edgar Allan Poe’s *Man of the Crowd* (1840) and walking as

1. “Actually there is a difference between seeing and touching, it separates the priority of seeing of the priority of feeling, this means, it separates the expression of the impression. Seeing is expressive because it depots of the expression of things. It establishes a semiotics that allows you to identify yourself in the world. While the sensation of the touch is impressionistic because it gives an interior echo to the exterior, the touch transforms into tactile what escapes to the vision. The touch introduces us to a euphoric sensoriality, in blind and closed spots, where pleasures produce themselves in three dimensions.” (in Portuguese).

an instrument for knowledge as reflected in psychogeography goes back as far as mid 19th century Paris and to Charles Baudelaire's 1863 essay *The painter of Modern Life* where he describes the *flâneur*, a person who walks the city to experience it. The first major written work by a *flâneur* practitioner was the unfinished Arcades project by Walter Benjamin, documenting his walks in the former arcades of Paris. The concept of a passive urban walker was transformed by André Breton in 1920 into walking as a positive tool to challenge perceptions of the city. In the 1950ies psychogeography arises as one of a set of ideas and practices developed by the *International Lettristes* (who later gave birth to the Situationists), a study of how places affect the psychological states of those who pass through them. With a reciprocal meaning: that the places might be changed in order to change the experiences and mental states of their residents and visitors.

Psychogeography was defined in 1955 by Guy Debord in *Introduction to a Critique of Urban Geography* in 1955 and producing the "Theory of the Dérive" in 1958, a document which essentially serves as an instruction manual for the psychogeographic procedure, executed through the act of *dérive* ("drift").

In the late 1960ies this was followed by first encounters between art and walking. Richard Long with "A Line Made by Walking (1967)", then 22 years old and a student at Saint Martin's School of Art in London, walked back and forth along a straight line in the grass in the English countryside, leaving a track that he then photographed in black and white.

Another milestone work is the video made by Bruce Nauman "Walking in an Exaggerated Manner Around the Perimeter of a Square" (1969), a work intriguing by its simplicity, only composed with time, space and the body.

Walking as an instrument for art culminated in the work of Marina Abramovic "The Lovers, Great Wall of China" (1988), an epic voyage on foot of 5.500 km undertaken with her colleague Ulay, as last of the many performances they realized together. Each of them, beginning at the opposite end of the wall walking towards each other, until they met and reunited, with as a final goal to say goodbye to each other. A gesture overcomes pain and endurance.

Other major contemporary artists as Hamish Fulton, Francis Alÿs, Janet Cardiff, Gabriel Orozco and as well interdisciplinary collectives as Stalker (Italy) with ON/Osservatorio Nomade made a bridge from the late 1960ies to the 21st century and influenced the contemporary art scene intensely with walking as a tool for art practice.

Recent art exhibitions show how art walking keeps captivating the public, for example Richard Long's "Heaven and Earth" at Tate Britain (2009), Francis Alÿs "Story of Deception" at Tate Modern (2010), Hamish Fulton "Walk" at Turner Contemporary Margate (2012) and "Walk On. 40 Years of Art Walking" in Sunderland (2013).

Artist's walks are shaped in different forms. Some artists trace their daily movements, with or without GPS devices. Others record or photograph their walks, make paths or lose themselves deliberately, let them guide by wind capturing devices or stumble in the dark and capture, transform and translate their walks into art objects or experiences.

The Belgian artist-writer-walker Stefaan van Biesen joins himself with this select group of international walking artists, connecting explicitly with the visions of the Swiss sociologist and urbanist, Lucius Burckhardt [1925-2003] who introduced the 'Spaziergangwissenschaft', the 'science of walking', expanding it to a subjective thought exercise in the urban texture and the landscape, resulting in the recent projects 'Sensitive islands' and 'Libraries of Walks' (2010-2013), interacting with literary works of José Saramago and Fernando Pessoa and leading to this newest walking project "Passeio Branco" in Lisbon (2015-2017) based on *The Year of the Death of Ricardo Reis*.

Introduced as a discipline on the academic curriculum at the University of Kassel (as well as organizing city of the important Art Biennale *Documenta*), Spaziergangwissenschaft or the science of walking in the urban landscape implies the community, in a kinetic esthetics, in the planification of their own city through minimal interventions and by going on foot, which can change the perception in relation to the space.

After the introduction of promenadology at the University of Kassel in the eighties it stayed on the curriculum till 1997 and was continued by his students Martin Schmitz and by Bertram Weisshaar in the University of Leipzig in 2006-2007. In 2007 Klaus Schaefer created at the Bremen University the seminar "On foot" as a topic of scientific research where the urban landscape becomes a mental construction through the intentional consciousness-raising of the senses of the body. On this moment the promenadology is an artistic object in various international projects realized within the fabric of society, like by Atelier Latent in Leipzig, coordinated by Bertram Weisshaar. The discipline knew a parallel development in France via the urban walks created by Yves Clerget.

In Portugal the original term Spaziergangwissenschaft was translated and introduced into the lexicon of the Portuguese language by the sociologist José Machado Pais in his book *Nos Rastos da Solidão* (On the trails of loneliness) in 2006: the promenadology becomes an instrument for social observation of the city. To capture the urban reality in sensory meanings, emphasizing the feeling, refers to a multimodal body in a physical implication in the city space of Lisbon. On this way, the cognitive dimension of the urban space articulates itself in a personalized urban layer, by means of a somatic choreography:

O corpo motor é, assim, um corpo cartografante: os lugares por onde passa organizam-se como um mapa. E o mapa, ao revelar o corpo através dos lugares por onde passou, emerge como uma metáfora do conhecimento (da relação entre o corpo e o lugar).² (Silva, 1999: 27)

Stefaan van Biesen is one of the important artists, on an international level, who investigates promenadology on an aesthetical way (by means of plastic work, multimedia, installations and performances, contextualized in social projects). His artistic oeuvre has an affinity with the work of another famous walker, Fernando Pessoa. The plastic corpus of Stefaan van Biesen is an important artistic comment on a Pessoa-logical vision. We integrate for example his oeuvre in a critical analysis of the literary representation of the city of Lisbon, which leads to this joint project with the artist, *Passeio Branco*, and artistic and literary research of Lisbon by means of the phenomenology of the walk: “If the image is text, then the body is space. If texts can create images, then spaces can change bodies and vice versa”. (Hallensleben, 2010:93).

The literary reading of the kinetics of the body in the city, in this case by means of an urban research of the oeuvre of the Portuguese writers José Saramago and Fernando Pessoa related to the plastic dimension of the oeuvre of Stefaan van Biesen, doesn't mean a rift with the daily perception, but follows the emancipatory and intimate logic of a new association between the epidermis of the urban space and its sensory somatic potential. On this way, *derive* through the city presents a broadened consciousness-raising of the senses. A cross-pollination that magnifies the phenomenological scheme of the city:

La relation de l'homme qui marche à sa cité, à ses rues, à ses quartiers, qu'il les connaisse déjà ou les découvre au fil de ses pas, est d'abord une relation affective et une expérience corporelle. Un fond sonore et visuel accompagne sa déambulation, sa peau enregistre les fluctuations de la température et réagit au contact des objets ou de l'espace. Il traverse des nappes d'odeurs pénibles ou heureuses. Cette trame sensorielle donne au cheminement au fil des rues une tonalité plaisante ou désagréable selon les circonstances. L'expérience de la marche urbaine sollicite le corps en son entier, elle est une mise en jeu constante du sens et des sens. (Breton, 2000 : 121)

2. “The body as a motor is, in this way, a map-making body: the places where it passes through, there it organizes itself as a map. And the map, revealing the body through the places where it passed, appears as a metaphor of knowledge (of the relation between body and place).” (in Portuguese).

3. Summarizing description of the Project Passeio Branco

With this conceptual background we propose two currents of the research of the walk in the works of Saramago and Stefaan van Biesen: a theoretical current, a research that emphasizes the representations of the city of Lisbon in a promenadological discovery and in a practical current, where this urban discovery is concretized in a space of artistic and social transformation in this project.

Investigating the novel *The Year of the Death of Ricardo Reis* by José Saramago with this promenadologic experience as point of departure as manifested in a social and artistic project and coupling the theoretical paradigm dedicated to walking and the literary perspective of the sensationalism in the works of Fernando Pessoa in the construction of the urban image of Lisbon, on this way we consider our proposal as a new approach that can open various hypotheses in the promenadologic interpretation, retrieved from literary texts.

The matrix of our analytical trajectory, departing from the novel *The Year of the Death of Ricardo Reis* and the drawings of Stefaan van Biesen inspired by it, is a new semiotics of the city of Lisbon constructed through a poetic kinetics of the body, an authentic phenomenological opportunity of manifolding unprecedented literary and visual representations. In this sense, an analysis of the promenadological topic overlapping the visions of Saramago and Stefaan van Biesen takes into account the direct sensorial experience between the body and the city, and indirectly through synesthetical correspondences.

On this way the walk becomes “an instrument” of the body to awake an alert consciousness in relation to the urban space, but as well in relation to the own destiny:

It is not well like this, when I decided to travel to Lisbon it seemed like I had reasons that I couldn't escape of, important matters to handle with overthere, And now, Now, the phrase suspended, stayed the looking into the mirror in front of you, Now I see myself as the elephant that feels approaching to the hour of death and that starts walking to the place where it leads to his death³[...] (Saramago, 1995:81).

3. “Não é bem assim, quando resolvi embarcar para Lisboa parecia-me que tinha razões a que não podia fugir, questões importantíssimas a tratar cá, E agora, Agora, suspendeu a frase, ficou a olhar o espelho na sua frente, Agora vejo-me como o elefante que sente aproximar-se a hora de morrer e começa a caminhar para o lugar aonde tem de levar a sua morte [...]”. (in Portuguese).

The kinetics of the surprised body in daily walks adjusts and widens the perception in relation to the own urban environment, eliminating the prefabricated representations in favour of a mental urban image constructed through the complete sensoriality of the body. The objective will be, on this way, to reconstitute the body to the city as a place of sketching yourself in the daily existence, mapping morphological and emotional realities in the sphere of the daily life. In the vision of the architect José Joaquim Bañon, Saramago

prefere o íntimo ao público, o fechado à praça, a casa mais que a paisagem. Não é o enigmático, nem o extravagante que lhe chama a atenção, mas a vida quotidiana, o senso comum, a arquitectura dos dias precedentes não as dos acontecimentos, aquela que é concebida para a natureza viva, para que haja alguém nela. Não se deixa seduzir pelo extraordinário, pelas ficções poéticas que dizem exalar algumas arquitecturas.⁴ (Bañon,2004:39)

Thus, our general objective will be to retrieve the senses of the corporality implicated in a specific Lisbon urban space, interface between the real physical space and the fictional space of Saramago and the artistic space in the vision of Stefaan van Biesen.

On this way the analysis of the sensorial amplified dimension proportioned by the walk in the city implies an interdisciplinary approach to the literary text and the visual arts. Our hermeneutic act implies various epistemological crossings between cognitive sciences, psychology, cultural history, anthropology, phenomenology, new technologies, cultural geography, the theory of architecture, history and philosophy of arts.

4. noTours, augmented aurality

The sensorial experience of the city, between the space of the freedom of the body and the coercive space, between the auditive and the haptic, will be an impulse for a new type of nomadism or a new urban ontology. On this way the incarnation of the city receives an answer

4. “[...] prefers the intimate above the public, the closed environment above the square, the house more than the landscape. It is not the enigmatic, nor the extravagancy that draws his attention, but everyday life, the common sense, the architecture of the days of the past, not to ones of now, that what is conceived by the living nature, because there is somebody present in it. He doesn't let himself seduce by the extraordinary, by poetic fictions that are to be said to express some architectures.” (in Portuguese).

in a three-dimensional perception of space, from the depth of the contours and from the sensory protuberances of the urban morphology:

Ce bruit se redresse aussi en information à travers la boîte joliment compliquée de l'oreille externe et interne, mais souvent nous bâtissons des boîtes tout aussi raffinées autour de nos corps : murailles, cilles, maisons, cellules monastiques. A travers portes et fenêtres, la monade perçoit doucement.(Serres, 1985:90)

The voice of the city, as a literary and sonic manifestation reinvents itself as *graphein* of the body, a promenadographic space, including an interactive scheme, people and technological systems in a reconstructed aesthetic urban environment. At the same time, with and parallel to art walking, the phenomenon of sound walking saw the light and developed itself since the late 1960ies. In 1966, the magazine *ArtForum* publishes Tony Smith's experiences consisting in driving on the surroundings of New Jersey, "converting an attitude in form", In the same year, Max Neuhaus paints audience's hands with the message "Listen" before all them went to a series of defined listening localizations. The mereaction of listening becomes a creative act, inheritor of the pan auralty and subversiveness. The sound walk is manifested as an improvisation with the sounds of a territory and the listening act merges to the idea of "walking as an aesthetic practice" completing the analysis that Francesco Careri makes about what he called of nomadic cities, concept that also interested the *lettrist* movement, land-art and new architectonic practices during those years.

Proposals like the *Otodate* itineraries (oto-sound/date- place) by the artist Akio Suzuki in Berlin, Paris or Torino; sound-walks by Hildegard Westerkamp or Andra McCartney, close to the ecologist premise of the World Sound Scape Project; the proposed walks in *City in a Soundwalk* by Michelle Nagai using the Extreme Slow Soundwalk derived from the Deep Listening by Pauline Oliveros; the performances by Viv Corringham; the work *Blind City* by Francisco López, where blind people guide others with blindfolded eyes; the works by Jean-Paul Thibaud and Nicolas Tixier (*Parcours commentés* and *Qualified listening motion*) in the CRESSON lab in Grenoble; or the soundwalks by Janet Cardiff have elaborated a set of interesting antecedents in the interference between sonic spheres, many times with high creative overlapping. These are just some examples that can approximate us to a psychogeographic city that is since now manifested as a discontinuous and subjective space.

But also, to all this classical projects, we have to add the works by *Escoitar.org*, *Tactical Sound Garden*, *Always something somewhere else*, *Sonic City*... who, using technological tools, have introduced the figure of the data-flaneur, putting the ear, if not in a higher level than

the vision, at least in the same importance than the eye, extending the experience of the perception of the city, understood as a reality that multiplies itself in each listening act and that incessantly builds our reality.

Passeio Branco is building on these recent developments and allying itself with noTours, a project that allows touring a place while living an augmented acoustic experience connected with the actual space visited and the rhizomatic situation of the territory involved. This project uses mobile devices based on open source code as well as GPS technologies (which provides the position of users) and 3D audio contents (binaural and ambisonics).

Using the extended format of touristic audio guides, understanding them as devices giving us information about spaces cataloged as relevant or for the public interest, this project would like to question their real value as well as the official discourses that contain. Objective of noTours is the deconstruction of this old-framed format for designing anew one opened to the collective memory of the inhabitants and connecting it to the real time situation of the city involved. It can be considered as an intervention in the perception of the urban space, understood as a stream of complex actions, as a performance and as an act of collective memory. Between fiction and reality, our focus is the intervention on those strange or familiar territories and converting them into mutant spaces. Touring them under the effects sound will reveal us a hidden city filled of personal stories and interferences. This project Passeio Branco presupposes as well a textual experience of the city (fragments of text of Saramago and Pessoa).

Next to the artistic and literary exploration of the city, noTours and Passeio Branco are urban intervention projects to investigate, document and enhance the aural heritage of the city through participation of residents. For this reason workshops with young people, students and residents are part of the collaborative processes, that aim to research urban narratives in the city.

A series of workshops start with an invitation to create geolocated narratives based on different memories and experiences of their living environment. By creating this narratives the participants are encouraged to explore a creative use of mobile devices and to explore the possibilities of locative media as a narrative tool.

Young people and older people work together, the latter sharing their knowledge of oral tradition and their living memory of the history of the place and the young ones would contribute with their knowledge of technology, creating an environment where everybody is learning and teaching at the same time.

The workshops proposes a theoretical and practical approach to the aural phenomena and the sonorous identity of the city. First from a theoretical point of view, studying the

experience of listening and complexities of sound. Later, the workshops focus on the practical configuration of a digital sonic cartography of a defined territory, materialized in the composition of soundwalks based on GPS localization: building a locative media instrument based on the noTours platform.

Maps are used as a metaphor of the links between sound and place. Through creating a collaborative sound map we introduce a reflexive exercise about his relationship with the environmental sounds. Geolocating a sound on the map is not complex, but it involves a thoughtful process as fill out a form including details of the physical location but, mainly, writing down your psychological and emotional “coordinates” (description of soundscapes, relevance, personal reasons, affection, etc.)

Our objective regarding the workshop is double. First we would like to introduce the participants into the cultural aspects of sounds and the complexity of the act of listening in a defined place. Also, we would like to create a team that could help in the construction and development of the final sound walk.

This dimension of the project turns the process that allows some social expressions to be considered cultural heritage upside down, by offering society a tool to participate in the process and actualizing the sonic identity of the city.

We propose working with all age groups from children, students to older residents and local artists in order to find enough physical and mental connections to the local universe of sounds and activities of the place.

Finally, this social and creative intervention closes the hermeneutic circle of the city, opened by literature and visual arts.

REFERENCES

- Abramovic , Marina.** “The Lovers, Great Wall of China” (1988). Accessed January 9, 2014.
<http://www.medienkunstnetz.de/works/the-lovers/>
- Bañon, José Joaquín Parra.** *Pensamento arquitectónico na obra de José Saramago, Acerca da arquitectura da casa.* Caminho, Lisboa, 2004.
- Andrieu, Bernard.** *A Nova Filosofia do corpo.* Instituto Piaget, Lisboa, 2004.
- Breton, Le David.** *Éloge de la marche.* Métailié, Paris, 2000.
- Burckhardt, Lucius.** *Warum ist die Landschaft schön? Die Spaziergangswissenschaft,* Kassel. Martin Schmitz, Kassel, 1980.

Collier, Mike and Morrison-Bell, Cynthia, WALK

ON: *From Richard Long to Janet Cardiff – 40 years of Art Walking*. Art Edition North, Sunderland: 2013

Hallensleben, Markus. *Performative Body Spaces*.

Corporeal Topographies in Literature, Theatre, Dance, and The Visual Arts. Rodopi, Otago, 2010.

Long, Richard. "A Line Made by Walking (1967)".

Accessed March 13, 2014. <http://www.tate.org.uk/art/artworks/long-a-line-made-by-walking-p07149>.

Nauman, Bruce . "Walking in an Exaggerated

Manner Around the Perimeter of a Square" (1969). Accessed March 9, 2014. <http://voicelanguage.wordpress.com/2010/04/11/video-bruce-naumans-walking-in-an-exaggerated-manner-around-the-perimeter-of-a-square-1967-68/>

Pais, Machado. *Nos Rastos da Solidão. Deambulações sociológicas*. Âmbar, Porto, 2006.

Saramago, José. *Ensaio sobre a Cegueira*. Lisboa: Caminho, 1998.

———. *O Ano da Morte de Ricardo Reis*. Lisboa: Caminho, 1985.

Serres, Michel. *Les cinq sens*. Bernard Grasset, Paris, 1985.

Silva, Paulo Cunha. *O Lugar do Corpo*. Instituto Piaget, Lisboa, 1999.

Solnit, Rebecca. *Wanderlust. A History of Walking*. Penguin Books, New York: 2001.

Weisshaar, Bertram. TALK WALKs – Urbane Spaziergänge. Accessed March 2, 2014. <http://www.atelier-latent.de/talk-walks>.

Commented Walk, Segmented Walk: An Exploratory Study on the Relationship Between Urban Space and Sound Stress

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Abstract

Through interactions with environmental parameters such as sound, public spaces generate ambiances which provide a sense to the places. Subjective methods of analyzing and characterizing the complexity of the urban soundscape have to be associated with objective evaluations of emotional arousal. So we tried to approach our study with an experimental methodology of three components: spatial analysis, analysis of physical signals and the capture of emotions via a biosensor called Q-Sensor that evaluates the stress level via skin conductance. Our field of study was the downtown of Tunis. We tried to follow subjects during a specific walk and to capture their emotional states. In addition, we recorded both the audio signal and the associated comment of the person describing the sonic ambience. The results of this study showed that the perception of stress in public places is related to certain specific frequency band signal of the urban contemporary.

Keywords: Urban space, emotional states, Q-sensor, electrodermal activity, sonic ambience, sense of place

1. Sensory exploration of the modern city or «the city of emotions»

1.1. The sound phenomena for analyzing pedestrian conducts

The public place is a flexible universe combined by physical properties and ambient real-life experience. It is perceived through our five senses. Among the phenomena that govern the relationship between Man and his environment, there is the sound phenomenon. They hold an important role in our experience, our perception and our representations of built space.

In return, the visual aspect relies on the choices of the town planners and the architects in their conceptions of the templates, the alignments and the aesthetics of facades. For lack of thorough knowledge, the noise situation in the city is often the result of a multitude of urban and architectural choices, where the acoustic aspect has not been taken into account. Here we seek tracks of reflections and actions from this sensory component.

Urban centers of Tunisia are far from being judged by the inhabitants or specialists as havens of silence. Until the sixties, most psychological researches done on urban noise were limited to the auditory effects. It is only after 1970's, with Gabriel Moser and Levy. C Leboyer that we started talking about the non-auditory effects of noise on human and social cost. These effects include first the notion of urban stress. This term has been frequently used in our daily modern life. It has become the primary concern of society. Everyone talks about it and we're all concerned.

1.2. The emotions as an object of architectural and urban research

Emotions are often thought of as private feelings or physiological changes. They are sometimes observed through physical reactions that betray them involuntarily, opening a window on a secret and intimate world. This conception justified the trend in the study of behavior in public to neglect the metrological dimension in the capture of emotions, often, in favour of a subjective vision of the question of emotions, especially the urban stress. Why not to think, conversely, that emotions such as stress exist in a first way as mediation between a user, a space and a sonic ambiance?

Several recent researches wonder about the way of capturing emotions and develop new daily physiological sensors to help in the understanding of emotions. For example, the studies of Bertrand Massot are particularly interesting. His researches focus on the design and realization of non-invasive and ambulatory sensors for detecting the activity of the autonomic nervous system. This thematic includes the development of on-board sensors'

networks and the study of physiological phenomena for the monitoring health status and emotional reactivity. The objective is to enable experimentation in environmental situations rather than in laboratory conditions, and the definition of relevant indicators in a complex and non-controlled environment, in which the individual evolves. The concerned fields of application include assistance to the autonomy (elderly, disabled people), monitoring of the driver, or the study of athletic performance.

As part of his thesis work Bertrand Massot has designed and realized EmoSense instrumentation for the on-board monitoring and real time skin temperature, heart rate, and electrodermale activity. This instrumentation allowed, as part of a study on the perception, representation and management of urban space for blind people, to define events and new relevant indicators to the objective measurement of stress among blind people on their displacement urban areas.

Diverse particular urban situations require in-depth researches, the situation of urban stress seems to be complex and interesting to explore according to a multidisciplinary methodology. At this stage, we question on the existence of links between the urban sound phenomenon, the stress of the user and the architectural and urban characteristics of lived space.

This question is the link between the physical, perceptual and morphological parameters implicated in any urban experience, namely: physical characterization of audio signal spread in the public space, perception and emotions relating to this signal, especially the stress feeling, and the configuration of the urban setting.

2. Space, acoustic and user speech: crossing three corpus

The observations on various dense urban fabrics show that the urban crossroads are real spaces of manifestation of the urban practices. They are places rich in events characterized by vehicular and pedestrian traffic in various configurations and generate various perceptual phenomena. Hearing is no longer “(...) this sense which gives us company of the street.” (Chelkoff 1996), but rather a real embarrassment and sound stress. The first condition for a rigorous analysis of the conditions of manifestations of this noise nuisance is a meticulous exploration of the complexity of the sound situation on different aspects: physical, morphological, and sensory.

Furthermore, for a Walker progressing according to determined direction, a path can be split into a number of sequences, each one constituted by a succession of 'sound levels' in which measurable signals interact with the built, and are so formatted before arriving at our ears. This "plan" is likely to be characterized objectively.

This work is based, essentially, on an experimental protocol of three components, which are simultaneously made: spatial analysis, analysis sound signals (acoustic metrology), and the capture of sound perception (commented walk / the detection of the stress).

2.1. Spatial analysis

Our field of study was an urban pedestrian walk situated in the city of Tunis, after the revolution of 2011. The first step made was collection of information and documentations on the chosen site. We completed this step by graphic surveys of the urban crossroads concerned (plans, spatial configurations...). Then we drew up urban profiles of browsed pathways. Then we updated the activities, function and epannelage maps. Finally, we described the morphology (rounded off, in hollow, meeting of two plans), materials and proportions of the architecture of angles of each browsed urban crossroads.

Through the reasoned choice of our field investigation, and after sweeping spatial and urban characteristics of the chosen urban path, we identified a variety of urban intersections by their clearances, buildings that enclose them, the functions they support, and the mode of traffic which take place there.

Presentation of the field of study

To answer the stake of the triple interaction of sound signals, configurations of the urban crossroads and the perception of the sound stress and after a stage of observation and search for the adequate ground, our choice has stopped on the neighborhood of little Sicily in Tunis (Figure 1). This district benefits of privileged situation in the agglomeration of Tunis. It is bounded in the north by the Avenue Habib Bourguiba, in the east by Avenue of the Republic, in the west by Avenue Carthage and south by the JALLEZ hill. Today the site appears as a pivotal district of the development of the city and a point of articulation of the urban growth of the capital southward and northward.

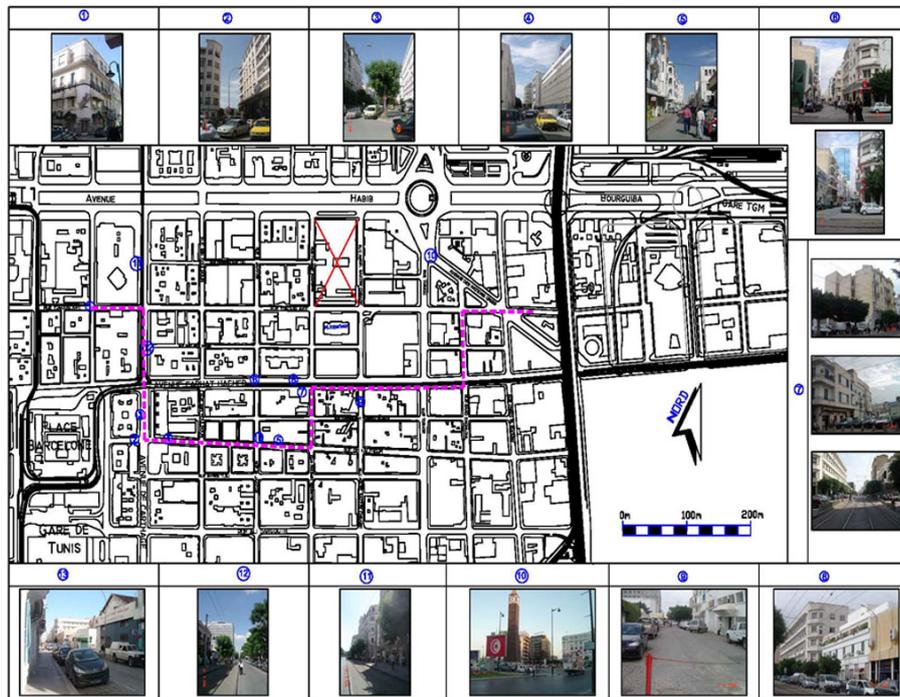


Figure 1. The selected path for the commented walk

We've chosen this path because of the variety of functions of its houses, and the sound sources available. When it was built, the residential function was confined to upper floors to make way for shops and services in the ground floors. The majority of buildings are home to a mix of functions varying between trade and services which are directly reflected on the soundscape recorded. We have also noted the richness of the building materials and architectural styles: Italianate, neo-classical or even said "modern style" with wall coverings made of granite and glass. The specificity of this site lies in the variety of treatments of angles which constitute it: loggias, balconies, and other more or less ornamented devices.

2.2. The sound perception measurements:

To address the relationship between stress and the urban soundscape, we have to start by highlighting certain peculiarities of sound phenomena. Urban sound identity interweaves permanently three components: sound sources, the spaces of propagation, and perceptions on the field of meanings, representations and social practices.

In summary, the sound system mixes sound material, spatial morphology (urban, rural, landscape, "natural" ...) and human communication. These three series of factors, physical, spatial and human, are in narrow interaction with each other.

The choice of pedestrian mobility

From the eighties and with the emergence of the notion of ambiance, we were witnessing a re-exploration of various crosses between social and spatial forms on one side and sound and visual landscapes on the other. Starting from the principle that the perception of space, that is architectural or urban, is poly-sensory, we can assert that the hearing as all other senses participates in the apprehension of space. By eliminating the vision, our ears can inform us about the nature of space: closed, open... This perception changes depending on the displacement mode in space.

Because I think that architecture will always remain at the scale of our senses, because the architecture exists only perceived, that's only when a person crosses a space, so, that we can really speak [...] about the experience of architecture. (Crunelle 1999)

The time of our movement is often sent to a fourth dimension.

In architecture, it is the user who moving into the building, looking under successive points of views, creates itself, so to say the fourth dimension. (Zévi 1959)

Feel and move have a relationship of interaction. As for the movement, the sound perception may also incite the user to micro-movements (turn the head), a change in speed, or even direction... But to understand an ambiance, it is necessary to know at first how to seize (measure) it. The method varies depending on the purpose of the investigator. We find ourselves, then, in a vast and very rich field of adopted approaches, divided into four categories. Either by treating the ambiance by behaviour (animal ethology), otherwise by the text (through comments), or by memory (the in vitro experience such as Pascal Amphoux's recurring observation) otherwise by action, that is by seeking the movement (the experiences are multiple, example the commented walk).

Because of the objectives of our research and the importance of walking to understand the different dimensions of the urban space which are: form, use and perception, we are going to attempt in what follows to use the chosen survey method: that is the commented walk of Jean Paul Thibaud.

This ambiantal approach allows us to grasp what is not usually sizeable. It highlights the sensitive dimension of our experience and allows us to identify sound sources.

To achieve these goals we use two approaches: the commented walk method and the capture of emotions through the apparatus of stress (Q sensor). We first start by the commented walk method. This approach was developed by Jean Paul Thibaud.

It has as objective to reach the sensitive experience of passers-by from the reports of perception in motion. It requests three simultaneous activities: walking, perceive and describe. This experience consists in making a path while describing what we perceive and feel according to the walk. (J.P. Thibaud, 2001) This method allows the user to describe the imme-

mediate perception of the environment. Therefore, the description reveals the instantaneous perception in action (perception in motion).

For our experience, we have to fix at first the point of departure and of arrival from the chosen path.

We then specify the approximate duration of the walk, which will be for our case of twenty minutes, necessary time for the verbal records. Comments should be recorded using a portable tape recorder, by giving regularly spatial landmarks.

From the description, we pass to the analysis of records and interviews, which will be transcribed in the most possible faithful way. These comments will be analyzed in the manner of the description or the perception according to the spatio-temporal locations (eg: the station), perceptual transitions (it is quieter), the verbal field appearance (be cut, is melt) or even reflective formulation (I'm attracted to ...).

2.3. The capture of emotions or “sensitive metrology”

The second way to the perception of sound phenomena is to use an apparatus of stress capture called Q sensor . It is thanks to the cooperation project between the ENIT and the ENAU that we were able to have access to this device, coming from the United States, finalized in the laboratory of Affective computing, and representing a very recent advance in stress research.

It is used to indicate the skin conductance, the temperature and emotion for a recording period of 24 hours, which presents a revolution in the field. It is a thick bracelet with an electronic data acquisition board (pulse, sweating). Its data are easily transferable on computers using a USB port. Once recovered, these records are shown in a Cartesian diagram with specific moments (peaks) which represent signals marks corresponding to moments of emotion or stress reported by the subject. Our goal is to confirm the precise timing of the entry and exit of the stressful sound situations using this scientific instrument that is the Q sensor.

This dual approach (commented walk, capture of emotion) will serve to objectify the collections of perception of sound phenomena which will confront and superimpose the collections of two methods to objectify the results.

In the analytical part, we are going to cross the data collected with the four previous investigation methods: measurement of sound levels, frequency analysis, the commented walk and the capture of emotions.

Before starting our analysis, we would like to insist on the fact that the simple variation of the electrodermale activity is not a sign of stress. It is the SCR (skin conductance response) which denotes stress. The electrical activity on the surface of the skin depends on

the physiology and the psychology of the person, on the state of the Q Sensor's electrodes and even on its fixation on the wrist. Experiments have shown an ineffectiveness of the stress measures, if the skin is dry (and a low level of conductance). It requires that the skin has to be clammy (so that the person is not at physical or cognitive rest). So to ensure that the trace of the EDA is usable, it is necessary that the minutes of adaptation preceding experience are not a simple part of the Sensor Q. So, we must stimulate the cognitive activity of the person failing to make intense physical activity. For every survey, we are going to present at first our observations of the curve of stress provided by the software Q. This allows us to estimate the stress by quantifying it.

To detect SCR, three criteria are to be raised: a moment of descent of the curve of the EDA and a recovery time (usually longer in duration than the descent). The curve has to get back more than 63% of its initial amplitude (difference between the lowest and the highest point of the phase of the descent in μS).

We then seek the correspondence of each variation with other data from our experimental protocol. We reveal the soundscape such it was perceived by the subjects as well as his feelings and emotions related to the ambiance (discomfort, uneasiness, stress, satisfaction, appreciation).

Then, we confront these psychological and physiological data with physical measures (the measurement of sound level). If the SCR detected denotes a sound stress, we turn to the analysis of verbal reports of the subject. If this sound stress is verbally verified, the next step will be the frequency analysis of the sound sequence that caused the stress of the investigated person. This method will allow us to check the frequencies and sound sources that cause stress to this user. It is only through this crossing method that we can verify the existence of links between the urban configuration and felt and emotions on one hand; And between the stress perception and physical characteristics of the signal on the other.

3. Multi-parameters crossed analysis:

Once the crossroads of sound stress will be identified through the analysis of physiological (Q sensor) and psychological (commented walk) data, we pay particular attention to their spatial configurations and more specifically sound phenomena.

The last part of our in situ survey includes an analysis of physical sound signals. This component is divided into three parts: the measurements of the sound levels, records of the audio signal of the sound scene and analysis of spectral compositions.

The measurement of the sound levels informs us about the quality of the space. So it allows us to evaluate the acoustic comfort of a space. The used unit is noted dB (A). These measures will be made by a son meter (sound level meter).

In addition to the measurements of the sound intensities we will also measure the equivalent sound level (L_{eq}). This index is the energy equivalence. It is often used for road noises. It consists in capturing the dynamics of sound intensity over a period of several minutes.

Given that the comments (describes) of the users are always influenced by the individual social and psychological factors; we have to correlate our surveys by sound records of the chosen path. These records will be made according to our progress. They will allow us to detect sound sources (a train, noise of a market, horns of cars at the traffic light...). This frequency dynamic along the path will allow us to be situated in the space through sound marks and to provide a sound identity of each analyzed crossroad.

We will complete this part by the last component of metrological surveys which is the analysis of spectral compositions . It's the technique of superimposing and segmentation of urban sequences and audio records to detect changes of atmosphere (ambiance) in the urban path. It identifies all variations of physical signals through the graphical representation of the frequency spectrum. Frequency analysis of these spectral compositions identifies areas of qualifications, which may be significant in relation to the frequency bands (low, medium, high frequency). This probably generates ambiantal effects (discomfort, comfort, stress, embarrassment...).These analyses will be correlated to the verbal data of the last part of our experimental protocol: the seizure of the sensitive perception of sound phenomena.

4. Validation of the experimental protocol

4.1. Walking, perceiving and describing

We would like to point out that there is sometimes an ambiguity in the events. The sound signal is not always the only source of urban stress. Indeed, following our experience, we've noticed that the factor "habit" acts on the way we perceive the space. The regular subjects tend to anticipate events and evoke memories. The same for the type of human presence,

two surveyed on five female expressed their dislike and even her sense of insecurity. They also stated that the discomfort has nothing to do with the noise intensity. It's not then a sound stress but rather a psychological and social stress (Figure 2) due to the type of human presence (males, mechanic work, café...)

(...) If we must turn right, I'd rather not pass in front of the café terrace. I prefer to bypass the news-stand. I avoid men sitting at the terrace. I move fast; I do not like the gatherings of men. (Subject 6)

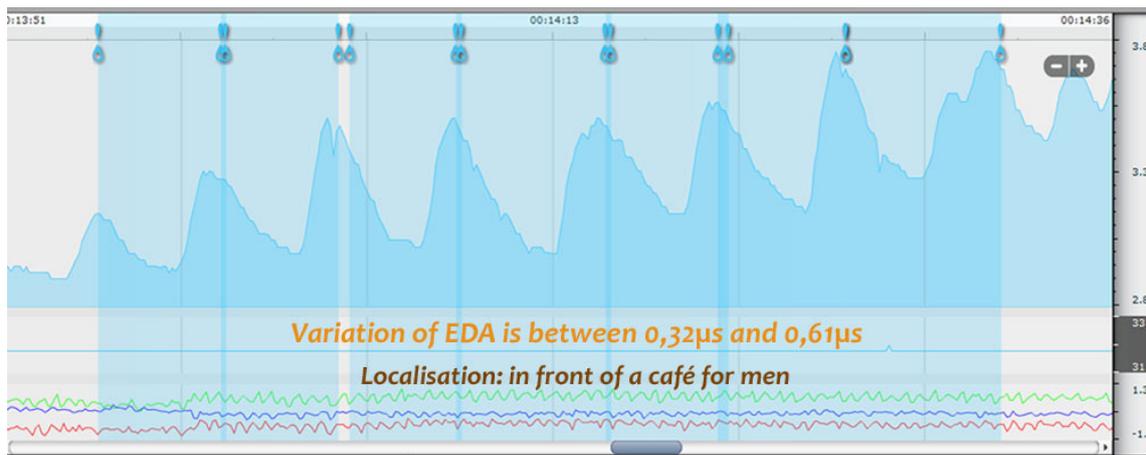


Figure 2. Variation of the EDA level (The stress detected is due to the social habits)

We also noted that the increase in the sound level is not always synonymous of stress increase. Indeed, a high sound level does not reveal the same reactions from the part of our subjects.

Sometimes it has a negative (Figure 3) and bothersome factor.

But here it starts to fuss. Drawing near the crossing with the street Ibn khouldoun, the noise increases, we approach the source of the noise, so, necessarily the tension rises. (Subject 8 for 69dB)

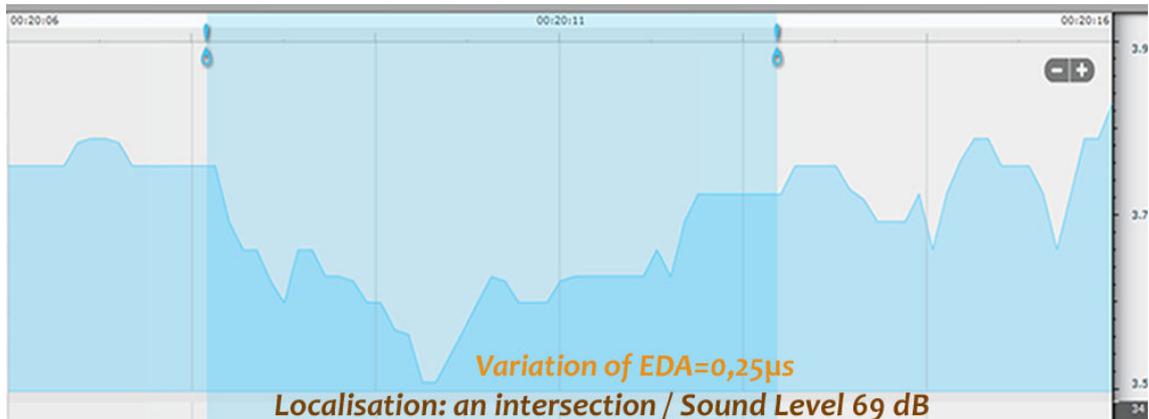


Figure 3. Variation of the EDA level (The stress detected is due to high sound level)

But, sometimes it becomes unnoticed and often it is taken as a sign of assurance and integration in the crowd. (Figure 4)

There are only cars here (...) I feel that it is a matter of habit. So I'm always on road and drive for several years now, the road noise goes unnoticed. (Subject 7 for 79 dB)

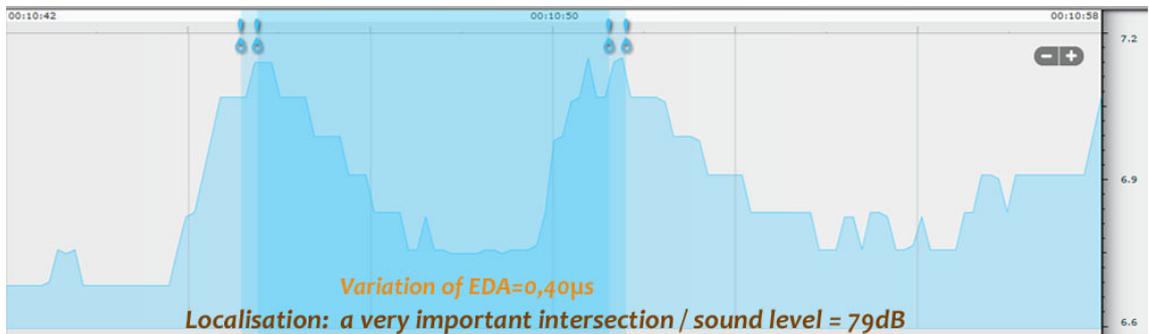


Figure 4. Variation of the EDA level (The SCR detected is not a sound-related stress)

The same for calm; It is not always appreciated by the investigated persons. It can sometimes be translated for the users by feelings of insecurity and routine (Figure 5) and at other times by comfort and relaxation.

(...)But once you get through it is a bit monotonous. This is annoying. I feel like sleeping. I do not feel motivated to stay long. I want to move to a busier area. It's quiet monotone. (Subject 8)

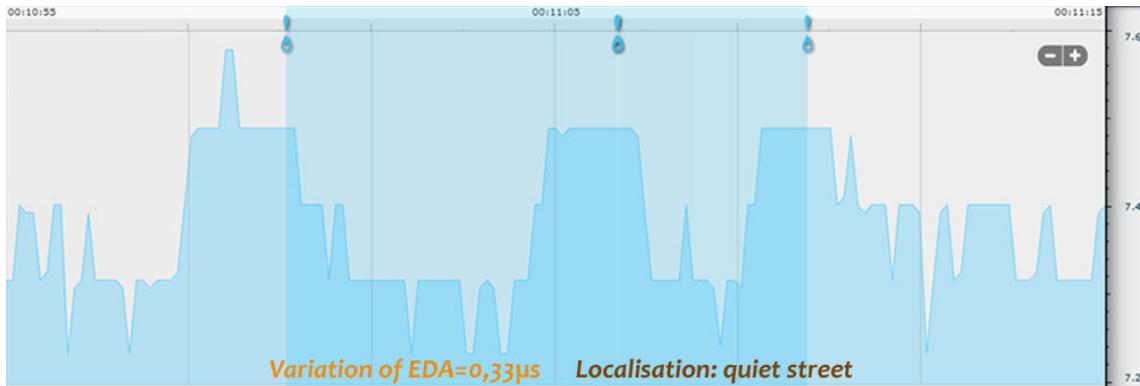


Figure 5. Variation of the EDA level (The low noise level is considered boring)

We have then come to an analogy between the variation of the sound recording, the variation of the electrodermal activity of the investigated subjects and their description of the situation.

We proved that the perception of stress in the public space is related to certain physical characteristics of the sound signal (Figure 6) and more exactly, specific frequency bands of the signal of the contemporary urban soundscape (space): police man's whistle (4KHz), vehicle horns (8KHz, 12kHz ...), acceleration and vehicle noise which is a urban permanent background sound (10KHz) ...

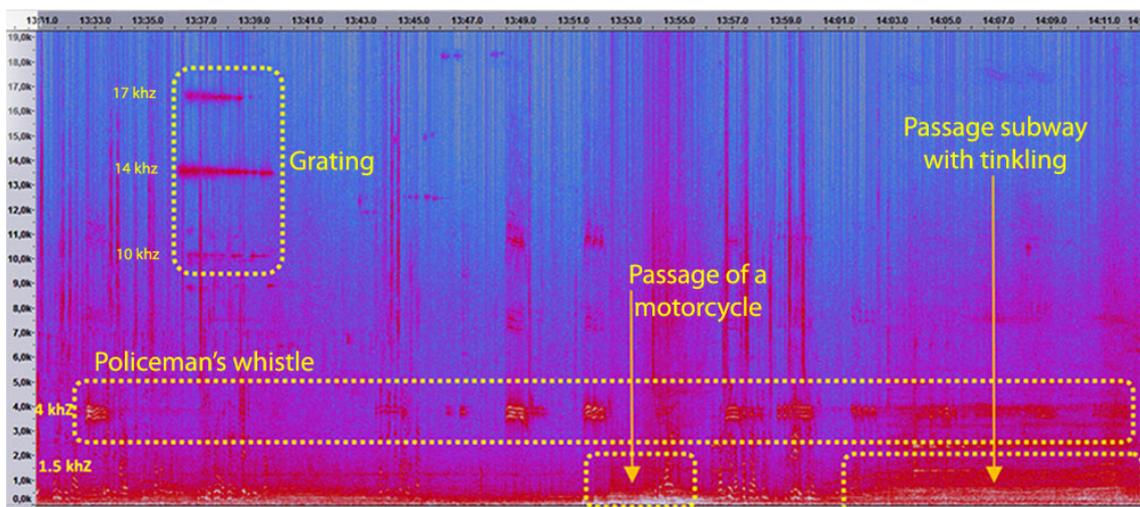


Figure 6. Analysis of the Audio spectrum recorded for subject 8 during her passage through the crossroad of Avenue Farhat Hached and Turkey Street

In several other cases we found that the SCR detected is not due to sound factors but olfactory factors "it stinks!" or "it smells bad!" or geographical or weather condition "What a heat!", or politic climate (Figure 7):

Look soldiers, I feel uncomfortable. You know after revolution even if all goes well, we are always stressed and in panic. (Subject 10)



Figure 7. Variation of the EDA level (The stress detected is due to political climate)

In other cases we are faced with an ambiguous explanation, where the sound detected physiologically stress is not synonymous of a stress expressed verbally.

4.2. Analysis of physical signals

The analysis of the variation of the sound levels according to the crossed urban intersections, confronted with the results obtained in the first part (crossing of the physiological, psychological, and physical methods), shows that the causes of the sound stress are related to three behaviors from the sound signal:

- Stress due to high sound level
- Stress due to sound level jugged as low
- Unnoticed stress nor satisfaction

Here are their locations relative to the selected urban path (Figure 8).

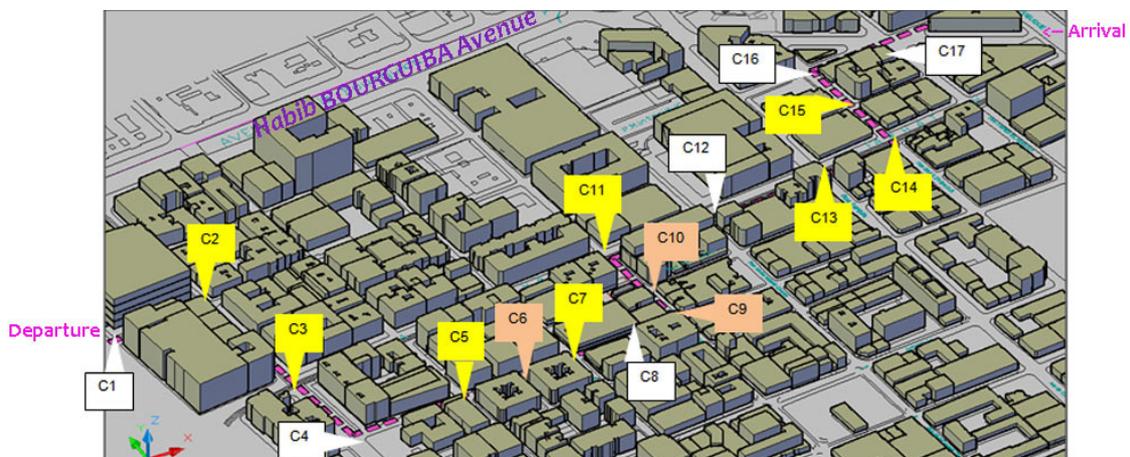


Figure 8. Synthesis map of the location of the urban crossroads according to their classifications

We must recall that our initial problem explores the links between the characterization of urban sound phenomena, the stress of the user and the morphology of the building. Then we supposed that the architectural and urban specificities of the crossed walk present an explaining factor of the manifestation of sound stress.

4.3. Analysis of urban space

Let's analyze the architectural and urban specificities of these crossroads. Let's take the example of the Om Koulthoum Street (Figure 9), a vehicular to one direction of traffic, we report three types of perception.

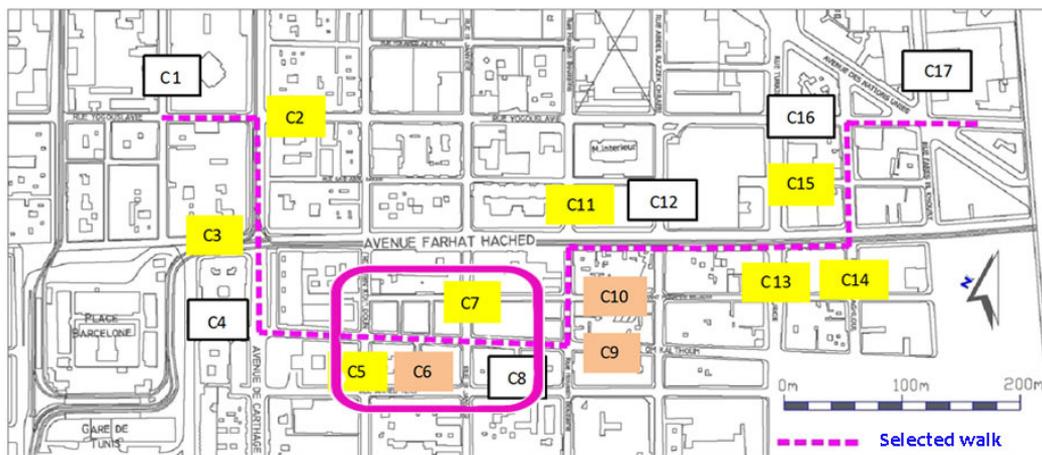


Figure 9. Synthesis map of the location of the urban crossroads according to their classifications (eg of Om Koulthoum street)

We note in an intersection of four buildings in the shape of a cross (+):

- A manifestation of sound stress due to a high sound level for crossroads C5 and C7.
- A manifestation of sound stress due to a sound level judged as monotonous and reduced for crossroads C9 and C10.

Similarly for the urban configuration in the form of (T), for the crossroads C6 and C8. For the same configuration, we note two different behaviors:

- A sound stress due to the reduced sound level for the crossroad C6.
- Unnoticed reaction.
- So, we can assert that the urban configuration of buildings of angle does not explain the manifestation of stress in the studied urban crossroads.

The multiplicity of sound sources (pedestrians, vehicles) the intensity of the noise, the intensity of road and rail traffic and the type of frequentation (police, pedestrians, men...) are at the origin of the change in the sound level in urban crossroads and consequently the manifestation of stress for surveyed persons. This is confirmed by crossroads C5 and C7, despite

their similarities with other intersections on the same street, these intersections present a source of sound stress, for the investigated persons, because of the great animation and presence of people in the shops that are settled in the ground floors of buildings which form the crossing.

5. Urban configuration and sound Stress: limits and perspectives

We then demonstrate that the urban configuration of the studied crossroads doesn't explain the manifestation of the stress. Indeed, for the same urban configuration we detected three different reactions to the investigated (sound stress due to the intensity or to the frequency or unnoticed reaction). We concluded then that urban configuration is neither determining nor explanatory factor of the manifestation of sound stress. Only the types of the sound sources, the animation of streets and the psychology of the investigated are the decisive factors in the manifestation of the sound stress.

We also noticed that the increase of the sound level is not always synonymous of increased stress. Indeed, a high sound level does not reveal the same reactions to our investigated. Sometimes, it presents a negative and annoying factor. But, in other times it is taken as a sign of assurance and integration in the crowd. The same for calm, it is not always appreciated by the investigated. It can be sometimes translated as a feeling of insecurity and routine and at other times as comfort and the relaxation.

This part still remains developing and what is interesting is to understand how to master the acoustic comfort? Is there any relationship between the frequency composition and the quantity of stress? And how does this report, if it exists, change from one user to another? And from one time to another (day and night). So many questions that other researchers will have to answer and remain to be developed.

Also, it's important to note that focusing on the soundscape doesn't exclude the fact that the sensorial components of the ambiance have a major role in defining the full situation in which the subject is immersed in.

Finally, we propose the figure below (Figure 10) which simplifies the triangulation of the applied methods which allows us to identify the links between the three parameters: the morphology of the built, the sound signal and the perception.

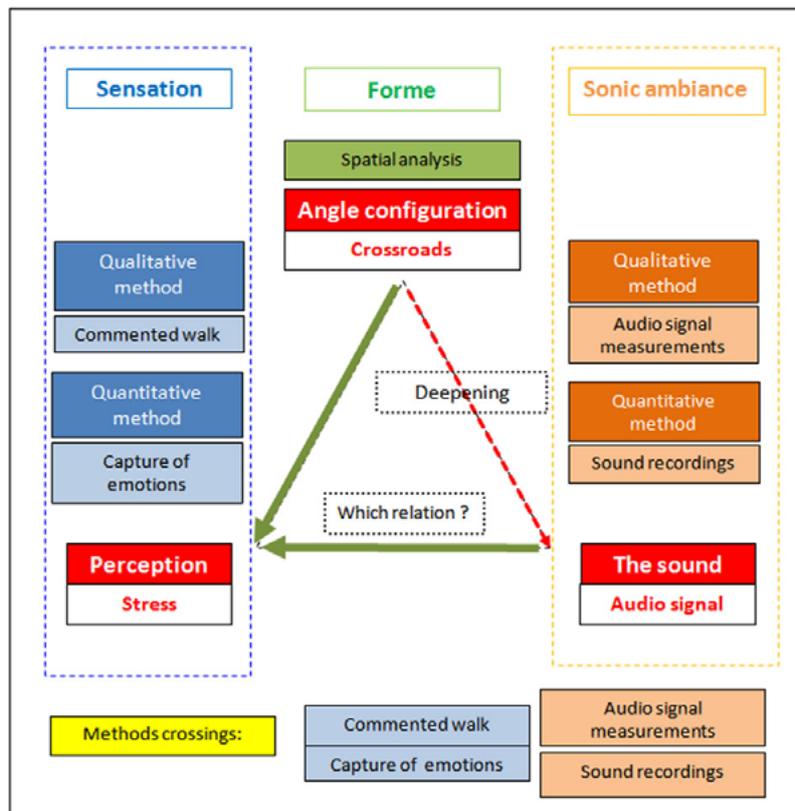


Figure 10. Recapitulative diagram.

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REFERENCES

Ammar Leila and Panerai Philippe. *Tunis d'une ville à une autre Cartographie et histoire urbaine 1860-1935*, Tunis : Espace Diwan, 2010.

Bouscein, Wolfman. *Electrodermal activity*, New York: Springer, 2012.

Camillo, Sitte. *L'Art de bâtir la ville, l'urbanisme selon ses fondements artistiques*. Paris: Edition Seuil, 1996.

- Grosjean Michèle and Thibaud Jean P.** *L'espace urbain en méthode*. Marseille: Edition Parenthèses, 2001.
- Layeb, Sana.** *Parcours commenté, parcours segmenté: une recherche exploratoire entre les configurations urbaines et le stress sonore en milieu urbain*, PhD diss., University of Carthage, 2012.
- Massabuau, Jacques P.** *Eloge de l'inconfort*. Marseille: Editions Parenthèses, 2004.
- Massot, Bertrand.** *Conception, réalisation de capteurs non-invasifs ambulatoires et d'exocapteurs embarqués pour l'étude et le suivi de la réactivité émotionnelle*, PhD diss., University of Lyon, 2011.
- Moser, Gabriel.** *Les stress urbains*, Paris : Armand Colin, 1992.
- Regnault B., Cécile.** *Les représentations visuelles des phénomènes sonores*, PhD diss., University of Grenoble, 2001.
- Strauss, Erwin.** *Du Sens des sens*. Grenoble: Millon, 1935.

Soundmarks in Place: the Case of the Divided City Centre of Nicosia

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Abstract

In this paper, the distinctive sounds of Nicosia are detected and a basis is set for examining whether the soundmarks of the divided centre of the city tend to empower the sense of place of the inhabitants. Firstly, the concept of the soundmark, as defined by Acoustic Ecology, is connected to the complex dimensions of place. Then, the methodology is analysed and explained, and the experience of a soundwalker is sited, delineating the soundscape of the city centre, leading the discussion to the religious soundmarks. Finally, a basis for a further discussion is set, regarding both the methodology needed to be applied and the religious soundmarks in place themselves.

Keywords: soundwalk, place, soundmark, religion

1. Theoretical Background

The connection of place with sound has been widely discussed and redefined in contemporary Sound Studies (Sterne 2012, 91-94). Already, from the early conversations on the notion of place, which acquires properties of the evolution of space, their complex relation has been stressed, where sound may play a highly significant role: Tuan has been arguing that 'sound dramatizes spatial experience' (Tuan 1977, 16), while, in parallel, the evolution of Soundscape Studies was in full development (Schafer 1977). Today, the notion of soundmark is well established, while it is also considered to be sufficient enough in order to characterise an acoustic community. However, the soundmarks also characterise places and since any sound can participate 'as a vibrant ingredient within community life' (LaBelle 2010, 83), by studying sounds within communities, one can approach an exploration and definition of the relation between the acoustic community that lives in a specific area and place itself.

One of the initial definitions indicates that a soundmark is a unique community sound, or it is of 'qualities which make it specially regarded or noticed by the people in that community. Soundmarks, therefore, are of cultural and historical significance and merit preservation and protection' (Truax 1999). While discussing this theory and trying to expand its attitudes, it is considered important to relate the definition of soundmark to the concept of place, at least as the last has been related to space and meaning in the academic community: Carter et al. agree that '... place is space to which meaning has been ascribed'(1993xii).From the beginning, however, this meaning is a result of a complex procedure before it is acquired to place: Rodman stated that 'places are not inert containers. They are politicized, culturally relative, historically specific, local and multiple constructions' (Rodman 1992, 641). It has also been discussed that places '... are more than geographic settings with definitive physical and textual characteristics' (Stokowski 2002).These attributes of place are worth being correlated to sound, as they consist of an intellectual approach to the meaning of an area, just as Sound Studies explore such features.

This study intends to explore the procedures that take place among the acoustic community when sounds of distinctive value resonate in a specific place, and the ways in which the general soundscape is evoked within this particular cultural context. The procedures that characterise the interaction between the sound sources and the way the listeners relate to sounds are discussed, depending on the environmental and cultural context of this exchange of information.

2. Description

The city of Nicosia, capital of the island of Cyprus, has been divided since 1974: its residents live either in the south or in the north of the city, and they mostly belong to the Greek Cypriot or the Turkish Cypriot community, respectively. The divided capital of Cyprus has been resonating until today, and is still intensively characterised by the presence of the existing sounds over the area. The northern part, the empty Buffer Zone (also called Dead Zone) itself and the south part of the city centre, apart from territorial borderlands, inevitably define separate aural areas, characterised by sonic events caused by the activity of the ethnic communities living there. As a result, specific soundmarks being produced by rich-in-context sources in both sides are audible in the sonic environment of the area too; more importantly, some of them travel across the borders of the city, indicating the existence of one acoustic community with unique characteristics. A common architectural structure makes the area –north and south– sound relatively equally, while by doing further observation, one can notice many detailed differences in the characteristics of sound in the place, from one block to the other.

2.1. Objectives

The main objective of this study has been to explore and define the soundmarks of the city centre of Nicosia, and in a next level to study them in relation with its inhabitants, as well as to find out how these sounds acquire meaning by them. These meanings may potentially influence the bonds of the inhabitants with their place, so a discussion can be started regarding people's place attachment through sound. With regard to this objective, the aim has been to listen carefully to the soundscape of the area of interest, understand its dynamics and then approach a method of analysing them, in order to comprehend such interactions.

2.2. Methodology

The study of such a subject requires paying attention to the detail of the sound environment and its influence to the acoustic community, therefore, methods that have been applied in Soundscape Studies should be used. It was decided that a combination of soundwalking and ethnographic interviews would be an appropriate combination, mainly in order to combine a classic, experiential approach of Soundscape Studies with a more in-depth knowledge about the soundmarks that can evolve after a guided discussion with the inhabitants, in a future

level. The soundwalk itself incorporates a multi-modal observation of the urban environment, taking cues from the visual and the sonic environment. It is also considered safer to practise the same soundwalks in different hours and days, (Semidor 2006) in order to move the soundwalker towards a better connection with the place. Hildegard Westerkamp encourages listeners to become part of the acoustic environment and reappraise it (2007), and in favour of this research, the soundwalk is used trying to generate data that could offer a place-related direction. Before the beginning of the series of the soundwalks, but also during their practice, the connection with the meaning of place has been kept in mind. In the present paper, an 'average' experience of a soundwalk is described—an enriched mediocre of all the soundwalks realized—looking to discover the soundmarks of place in the city centre of Nicosia.

3. The Soundwalk

A first evaluation of the soundscape of the city centre has evolved after intensive observation, listening and verbalisation of the sounds that exist in the area and dominate the soundscape. In the first place, however, the method of soundwalk was frequently used to make the evaluation of the soundscape clearer and more precise. The following text explains the personal experience, from the writer's point of view, after systematic soundwalks in the area of interest.

In the first place, a description is made in order to emphasise the differences between the two sides of the city centre, by examining the soundscape across the area and by focusing on certain characteristic sounds that define that place.

The area is characterised by a unique architectural, cultural, and consequently sound variety, something that has been directly obvious from the first soundwalk. Moving from one neighbourhood to another across the Buffer Zone, and while frequently meeting dead-ends created by the barriers spread across this Line, the qualities of the ambience change, so do the sounds. From Paphos Gate, the east entrance to the old city centre, to the central commercial Ledra Street and then, passing from the check point and heading east again towards the old car repair garages in the north part of the city, the sound qualities vary, yet they develop on a standard lo-fi basis. Going back to the tourist area and the municipal closed market in north Nicosia, and passing by the Selimiye Mosque, then going back to the south

city centre, passing next to Faneromeni church, and walking through the narrow streets, the sound of Nicosia appears to shape its identity. Passing next to a small, quiet cafe in front of another roadblock and ending up in the quiet area of Saint Kassianos Church, where the soundwalk ends, it feels like the sound of the place has been there forever, mixed, rich, united. The soundwalks that lead to the following description took place on a normal summer day in the city centre of Nicosia¹.

3.1. Soundwalking

Starting from the area of Paphos Gate, where the old, calm area of the city centre meets the new buildings and the big and noisy streets, I sense² the quietness that lies beyond this point. It is not the buildings, but the sounds which appear being masked when passing the starting point of the soundwalk. And this is what actually happens: entering the old city centre of Nicosia, car sounds cut out and become a far lo-fi soundscape, when new, more detailed and accurate sounds come to the foreground. The school ambience and action coming from the coffee shop where elderly people spend their time, mark the soundscape. Two of them are playing backgammon; the sound of dice rolling and their checkers hitting the wooden board stand out in the -relatively- silent ambience. Murmuring, newspaper page turning and sounds coming from the kitchen of the coffee shop are also present, while walking outside of the Holy Cross Catholic Church. Walking through the narrow streets, alert by the quiet talking of the army guards in front of their military checkpoint, the sound of leaves rustling and birds chirping, I reach an alley, where sound is circulated, leaving my ears exposed to the reverberations created by the high walls.

The open-air parking areas that I have to cross in order to reach the crossing point, create another quality, the one of the abandoned area, as they are quiet, with a terrain texture that is not taken care of, full of dust and small rocks. Standing for a while in the south crossing point of Ledra street, I can focus more on the sound of people passing by, talking on their phones, talking to each other, shouting at their kids. Cell phones, music from the nearby tourist shops and people entering and leaving shops and cafes compose the soundscape of this point.

When crossing the Buffer Zone, the entire ambience changes all of a sudden. While walking through large white iron doors hiding the abandoned and ruined houses of the area, the

1. The sounds were noticed and written down on a separate log, during the realisation of 10 soundwalks in different working days in the city centre, actualizing the same walking route each time.

2. In the description of the realisation of a soundwalk in the area, the present tense and the first person were chosen: the practice of one's soundwalk is a personalised experience, during which it is important for it to be described as intimately and as close to reality as possible.

sound also seems to be missing something. The seventy steps needed to cross the 'Dead Zone' are enough to make someone feel the emptiness of the sound environment, leaving the sound of the city behind, and moving towards a sound of another city, yet the same one. At the Turkish checkpoint, where few people are patiently queuing, waiting for their access to be authorised and cross the Line, what stands out sonically is the sound of the stamp of the officers on their passports, and the relatively noiseless conversation of the police guards.

Having crossed the borders, and still walking across Ledra street, the soundscape slightly changes. After a silent area lies the extension of the deserted Buffer Zone, where tourists and locals appear to give life to the neighbouring cafes and shops. Another, less cosmopolitan, yet busy ambience is present, until I leave behind the last CD shop playing music through loudspeakers, and head West. The soundscape dries out, becomes calm and silent; its quality changes. The streets are narrow, they are the same as the ones in the South, but they are more dusty. By walking and listening in this specific area, one might think that's/he is in a village. Every three or four old buildings, houses or stores, there is an open car repair garage, with few people inside, working or socialising. A printing house establishes the place with the constant noisy sound of its working machines. Walking back, leaving the quiet Turunçlu Fethiye Camii Mosque behind me, and heading East, moving through the narrow streets, I enter a tourist area once more, full of shops with clothes hanging on both sides of the street. As a result, this forms an area where the sound of the walkers dries out and gets absorbed by the colourful fabrics.

Leaving behind this vivid place, I reach Selimiye Mosque; its wide yard, also hosting some trees, lets the sound circulate in the area, and gives a sense of openness to the ambience. Some meters away, children are playing in the square: they are always there and the sound created by their shouts, games and running is a constant event. At some point, distant church bells are heard from a cathedral at the other part of the city. I end up, once again, in a rather quiet area, despite the few cars, close to the end of the city walls of North Nicosia, and I am heading back to the crossing points, this time passing from the closed market. The ambience in there is different, it is a calm closed space, where customers and workers move around and trade vegetables or other products, and the sound reaches to the top of the building and then returns back. Following the way back to the borders, tourists are still there, shops declare their presence sonically, and the sound of life there reminds of commerce.

Crossing the borders for the second time, the sound of the stamp initiates my peaceful short walk along the Buffer Zone, until I reach again the tourist zone, and then end up close to Phaneromeni Church, an open space full of cafes, accompanied by the typical sounds of people: chatting, arguing, playing backgammon or silently reading. Leaving this area and

walking across the line, the streets become more narrow, there are fewer cars left, and I am lead to a calmer neighbourhood, where birds declare their presence and the neighbourhood seems to take over the character of the city centre. Taht-el-Kale Mosque is the last religious-related sound source before I reach the church of Saint Kassianos and finish the soundwalk in a calm sound environment which, once again, brings a village soundscape to my mind. The silence is interrupted by the call to prayer, heard from the north part of the city, which I have just visited.

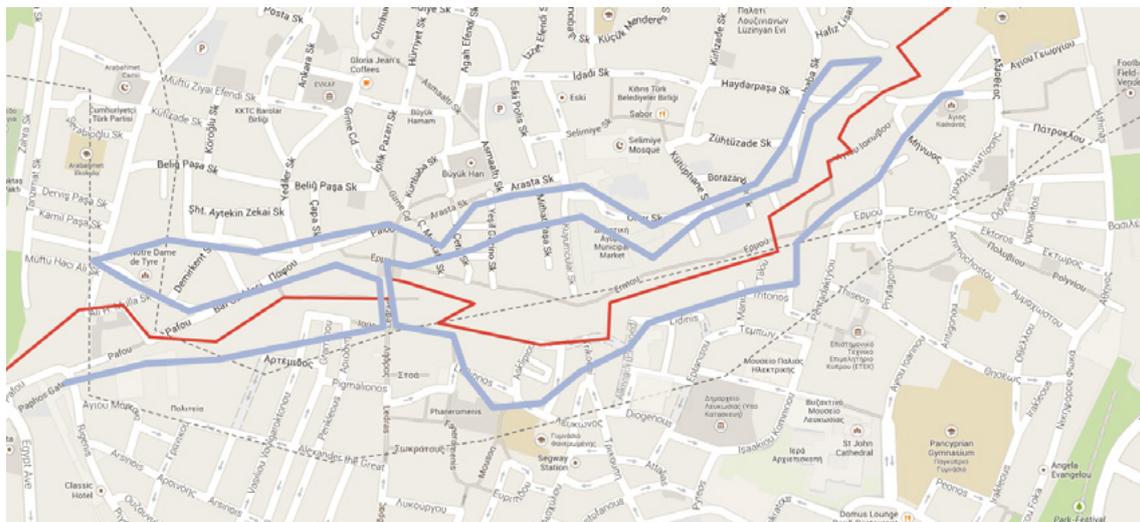


Figure 1. The Soundwalk (Nicosia).

3.2. The Religious Soundmarks during the soundwalks

During the soundwalks, the characteristic sounds of the area were discovered. Above, the experience described has been shaped likewise taking into account all visits in the area. Most importantly, however, it is the church bells and the imam's prayer that mostly dominated the soundscape during these walks, in both sides of the city (the North and the South), meaning the entire acoustic community.

These religious sounds maybe defined as soundmarks, as they are significant in terms of culture and history. Most importantly, they do contribute to the walker's experience of place in the area, which, apart from its particular characteristic architectural structure, considering these sounds, it acquires properties of place. Mazumdar and Mazumdar would probably agree with the importance of the complexity of such an experience: 'People develop attachment to sacred cities and sacred structures, in addition to natural places' (Mazumdar and Mazumdar 2004, 394). During the soundwalks, the call to prayer would be heard very loud,

when close to the speaker of the mosque, distant and tinny when far from it, or distant yet clear and distinctive, when in a significantly quiet area far from the source. The same happens with the church bells; someone can hear the bells from south Nicosia, even when being in areas in the north side. In such cases, the bells are heard distinctively, yet are embedded in the sound environment.

In Figure 2, one may spot the religious places (church and mosque) of the area, which are active sources of the religious soundmarks that are frequently audible in the area. The church bell is heard on Sundays, on religious celebrations or ceremonies (weddings, funeral, Easter etc.), various times per month. The call to prayer is ‘a social phenomenon, (where) the adhan unifies and regulates the Islamic community by marking the times for prayer and creating a sacred context’ (Lee 2006, 199). The creation of such a sacred context, both Christian or Muslim is significant in terms of sound experience of the city.

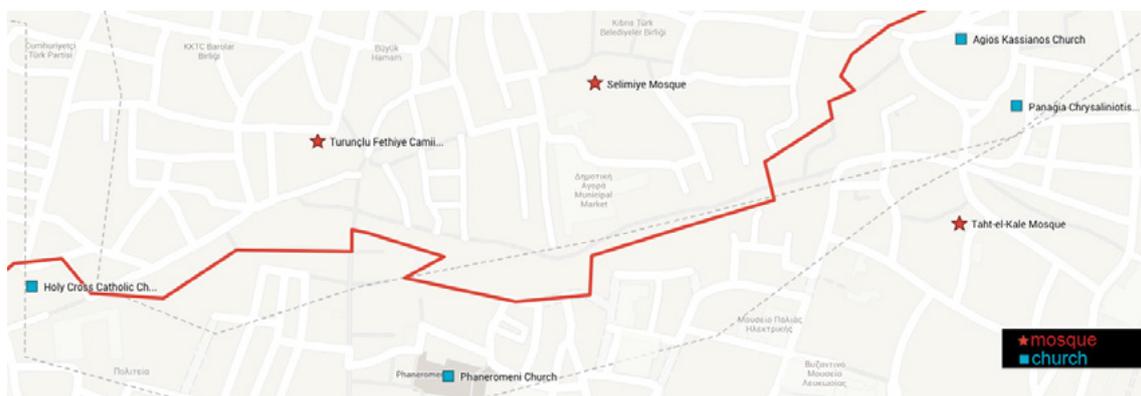


Figure 2. Temples in divided Nicosia's city centre.

4. Soundmarks in Place

Taking into account how characteristic the sounds are, or how identical some sounds appear in the north and south part of the city, it is observed that what seems to form the acoustic identity of the city centre of Nicosia is the sound of the city itself, as described by the soundwalk and the religious soundmarks.

4.1. A common soundscape

Soundmarks, such as the sounds of the tourists, the shops, the cafes and the distinctive qualities of the architectural unity of the whole city centre is what forms the acoustic com-

munity around the area. While some differences can be noted during the soundwalk, such as the dust on the road – being plenty in the north part–or the age of most cars –they are newer and more silent in the south part–one can observe that the quality of the sound of people’s activity remains the same, as the architectural structure is similar. The surfaces of the buildings are similar, the way people move or act is also similar and the rhythm of life sounds equally: aurally speaking, the area does appear as one place. Although there are both quiet and busier areas in a distance of several meters, one could argue that the quality of the soundscape is alike across the city centre, the silence of the Buffer Zone included. A soundscape, in a wider perspective would also involve the language spoken across the city, as in the north part the Turkish Cypriot dialect is spoken, whereas the Greek Cypriot dialect dominates in the south part of the city.

4.2. The religious soundmarks

The religious soundmarks resonate all over the city centre of Nicosia. Church bells, at non-standardized times and the call to prayer, five times a day, are sounds which characterise the acoustic community of Nicosia. Having observed the area, following the soundwalking procedure, and having noticed the sources of the characteristic religious soundmarks, it is obvious that the imam’s call to prayer and the church bells form a constant common sound identity through the repetition of the religious soundmarks all over the city centre.

Thus, the religious soundmarks are the ones coming from the religious buildings, that is churches and mosques along the city roadblocks/across the border barriers of the city. It is also worth mentioning that sounds related to these, such as the people going there for praying or participating in ceremonies, are also present in the area, giving meaning to the place by their activity.

5. Discussion

The presence of certain soundmarks in accordance to place, both as described by Acoustic Ecology, and also as they could be defined by a less compositional-approach definition, are present in the city centre of the area. Their presence has been proven after having derived a series of systematical soundwalks in the area. The religious soundmarks mix with other, less resonating but equally important sounds that declare their existence throughout the whole

city centre of Nicosia. In a place like Nicosia's city centre, which is divided in two ethnic communities, it is very important that a whole acoustic community can be defined by these –resonating in both sides– soundmarks. The sound travelling over the roadblocks, signifying not only the acoustic, but also the religious, ethnic, or the urban community of the city centre, appears to enforce a place identity in the area.

However, this relation to place through sounds, needs further research: in order to investigate more in depth the relation between these soundmarks and the inhabitants, another, more human-engaging method seems to be useful. Trying to approach the way in which the inhabitants of the divided city centre of Nicosia give meaning to the sounds of the area, ethnographic interviews need to be planned and realised. Using the theory of place attachment as a theoretical umbrella, the interviews can be derived and organised according to the investigation of any special bonds developed between the residents, through the soundmarks that have been observed. In the overall aim of the current research, which has been to investigate place attachment through the soundmarks as far as the Greek Cypriot and Turkish Cypriot communities are concerned, it is essential to proceed to further discussion and reappraisal of the application of the 'acoustic community' title to both communities.

REFERENCES

- Westerkamp, Hildegard.** "Soundwalking." In *Autumn Leaves, Sound and the Environment in Artistic Practice*, by Agnus Carlyle, 49. Paris: Double Entendre, 2007.
- Carter, Erica, James Donald, and Judith Squires.** *Space & Place: Theories of Identity and Location*. London: Lawrence & Wishart, 1993.
- LaBelle, Brandon.** *Acoustic Territories Sound Culture and Everyday Life*. New York: Continuum, 2010.
- Lee, Tong Soon.** "Technology and the Production of Islamic Space: The Call to Prayer in Singapore." In *Ethnomusicology: A Contemporary Reader*, by Jennifer C. Post. New York: Routledge, 2006.
- "Nicosia". Map. *Google Maps*. Google, 23 May. 2014. Web. 23 May 2014
- Mazumdar, Shampa, and Sanjoy Mazumdar.** "Religion and Place Attachment: A study of sacred places." *Journal of Environmental Psychology* (Elsevier), August 2004: 385-397.
- Schafer, R. Murray.** *The Soundscape. Our Sonic Environment and the Tuning of the World*. Vermont: Destiny Books, 1977.
- Semidor, C.** "Listening to a City with the Soundwalk Method." *Acta Acustica united with Acustica*, 2006: 959-964.
- Sterne, Jonathan.** "Spaces, Sites, Scapes." In *The Sound Studies Reader*, by Jonathan Sterne, 91-94. London & New York: Routledge, 2012.

Stokowski, P. A. "Languages of place and discourses of power: Constructing new senses of place." *Journal of Leisure Research*, 34, 2002: 368-382.

Rodman, Margaret C. "Empowering Place: Multilocality and Multivocality." *American Anthropologist*, September 1992: 640-656.

Tuan, Yi-Fu. *Space and Place*. Minnesota: University of Minnesota Press, 1977.

Truax, Barry. *Handbook for Acoustic Ecology*. 1999. http://www.sfu.ca/sonic-studio/handbook/Sound_Signal.html (accessed April 24, 2012).

Exploring the Perception and Identity of Place in Sound and Image

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Abstract

In this paper the concept of place is explored as the stimulus for the creation of original works combining electronic music and photography. Although the compositions of both authors take inspiration from different facets of place there is a similarity of theoretical approach regarding the identity of the individual and their relationship to geographical situations and place. We will draw upon aspects of psychogeography, psychosonology, the theory of 'atmosphere' by Gernot Böhme to explore complexity of place in 21st century.

Keywords: atmosphere, *City Colours*, composition, *Drift Trilogy*, photography, place, psychogeography, psychosonography, social geography.

1. Introduction

This paper explores the theoretical context for audio-visual projects by the authors: *Drift Trilogy* by Adkins and *City Colours* by Santamas. The *Drift Trilogy* (*Rift Patterns*, *Residual Forms* and *Radial Drift*) is about the psychogeographical exploration of places and how they impact on our identity and emotions. In the *Drift Trilogy* the artistic intention is to expand the psychogeographical drift from the city, into the wider landscape as well as to our inner world in which multiple instances of experiencing a place converge to form a palimpsest of that place. This intention is also expressed through the photography accompanying the work by Stephen Harvey, particularly the overlaying of images that occurs in the images for *Residual Forms* (see Figure 1).



Figure 1. Photographic layering (palimpsest) for *Residual Forms*.

City Colours by Santamas is part of a larger project focusing on audio-photographic art and the creation of atmospheres. It is a portrait of a city based on the experiences of the artist created through processing and layering photographs and field recordings as well as synthesised colour and sound. Through this approach Santamas is aiming to create an audiovisual artwork where the photography and sound are presented as equals as opposed to one supplementing the other.

In these works, both authors are not concerned with the objective representation of place in order to make a political or ecological statement about the location being recorded or depicted. Rather we are concerned with the communication of an individual's emotive response to a specific location through sound and image. We acknowledge that this emotive response is both culturally conditioned and is fluid due to the changes that occur in one's perception of place through repeated engagement with that place over time.

2. Composer and Place

Place is a complex and multifaceted phenomenon including elements of memory, sight, sound, smell and atmosphere amongst others. There have been many composers and sound artists who have responded to or been inspired by 'place'. In the nineteenth century depicting 'place' in music became more common as musical tone painting – a depiction in sound of something tangible – made fashionable through the symphonic tone poem. Bedřich Smetana's *Má vlast* depicts the Danube from its origins to a vast river and Edward Elgar's *Cockaigne* Op.40 provides a series of musical vignettes of life in London. Although there is no narrative in Elgar's work, it is about a specific place. In both *Má vlast* and *Cockaigne* the music is a metaphor for external events.

In contemporary music a similar preoccupation with place is evident. It seems that for all of our technological advancement and globalisation, artistically we still take inspiration from, and respond strongly to, our personal connection and history with geographical locations. John Surman's *Road to St Ives*¹ is inspired by the West Country. Surman, born in Tavistock, Devon, writes that,

Most of the music on this recording has been inspired by the landscape and history of the county of Cornwall in England. I am not Cornish. My birthplace lies just to the east of the river Tamar, which forms the border between Devon and Cornwall. However, ever since my first visit to Land's End, the county has held a special fascination for me. Its early inhabitants are traceable back to Paleolithic man. It has a language of its own, which remained in use up until the nineteenth century. With a rich fund of folklore and legend in addition, I've found much to inspire me. The pieces are not intended to be musical portraits of particular places or events, the titles being simply a collection of some of the intriguing place-names found on and around the road to St. Ives.

A similar pre-occupation with place names from the West Country is to be found on Simon Bainton's *Visiting Tides*² which goes further than Surman's work in that it uses field recordings taken from the locations referenced. Although the content of the field recordings

1. John Surman *Road to St Ives* www.ecmrecords.com/Catalogue/ECM/1400/1418.php

2. Simon Bainton, *Visiting Tides*, Hibernata Records, 2013, <http://hibernate-recs.co.uk>

do not locate the work specifically in the West Country it is clear that for Bainton they are an important part of communicating a sense of place and his emotive response to it to the listener.

Richard Skelton is another composer who has a specific relationship with place. His work is often inspired by the West Pennine Moors and the landscape around Lancashire, and more recently the West Coast of Ireland. Skelton has responded to the landscape in a particularly musical way and one that expresses the essence of a place or environment and an individual's presence within it. His music is abstract and is created from multi-tracking predominantly stringed instruments. Skelton has recorded in specific locations on the Moors, buried instruments and subsequently then recorded tracks using them. In an extended interview Skelton states that,

'Ridgelines', for example, is the music of two hills – Black Combe in Cumbria, and Capanawalla in County Clare, Ireland. I spent a significant amount of time living near, and visiting, each, before commencing the recordings. For me proximity is vital, as is duration. The longer I can spend with something, the better – observing and experiencing a place in different seasons, light and weather ... In my own work the music is a rendering of space, or more accurately, place. It is a distillation or transmutation of landscape. The landscape is full of voices, audible and inaudible. Its contours and reliefs are a patterning of melodies, and the music I create is a string, resonating in sympathy ... Provenance is important to me, though. Some of my recordings are composed of sounds recorded in specific places, and I feel that it's important to acknowledge that. I feel that a listener's experience is enriched by this knowledge ... When I released handmade editions of music through Sustain-Release, I would frequently include natural ephemera from the landscape that inspired the music. Leaves, bark, grasses, etc. These were things that had fallen – they were in a way detritus – and ultimately bound for decay. I found the idea of saving them quite meaningful, and by including them in the packaging it bound the music to the landscape, acting as a physical link or signifier. (Wright, n.d.)



Figure 2. Ephemera in Skelton's hand-crafted releases.

Skelton's past physical releases³ have been hand-crafted artworks in their own right and were often accompanied by bark, pine cones or other natural ephemera collected whilst working on the tracks that signify a 'local' personal sense of place rather than the predominant trend towards globalisation. (see Figure 2).

A further example, to demonstrate how a sense of place is manifest in many different genres of music, comes from the field of popular music. Place is a central concern of the musical and photographic project of Mount Eerie (a.k.a. Phil Elverum). In an interview shortly after the renaming of his alter ego project from The Microphones to Mount Eerie, Elverum discussed the link between his home town Anacortes and his art. He states that,

I love this place. It is home, in a deep way. The mountain (Mount Eerie) is right in the middle of the island. It has this distinctive, dramatic rock face. It's almost like the mascot of this place. I grew up under it, staring at it every morning waiting for the school bus. It's a special place for me, and the mysterious beauty in the rock face is potent. It has a similar vibe to much of what I am trying to do in music. 'The voice of an old boulder.' So I called it 'Mount Eerie' to marry myself to this place because it is the center of my universe. I guess I had this idea that everyone must have some similar landmark that could be the center of their universe. Some places have a mountain that's always on the horizon. Maybe for some people it's a grain silo. Maybe a tree. Maybe a flat field. Maybe an apartment building. The iconic mascot of a place that is 'home.' (Stosuy, 2009)

As with Skelton, Mount Eerie's work is not merely a description of place but an on-going emotive response to it that reflects both the seasonal changes of the landscape, one's own accumulating experiences and memories, and the intersection of these. What all of these examples illustrate and something that is echoed in the authors' works, is the individual's

3. On the Sustain-Release press – now an archive entitled *Skura*.

response to place and the communication of this through music. Furthermore, there is a desire not merely to describe place but the emotional connection the composer has to it, often amplified through the inclusion of objects or additional artwork such as photography. It is this expression of place and the communication of atmosphere, memory and psychological space that is fundamental to these works and takes them from being mere tone poems to psychosonographical portraits of place (Iosofat 2009).

As well as considering this individual approach to place in creative work it is interesting to note a parallel development in geography studies. In the past two decades there has been a shift in how social geographers consider the relationship between place and the individual. Gillian Rose writes that many geographers use 'place' in a 'quite specific sense, to refer to the significance of particular places for people. These feelings for 'place' are not seen as trivial; geographers argue that senses of place develop from every aspect of individuals' life experience and that sense of place pervade everyday life and experience.' (Rose, 1995). Rose continues,

Identity is how we make sense of ourselves, and geographers, anthropologists and sociologists, among others, have argued that the meanings given to a place may be so strong that they become a central part of the identity of the people experiencing them ... a sense of place is more than just one person's feelings about a particular place; such feelings are not only individual but also social. All places are interpreted from particular social positions and for particular social reasons ... a sense of place is seen as a result of the meanings people actively give to their lives. It is part of the systems of meaning through which we make sense of the world. (Rose, 1995)

Our repeated contact with a place changes our perception of it. Our memories become a palimpsest as each visit provides new memories that are added to and nuanced by existing ones. Mark Graham extends this notion further writing that 'Places have always been palimpsests. The contemporary is constantly being constructed upon the foundations of the old.' (Graham 2009) Graham continues,

All places are palimpsests. Among other things, places are layers of brick, steel, concrete, memory, history, and legend... The countless layers of any place come together in specific times and spaces and have bearing on the cultural, economic, and political characteristics, interpolations, and meanings of place. (Graham, 2009)

It is the sense of place as discussed by Rose and Graham and expressed in abstract terms in the music of Skelton and Mount Eerie that is key to the contextualisation and understanding of the authors' works. The desire to make the communication of place more tangible through the addition of ephemera objects, text or photography as Rose indicates, reveals much about the identity of the artist and the strength of their connection to a specific place. To an extent our work could be considered neo-expressionistic in that a depiction place is presented from a solely subjective perspective. The process of abstraction from the reality of place to musical composition engenders affects in the listener evoking various emotions or ideas. Where our work differs from the expressionism of Schoenberg, or post-war abstract expressionism is that our work is concerned with *all* emotive experiences. Adorno describes expressionism as concerned with the unconscious, and states that 'the depiction of fear lies at the centre' of expressionist music, with dissonance predominating, so that the 'harmonious, affirmative element of art is banished' (Adorno, 2009). What is important for the authors is to acknowledge that our relationship with place changes over time. At different times the same place can be both affirmative or oppressive as a result of both the individual's psychological state and the seasonal changes in a given location. Even though our work has certain commonalities with *some* aspects of expressionism, a more important theoretical basis is to be found in psychogeographical writings and the extension of these by Dani Iosofat with his term psychosonography in which sound becomes the medium through which place is communicated rather than writing. Iosofat writes that,

Psychosonography and expressionism share an attitude toward representation of material reality: impressions and experiences are rendered directly, with a referential and not interpretative perspective on the actual nature of the cosmos, with a focus on the subject of observation; they make use of the 'poetic logos'. (Iosofat 2009)

For Guy Debord, places are made by 'subjecting space to a directly experienced time' (Debord, 1995). For the authors this statement is fundamental. Whereas many soundscape artists working with place often present quasi-neutral, objective recordings of place, Debord's focus places the individual experience at the centre of an understanding of place. His psychogeographical understanding of place therefore has a kinship with the contemporary social-geographic thinking of Rose and Graham. What is important for the authors is Iosofat's poetic logos - the communication of place through a creative practitioner's 'directly experienced time' in that location.

3. Psychogeography and Psychosonography

Psychogeography is ‘the study of the specific effects of the geographical environment... on the emotions and behaviour of individuals.’ (Andreotti & Costa, 1996) It emphasizes a personal response to place and thus a departure for artistic creation. Psychogeography has historically been associated with the exploration of our cities and the ‘drift’, and has been described by Joseph Hart as ‘a whole toy box full of playful, inventive strategies for exploring cities... just about anything that takes pedestrians off their predictable paths and jolts them into a new awareness of the urban landscape.’ (Hart, 2004) This notion of the drift is to be found in BJ Nilsen’s *Eye of the Microphone*⁴ which is closely aligned with Chris Watson’s hyper-real field recordings. Nilsen states that his goal was simply to document the streets, sights, and sounds of the city with no real emphasis on route or destination. Although Nilsen’s drift has its origins in psychogeography, what is missing here is the communication of the individual’s emotional response to place. The *dérive* has as much to do with how a specific place stimulates an individual’s past experiences and memories and the intersection of these with present experience. Anthony Harding (a.k.a. July Skies) talks of the music on his album ‘The Weather Clock’ (2008) which is influenced by post-war British architecture, as ‘having an emotional reaction to things from the past, and connecting with that past... It’s about things buried in your psyche that emerge when you see a building or a landscape, and then trying to summon those feelings in sound – especially examples that are decaying or dying.’ (Rogers, 2008).

Such an emotional reaction, especially in conjunction with the ambient electronica of the authors could be interpreted as nostalgia with its inherent associations of sentimentality and melancholy. However, research studies of nostalgia and consideration of the past in the context of the present (Zhou et al, 2008) have demonstrated the positive aspects of such thinking and how it improves social connectedness. Even when consideration of the past is tragic, the function of art becomes cathartic and one of purification. Joanna Demers takes this approach when writing of the sense of ‘melancholy at the operatic drama in Tim Hecker’s artwork’ (Demers 2013). For Demers, Hecker’s titles provide a suggestion of place such as ‘In the Fog III’ on *Ravedeath 1972* without suggesting any specific place. As such, they provide a psychological condition for listening. The relationship between Hecker’s music and place is akin to the lettrist theory of metagraphy. Mark Goodall writes, ‘the psychogeo-

4. BJ Nilsen, *The Eye of the Microphone*, Touch Records, 2013

graphical practice of using writing to visualize a location, to render a place in text is in effect a metagraphic expression.' (Goodall 2008) In the authors' creative output the same process is at work. The practice of using sound to evoke or render a location in music is what Dani Iosofat (2009) would term psychosonographic expression and is not merely a recording or sonification of place. Any sense of nostalgia in the authors' works and the desire to amplify the communication of place through extra-musical elements is to enhance a sense of connectedness between the audience and artist. Iosofat writes that our psychosonographic perception of place results from,

the consideration and appreciation of perceptual stimuli that provide this general impression, through association and other cognitive processes ... the aesthetics and poetics of visual stimuli, such as the observation of architecture and landscape, can be important; so, of course, can sound. A method of representation of the sense of place using sound as the sole medium must, therefore, provide means of reproducing general sensations and impressions, complete with context, memory and emotion involved as appropriate. The inverse, obviously, also holds: Situationism 'presupposed that it was possible for people to synthesise or manage these situations [which affect the individual's consciousness and will] as an act of self-empowerment' (Sadler 1998: 45–6). The relationship between individuals and environment is therefore bi-directional. (Iosofat 2009)

While one of the authors (Santamas) does use some location recordings in his work (as do Iosofat and Bainton), Adkins, Surman and Skelton rarely use such recordings. Chion notes that sounds are recognised to be 'truthful, effective and fitting not so much if they reproduce what would be heard in reality, but if they render (convey, express) the feelings associated with the situation' (Chion 1994). Iosofat writes in relation to his own work that,

The use of location recordings may suggest a similarity to soundscape composition. The latter, however, deems 'the acoustic ecology arena as the basis from which [it] emerges' (Westerkamp 2002: 52), and, as such, serves a completely different purpose. It is reasonable to suggest that soundscape composition is to psychosonography what photography is to expressionism: the Brücke artists, for example, 'tried to capture their sensory experiences and visual impressions [...] in the form of paintings' ... Wassily Kandinsky ... in his 'Concerning the Spiritual in Art', wrote of 'artistic recreation of mood in its inner value'. (Iosofat, 2009)

The psychosonographic is therefore not a representation of place through field recordings but requires sonic intervention to express a sense of experience or 'otherness'. For the authors, the composition and its interpretation arises from an intersection between individual cognition, place and atmosphere. A given composition may evoke an associated visual image from either the composer's or the listener's past or present experience. Iosofat writes,

An image (not necessarily visual) that possesses such evocative qualities can be said to be poetic, in the Aristotelian sense. Bachelard remarks that, [the poetic image] is referable to a direct ontology. [It] has an entity and dynamism of its own ... The relation of a new poetic image to an archetype is not a causal one. (Bachelard 1964: xvi) Therefore, an object's image is a being in its own right, a separate entity from the object's material existence, and disjunct from all causality related to the nature of the phenomenon. It is possible to consider this image (or general reconstruction, in the sense discussed) as completely remote from the reality from which it originates. (Iosofat, 2009)

It is this relationship between sound and stimulated poetic image that is explored in the authors use of photography, what Santamas (2013) terms audio-photographic art. In audio-photographic art the experience of an artwork is through the integration of image and sound. The audience is invited to subjectively reconstruct and share the emotive experience of the artist. The inclusion of image in both authors' works conditions the audiences perception of the artwork in a more directed manner than sound alone. Derrida (2010) considers photography as 'auto-affective' in time, something that is both a passive record of time that has passed and an active intervention through the artistic decisions the photographer takes (exposure time, perspective etc.). This same idea can be applied to a field recording's relationship with time. It is both passively recording the past but at the same time intervening through microphone choice, placement and production techniques. This exposes a flaw if the intention is to capture place - the intervention in the soundscape means that the sound of the place can not be truly objectively recorded. Our work differs from soundscapes in that instead of using detailed 'clean' recordings of space to attempt to transmit a sense of place, we use a full range of sounds, instrumentation, as well as still image (and its own full range of aesthetic possibilities) to *evoke* a sense of place rather than recreate it. What one has in *City Colours* (Santamas) and the *Drift Trilogy* (Adkins) is a sonic impression of place as an expression of a mental image. This mental image is not just of place but is also a subjective response to a real or imagined sensory experience of place. As such it is not bound by spatial

materiality. There is therefore a disconnect between representation and expression. This is the creative act. An act that consciously plays with the evocation of memory, atmosphere, place and sound.

4. Atmosphere

In Gernot Böhme's writings on atmosphere there are a number of concepts mentioned above that are brought together, particularly Debord's notion of 'spaces' becoming 'places' through an individual's experience of a given location; the bi-directionality of individual and place discussed in Iosofat's writings; and Kandinsky's expressionist recreation of 'mood'. Böhme writes,

atmosphere indicates something that is in a certain sense indeterminate, diffuse but precisely not indeterminate in relation to its character... Atmospheres are indeterminate above all as regards their ontological status. We are not sure whether we should attribute them to the objects or environments from which they proceed or to the subjects who experience them. (Böhme, 1993)

For Böhme the meaning of atmosphere is manifest between or intermediary to subject and object relations and is the fundamental concept in a new aesthetics for him. He contends that his new aesthetics is 'concerned with the relation between environmental qualities and human states. This 'and', this in-between, by means of which environmental qualities and states are related, is atmosphere.' (Böhme 1993) Böhme states that since the time of Kant, aesthetics has predominantly been about a positive or negative response to the arts and providing a critique and judgment. He writes that,

aesthetics is now the full range of aesthetic work, which is defined generally as the production of atmospheres and thus extends from cosmetics, advertising, interior decoration, stage sets to art in the narrower sense. Autonomous art is understood in this context as only a special form of aesthetic work, which also has its social function, namely the mediation of the encounter and response to atmospheres in situations ... set apart from action contexts. (Böhme, 1993)

Böhme draws on Hermann Schmitz's philosophy of the body in the creation of atmosphere, writing that, 'if we accept their [atmospheres] relative or complete independence from objects, [then they] must belong to the subject. And in fact this is what happens when we regard the serenity of a valley or the melancholy of an evening as projections, that is, as the projection of moods, understood as internal psychic states.' (Böhme, 1993) For Schmitz feeling are 'unlocalized, poured forth atmospheres ... which visit (haunt) the body which receives them ... affectively, which takes the form of emotion.' (Schmitz, 1964) For Böhme, Schmitz only goes so far and there is a need to liberate the latter's notion of atmosphere from the 'subjective-objective dichotomy' (Böhme, 1993). Böhme goes on to state that atmospheres are,

spaces insofar that they are 'tinctured' through the presence of things, of persons or environmental constellation, that is, through their ecstasies. They are themselves spheres of the presence of something, their reality in space. As opposed to Schmitz's approach, atmospheres are thus conceived not as free floating but on the contrary as something that proceeds from and is created by things, persons or their constellations ... Conceived in this fashion, atmospheres are neither something objective, that is, qualities possessed by things, and yet they are something thinglike, belonging to the thing in that things articulate their presence through qualities – conceived as ecstasies. Nor are atmospheres something subjective, for example, determinations of a psychic state. And yet they are subjectlike, belong to subjects in that they are sensed in bodily presence by human beings and this sensing is at the same time a bodily state of being of subjects in space. (Böhme, 1993).

For Böhme the concept of perception,

is liberated from its reduction to information processing ... Perception is basically the manner in which one is bodily present for something or someone or one's bodily state in an environment. The primary 'object' of perception is atmospheres. What is first and immediately perceived is neither sensations nor shapes or objects or their constellations, as Gestalt psychology thought, but atmospheres, against whose background the analytic regard distinguishes such things as objects, forms, colours etc.' (Böhme, 1993).

In our compositional work the creation of atmosphere can also be understood through Barthes' notion of punctum and studium proposed in his *Camera Lucida*. For Barthes, punctum 'wounds' the viewer, usually by evoking memory or the imagining of what could have been. The punctum has a few possible causes. The first is 'detail': Barthes explains that for him the punctum is often a detail such as a necklace or shoes. These items may bring forth memories of relatives that these objects remind him of. The second form of punctum is time. Barthes said 'This new punctum, which is no longer of form but of intensity, is Time, the lacerating emphasis of the noeme ("that-has-been"), its pure representation' (Barthes, 2000).

Music can also have an effect through its association with particular moments in memory. Barthes explains that details of some photographs trigger memories and emotions, this is one way in which the viewer can experience the punctum. This effect however, does not appear to be limited to the details of things but rather the general impression that they leave upon you. In this way it is possible to look at other mediums with a different temporal frame such as music in the context of the punctum. This is not a new idea; in their essay 'For The Record: Popular Music and Photography as Technologies of Memory' Emily Keightley and Michael Pickering use Barthes' punctum as a means for analysing music. They go on to explain that 'along with the visual punctum, there is also the aural punctum where music pierces, cuts through and penetrates in such a way as to be indistinct from the experience of it' (Keightley & Pickering, 2006). They go on to cite an interview from *Music in Everyday Life* (2000) in which the participant talks about a song on the radio triggering grief for her recently deceased father. This is a clear parallel with Barthes' 'winter garden photograph', a photograph of his recently deceased mother which through its punctum triggers feelings of grief and loss. Keightley and Pickering however, do not look at the problems of applying the idea of punctum to sound. Punctum relies on photography's noeme ("that-has-been" (Barthes, 2000)) and as such much of its effects are unique to the temporal aspect of the medium. What is clear is that in sound the punctum is not time based but a reaction to the generality of the music. It is not a just a detail or the specifics of time but the music as a whole which is associated with part of the past - or place. Due to music's abstract nature, its sounds are not always clearly indexical of any particular situation. This abstraction allows the listener to attach memories to the whole as well as any detail with a personal referent. It is the music's association with the time of the memory that triggers that memory: its place in history as referent rather than the visual punctum's object as referent or 'the lacerating emphasis of the noeme' (Barthes, 2000). It is the music's association with personal history which allows it to create a punctum. In this case the music is equivalent to the 'detail' in photography that causes punctum. The music is what takes you back to when you listened

to it previously or intensely. This does not mean that a particular sound detail that occurs cannot 'prick' you, (after all, sound is 'pregnant with meaning' (Prevost, 1995)) however, this contributes to the whole rather than just that moment. The continuous sound does not allow you to dwell on an individual detail therefore not allowing the brief shock to become a punctum however, that detail then is subsumed into the whole, leading the listener to associate the whole piece with that time, each detail playing a part in creating an abstract atmosphere. In summary, the details do create a punctum but one which is the sum of a number of small 'pricks' which create or contribute to an atmosphere rather than a single detail which the audience has time to dwell upon. This explains the example from *Music in Everyday Life* (DeNora, 2000) that Keightley & Pickering (2006) use: it is the piece as a whole, not any one detail of the piece that causes the strong emotional reaction.

Although both author's use of electronic music has a similar goal it is interesting to note that their use of photography can trigger the punctum in different ways. Stephen Harvey's photographs for *Rift Patterns (Drift Trilogy Pt.1)* are rich with detail and likely to trigger Barthes' notion of punctum through the recognition of a particular detail (see Figure 3). Santamas' use of photography in his work is different from Harvey's clean-cut and detailed style. There is a very different sense of atmosphere created. Santamas uses a number of experimental techniques to create unusual blur and light effects. These include taking the lens off the camera body itself (see Figure 4). In Santamas' audio-photographic art the photographs as well as the music explore the creation of atmosphere through the erosion of detail. In Santamas' work the colours and shapes in the images create more of general atmosphere. The lack of detail leads the viewer to create their own associations, away from the more specific cultural referents of Harvey's work. Freed from detail, the audience can link any memory they associate with those shapes and colours to the image rather than being anchored to a specific cultural referent.

With the majority of our work, abstraction is a key component in the way we explore place. The experience of place is not just an aural one or even simply audiovisual so when looking towards representing place it is clear that our respective mediums of music and audio-photographic art are fundamentally flawed. In *The Order of Things* Foucault (2002) suggests that a similar barrier between language and painting exists - the phenomenology of both is very different. Any attempt to represent one with the other is always going to be problematic as 'Neither can be reduced to the others' terms'. This incompatibility however, could be used to the artist's advantage.

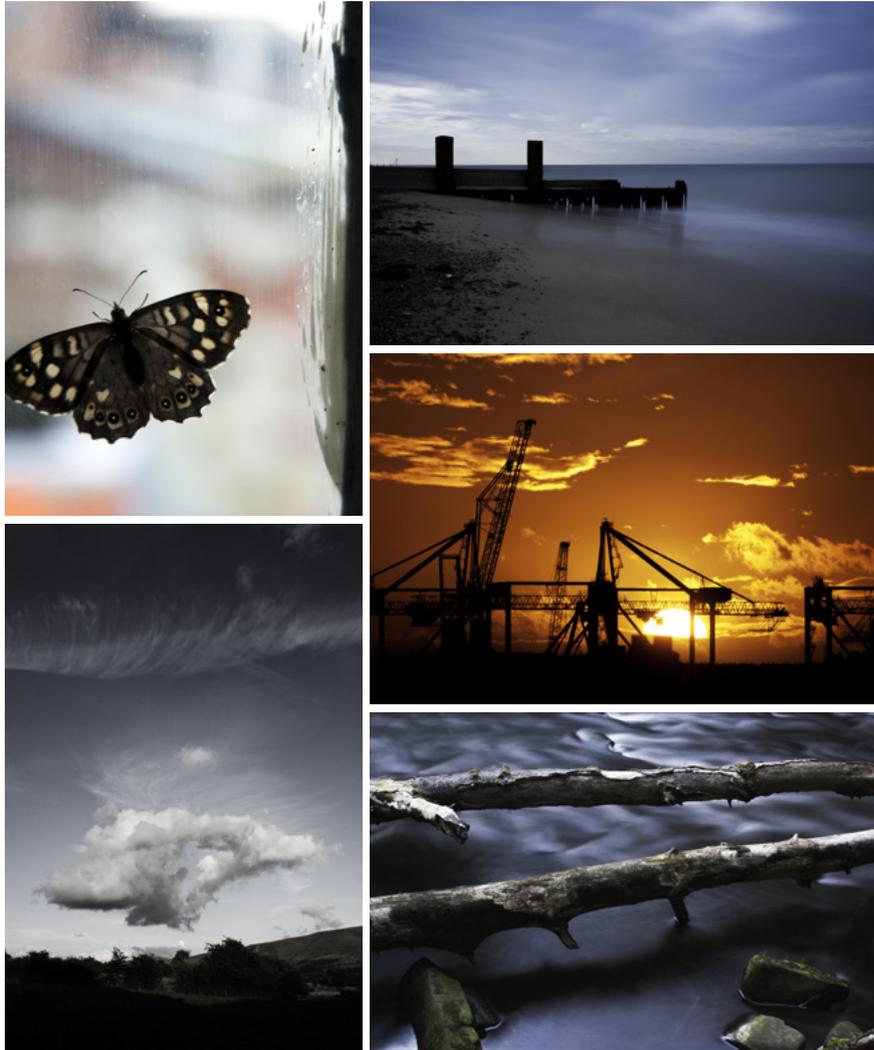


Figure 3. Stephen Harvey's photographs for *Rift Patterns (Drift Trilogy Pt.1)*

... if one wishes to keep the relation of language to vision open, if one wishes to treat their incompatibility as a starting-point for speech instead of as an obstacle to be avoided, so as to stay as close as possible to both, then one must erase those proper names and preserve the infinity of the task. It is perhaps through the medium of this grey, anonymous language, always over-meticulous and repetitive because too broad, that the painting may, little by little, release its illuminations. (Foucault, 2002)

Foucault's writing is particularly pertinent to Santamas' work. Here Foucault suggests that erasing the details and dealing with generalities could still evoke the image but not recreate it. In this way by using general atmospheres one can evoke a sense of place using the

full palette of sounds and colours available - using sound and image to its full potential and on its own terms. This creates a far more open way of experiencing art: through the erosion of detail one can leave the audience to interpret the material they are presented with in a much more liberal way, connecting the sound and image with their own memories to create a strong sense of place. By communicating generality there may be something that anyone can latch onto to build their own sense of place from the music whether through psycho-sonographic imagined images or memories of past experiences.

In Santamas' audio-photographic installation *City Colours*, the audiovisual material is a mixture of captured reality (photographs, field recordings) and synthesised elements, layered to create an abstracted piece of work that takes advantage of a range of sound and image processes on their own terms. Here evocation of place through generality is key to the work.

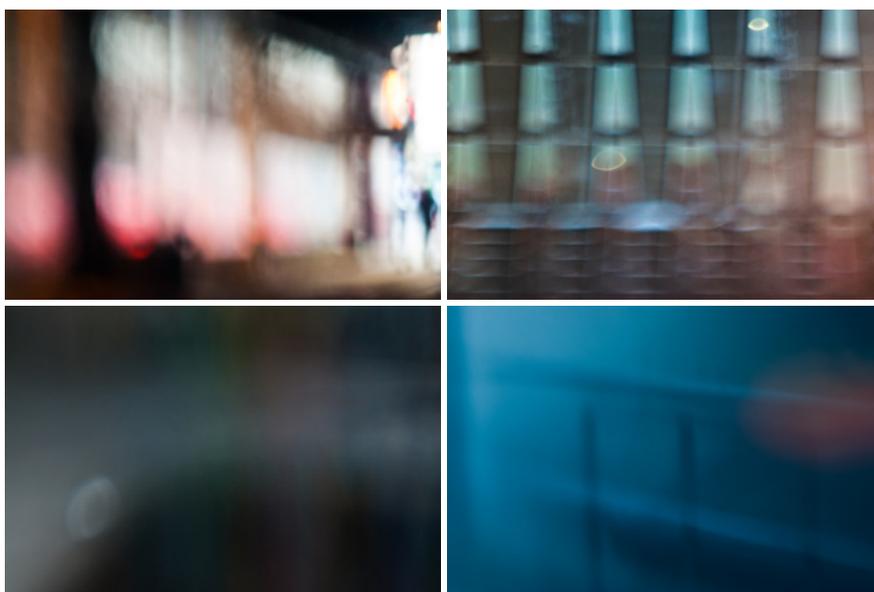


Figure 4. Hali Santamas' images for *City Colours*.

In Adkins' *Drift Trilogy*, the approach to place is still the focus of the work but the method is different. Adkins also uses abstraction in sound, going even further by not including field recordings of place and so creating a neo-expressionistic emotive evocation of the intensity of place. Harvey's images and Adkins' sound focus on detail rather than generality arguably creating a more directed and hence restricted interpretation of the work rather than Santamas' openness. In Adkins' and Harvey's work there is a desire to communicate the author's individual response to place and its importance to them. In Santamas' audio-photographic art an interpretation of the work is more ambiguous as it is the audience's perception of place that comes to the fore.

5. Conclusion.

There are a number of conclusions that can be drawn from consideration of the authors' creative work in relation to place and identity. The first, paradoxically, is informed by writings on super-modernity by Marc Augé. According to Augé's notion of 'non-place', spaces that are the same the world over in contemporary society, such as airport lounges and hotel lobbies typify super-modern culture. Augé contends that the contemporary understanding of 'local' can only be defined through reference to the 'global'. In artistic terms the authors' work, as well as that of Bainton and Skelton fits into the 'global' contemporary ambient genre - integrating instrumental recordings, field recordings, drone and noise as exemplified by artists on labels such as Kranky, 12k, Crónica, Room40 and Hibernata. What makes them distinctive is the 'local' emphasis of place and the communication of this through the creation of atmosphere. Skelton's use of ephemera emphasises the fragility of the 'local' within a 'global' environment and although not overtly political in the sense of acoustic ecology, his work communicates to the audience the importance of a given location to him. Similarly, the authors' work emphasises the individual's link with place and acknowledges the local and individual relationship that exists between them. It is a 'political' artistic statement in that, through the perception of atmosphere in a work, the audience comes to appreciate how the identity of the artist is shaped by the relationship with the 'local' and hence comes to understand that the preservation of the 'local' in relation to the 'global' non-place is essential for the artist and society at large.

Although our compositional work considers identity and place from a different perspective to that found in soundscape composition, the unifying factor is Böhme's notion of atmosphere in that both are concerned with the relationship between human beings and their environment mediated through sound. Understood from this perspective both approaches are two sides of the same coin emphasising a subjective artistic response or an objective response to a location through sound and contextualising this within a local-global perspective in relation to the individual and society.

REFERENCES

- Andreotti, Libero & Costa, Xavier** (eds), *Theory of the Dérive and Other Situationist Writings on the City*. Barcelona, Museu d'Art Contemporani de Barcelona, 1996.
- Barthes, Roland**. *Camera Lucida*. (Trans. Howard, Richard) London: Vintage, 2000
- Baudrillard, Jean**. *Simulacra and Simulation*. Ann Arbor: University of Michigan Press, 1994.
- Böhme, Gernot**. 'Atmosphere as the fundamental concept of a new aesthetics' in *Thesis Eleven*, No. 36 pp.113-126. (trans. Roberts, David). Cambridge MA: MIT Press, 1993.
- Chion, Michel**. *Audio-Vision. Sound on screen*. New York: Columbia University Press, 1994.
- Debord, Guy**. *The Society of the Spectacle*. Trans. D. Nicholson-Smith. New York: Zone Books, 1995.
- Demers, Joanna**. *Tim Hecker and Revisited Tragedy*. Headphone Commute, <http://wp.me/proVw-5Wi>, 2013. [accessed 3.5.2014]
- DeNora, Tia**. *Music in Everyday Life*. Cambridge: Cambridge University Press, 2000
- Derrida, Jacques; Amelunxen, Hubertus Von; Wetzel, Michael; & Richter, Gerhardt**. (eds). *Copy, archive, signature: A conversation on photography*, (trans. Fort, Jeff) Stanford: Stanford University Press, 2010.
- Foucault, Michel**. *The Order of Things: An archaeology of the human sciences*. London: Routledge, 2002
- Goodall, Mark**. 'Salford Drift: a psychogeography of The Fall', in *Mark E. Smith and The Fall: Art, Music, and Politics*. Goddard, M., and Benjamin Halligan, eds. Aldershot: Ashgate, 2010.
- Graham, Mark**. Neogeography and the palimpsests of place: WEB 2.0 and the construction of a virtual earth. *Tijdschrift voor economische en sociale geografie* 101: 422-436, 2010. doi: 10.1111/j.1467-9663.2009.00563.x
- Hart, Joseph**. 'A New Way of Walking' in *Utne Reader*. <http://www.utne.com> [accessed 02.03.2014]
- Iosofat, Dani**. 'On Sonification of Place: Psycho-sonography and Urban Portrait' in *Organised Sound* 14(1): pp.47-55. Cambridge: Cambridge University Press, 2009.
- Keightley, Emily & Pickering, Michael**. 'For The Record: Popular Music and Photography as Technologies of Memory' in *European Journal of Cultural Studies*. 9: 2, pp. 149-165, 2006.
- Merrifield, Andy**. *Guy Debord*. London: Reaktion Books, 2005
- Prevost, Edwin**. *No Sound is Innocent*. Harlow: Copula, 1995
- Rogers, Jude**. 'A sonic postcard from the past' in *The Guardian*, Friday June 6 2008.
- Rose, Gillian**. 'Place and Identity: a sense of place' in Massey, D. and Jess, P. (eds), *A place in the world? Places, Cultures and Globalization*. Oxford: The Open University, 1995.
- Santamas, Hali**. *Composing in the 'new aesthetics': atmosphere as compositional material in audio-photographic art*. Conference paper given at 'Seeing Sound', Bath Spa University, 2013.

Schmitz, Hermann. *System der Philosophie* vol. III. Bonn: Bouvier, 1964.

Stosuy, Brandon. *Interview with Phil Elverum*, *Believer*, July/August 2009 issue.
http://www.believmag.com/issues/200907/?read=interview_elverum
[accessed: 24/04/2014]

Wright, Mark Peter. Fifteen Questions with Richard Skelton: Sympathetic resonances
<http://www.15questions.net/interview/fifteen-questions-interview-richard-skelton/page-1/> [accessed 27.2.2014]

Zhou, Xinyue; Sedikides, Constantine; Wildschut, Tim; & Gao, Ding-Guo. 'Counteracting loneliness: On the restorative function of nostalgia' in *Psychological Science*, 19(10), 1023-1029, 2008.

“Close Your Eyes and I’ll Kiss You”: The Role of Soundtracks in the Construction of Place

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Abstract

This paper seeks a way to uncover the role of aural experience in the affective and more effective construction of place. In the films of Tarkovsky, the ‘weak’ narrative, based on ambiguity and improvisation, intentionally creates a distance between the image and the story in order to weaken the logic of the narrative, originating a field of associative images that arouses strong personal interpretations. The same may happen in a city by applying subtle acoustic strategies, suggesting to its users a new, more involved, attitude, so that they cease to be external elements and become participants, accepting a moral responsibility in the progression of events. This hypothesis is explored through the analysis of the relation between image and sound in Tarkovsky’s film *Stalker* (1979) and behaviour observations in two sonic interventions held in the cities of Lisbon (1999) and Guimarães (2012).

Keywords: Architecture, Affect, Place Attachment, Aural Experience, Soundtrack

1. Introduction

In 1997, ECM released an anthology¹ presenting on its cover a photograph² of an object, upon which is projected a statement from Paul Virilio: “The Essential is No Longer Visible”. The object – a bunker built by Nazi Germany during WWII – is beautifully shot and the image is pleasant; however, it is the writing projection that stays in the mind. As one lingers for a moment, the question arises: was the essential ever visible?

Between 1928 and 1930, the British decided to build on the south and northeast coasts of England a group of large concrete structures. Known as acoustic mirrors, concrete dishes or listening ears, they were designed to pick up the sound of approaching enemy aircraft. Sound waves were caught in the belly of the mirror and relayed back through microphones and a stethoscope to an operator who raised the alarm. The mirrors effectively gave Britain a fifteen-minute warning of an impending attack. The essential was not visible but was capable of being heard.

Going a bit further back to the Middle Ages, Bernard of Clairvaux, a French abbot and the primary reformer of Cistercian order that encouraged the contemplation of nature and avoided any images or artefacts, said: “You wish to see; listen. Hearing is a step toward Vision.” This statement is strangely relevant to our world of 21st century technological multi-sensory experiences where nevertheless we still close our eyes to kiss, to savour, to listen, to feel something deeply.

This paper investigates how architects may explore our sensory perception of image and sound, both of which are inseparable ways in which we experience the world, to design places. This dialectic is the leitmotiv of our research. Hearing is one of the first and last of our sensory experiences in this world, so it seems interesting to use it to subvert the relationship between image and sound in the city – sight being the dominant of all our senses – and thus invite the citizen to engage affectively with the multidimensionality of reality and build the place upon it.

The purpose is to uncover the role of aural experience in the affective (and more effective, as we will see) construction of place. In the films of Tarkovsky or Antonioni, the ‘weak’ narrative, based on ambiguity and improvisation, intentionally creates a distance between the image and the story in order to weaken the logic of the narrative, originating a field of

1. *Selected Signs*, 1, ECM (1997).

2. Magdalena Jetelová (1995), *Atlantic Wall*, accessed May 20, 2014, <http://www.jetelova.de/project/atlantic-wall-1995/>.

associative images that arouses strong personal interpretations. The same may happen in a city by applying subtle acoustic strategies, suggesting to its users a new, more involved attitude, so that they cease to be external elements and become participants, accepting a moral responsibility in the progression of events.

Rather than attempting to reinvent architectural form or function, this paper explores how, through a sensitivity to the possibilities of sound in architecture, it is possible to transcend the confines of its traditional uses and enable in its perceiver the freedom to engage that allows for the individual's own sensitivity and mind to take an active role in creating a personal connection with space and charging it with meaning, hence defining or constructing the place. This is further explored through the examination of sound in Tarkovsky's film *Stalker* (1979) and the analysis of two sonic interventions in public space held in Lisbon (1999) and Guimarães (2012).

2. Framework

The construction of place is rooted in place attachment, the bonding that occurs between individuals and their meaningful environments that has gained much scientific attention in recent years (e.g., Giuliani, 2003; Low and Altman, 1992). Part of this interest is a consequence of the awareness that person-place bonds have become fragile as tendencies like globalization, increased mobility and virtual connectivity, and environmental problems threaten the existence of, and our connections to, places that used to be important to us.

Interest in understanding the attachments that people form with places can be found in a variety of disciplines. Sociology, for example, emphasizes how the symbolic meanings of environments influence the social context of human interactions (Grieder and Garkovich 1994). Anthropology seeks to understand the cultural significance of places in everyday life (Gupta and Ferguson 1997). Human geography has explored the concept of 'sense of place' (Relph 1976, 1997, Buttimer and Seamon 1980, Tuan 1977, 1980), which is similar to the notion of 'place attachment' as developed in environmental psychology (Altman and Low 1992). When viewed from this latter discipline, attachment represents a positive connection or bond between a person and a particular place (Giuliani and Feldman 1993, Williams and Patterson 1999). In the course of this interaction, indifferent spaces turn into places charged with meaning which serve as objects of attachment (Tuan 1977).

More attention has been given in the domains of human geography and environmental psychology to the study of place attachment. This concept has been related to psychological and physical characteristics (Bonnes and Secchiaroli 1995), and to variables related to feelings, emotions, and bonds that people develop toward places where they live (Bagozzi 1978; Hay 1998). Pretty et al. (2003) and Groat (1995) proposed that individual relations with places assign them with meaning and order by means of personal, social, and cultural processes. Riger and Lavrakas (1981) reported two particular characteristics of place attachment that relate to rootedness and bondedness. While rootedness is related to duration of residence, ownership, and expectations to live in the same place, bondedness is associated with belonging to and familiarity with the place.

One thing is certain: emotion was shown to have a deep influence on the links that people establish with particular environments. Tuan (1977) suggested that emotion is a major aspect by means of which people charge environments with meaning. Eisenhauer et al. (2000) showed how interaction with certain natural environments contributed to the development of emotional attachment to those settings. Casakin and Billig (2008), Jorgensen and Stedman (2001; 2006), and Kyle et al. (2004) found that affective attachment received higher scores as compared to other dimensions of attachment such as place identity and place dependence.

Place attachment is also worthy of study because of its relevance to many important processes. For instance, the examination of place attachment as an emotional bond has shed light on the distress and grief expressed by those who are forced to relocate (e.g., Fried 1963; Fullilove 1996). Place attachment has thus been applied to disaster psychology (e.g., Brown and Perkins 1992), immigration (e.g., Ng 1998), and mobility (e.g., Giuliani, Ferrara, and Barabotti 2003; Gustafson 2001). Other research has shown that place meaning and attachment can be used to plan and encourage the use of public spaces, such as national parks (e.g., Kyle, Graefe, and Manning 2005; Moore and Graefe 1994; Williams and Stewart 1998).

Place attachment is also relevant to the study of environmental perception. Attached individuals experience a heightened sense of safety, even when their place is situated in a war zone (e.g., Billig 2006). On a smaller scale, attachment to one's neighbourhood is associated with fewer perceived incivilities (e.g., drug dealing, gang activity, traffic, etc.) on one's block and less fear of neighbourhood crime (Brown, Perkins, and Brown 2003). Finally, because of its associations with environmental risk perception, and place-protective attitudes (e.g., Kyle, Graefe, Manning, and Bacon 2004; Nordenstam 1994; Stedman 2002; Vorkinn and Riese 2001), place attachment contributes to the understanding of pro-environmental behaviour, although the research on this topic is limited and the findings are inconsistent (e.g., Uzzell, Pol, and Badenas 2002; Vaske and Kobrin 2001).

The diversity of definitions reflects the growing interest in place attachment, and can be seen as progress in the concept's theoretical framework. Researchers have highlighted different processes, places, and people involved in person–place bonding, but these definitions remain atomized in the literature, and thus the theoretical progress of the concept has not yet been acknowledged, nor has a more general definition of place attachment been agreed upon. By exploring the affinities across the different uses of the concept, we can begin to outline, and then structure, a coherent understanding of it.

We adopted the three-dimensional organizing framework proposed by Scannell and Gifford (2010). This framework proposes that place attachment is a multidimensional concept with person, process, and place dimensions (see Figure 1). The first dimension is the living being: who is attached? To what extent is the attachment based on individually and collectively held meanings? The second dimension is the psychological process: how are affect, cognition, and behaviour manifested in the attachment? The third dimension is the object of the attachment, including place characteristics: what is the attachment to, and what is the nature of this place? This three-dimensional framework of place attachment organizes the main definitions in the literature.

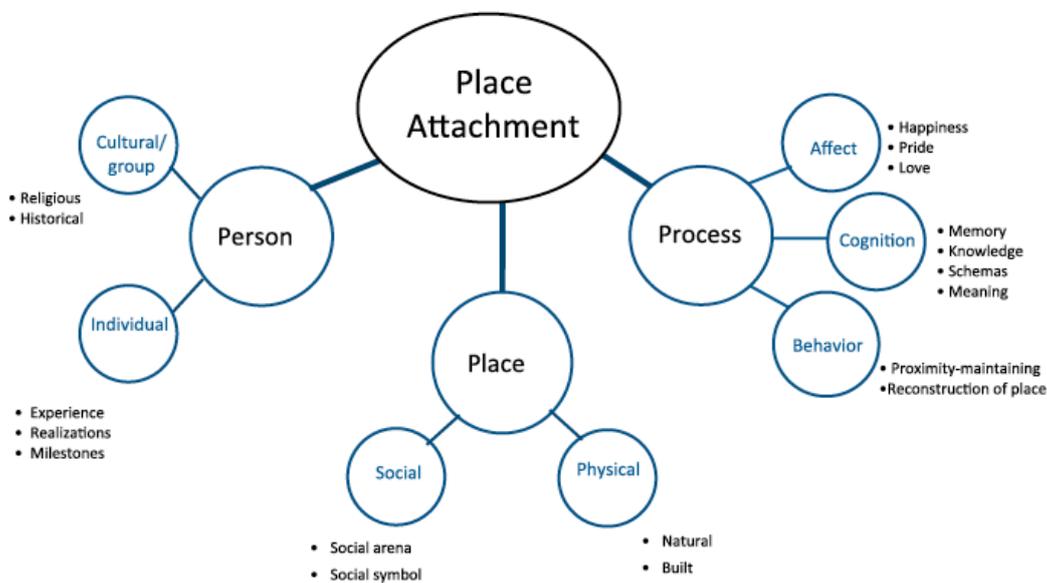


Figure 1. The tripartite model of place attachment.

We consider this framework with a special attention on the affective dimension (process) associated to individual experience (person) of built environments (place).

2.1. Place attachment as individual experience

At the individual level, it involves the personal connections one has to a place. For example, place attachment is stronger for settings that evoke personal memories, and this type of place attachment is thought to contribute to a stable sense of self (Twigger-Ross and Uzzell 1996). Similarly, places become meaningful from personally important experiences, such as realizations, milestones (e.g., where I first met my significant other), and experiences of personal growth, as Manzo (2005) notes in her study of the experiences and places that create place meaning. She comments, “it is not simply the places themselves that are significant, but rather what can be called ‘experience-in-place’ that creates meaning”. Although other theorists argue that place characteristics are integral in the construction of place meaning, the argument that individual experiences may form the basis for the attachment is convincing.

2.2. Place attachment as affect: Topophilia

Person–place bonding undoubtedly involves an emotional connection to a particular place (e.g., Cuba and Hummon 1993; Fullilove 1996; Giuliani 2003; Hidalgo and Hernández 2001; Manzo 2003, 2005; Mesch and Manor 1998; Riley 1992). Humanistic geographers describe place belongingness in emotional terms. Tuan (1974), for example, coined the word ‘topophilia’ or ‘love of place’, for this connection, and Relph (1976) defined place attachment as the authentic and emotional bond with an environment that satisfies a fundamental human need. Environmental psychologists similarly assert the central role of affect in person–place bonding. Most often, their definitions portray place attachment in affective terms, such as an emotional investment in a place (Hummon 1992), or “feelings of pride and a general sense of well-being” (Brown et al. 2003).

Further evidence that attachment to a place is grounded in emotion comes from the literature on displacement, when individuals must leave their places such as in the event of a natural disaster or war, immigration, or relocation. In his classic study on the effects of displacement, Fried (1963) investigated a neighbourhood redevelopment project in the West End of Boston. The ‘improvements’ planned for the neighbourhood caused the residents to lose familiar structures and social settings, and many of them were forced to move. Essentially, this reconstruction meant the collapse of a tight-knit community. After the fact, residents mourned and displayed symptoms of grief. Fried concluded that grief is not limited to the death of a loved one, but can emerge following the loss of a significant place. Fullilove (1996) also found that displacement results in feelings of sadness and longing, and so concluded that attachment is primarily based in affect.

Relationships with place can represent an array of emotions from love and contentment to fear, hatred, and ambivalence (Manzo 2005). For example, one can experience a childhood home as a significant place, but that does not necessarily mean the bond is positive. Rather, unhappy or traumatic experiences in a place may create negative feelings or even aversion toward it. Although strong negatively charged bonds can be formed with important places, attachment usually is defined in positive terms; the desire to maintain closeness to a place is an attempt to experience the positive emotions that a place may evoke (Giuliani et al. 2003).

It is also in this (positive) sense that fosters Tuan's cited work on environmental attitudes and perception that investigates the love to the place: "My main concern is with the formation and nature of positive attitudes and values". To this end, Tuan defines the neologism 'topophilia' as "the affective link between the person and the place or physical environment. Diffuse as a concept, vivid and concrete as personal experience" (Tuan 1974). The concept covers all the emotional ties of human beings with the material environment that differ profoundly in intensity, subtlety and mode of expression. According to Tuan, topophilia "is not the strongest human emotion. When is irresistible, we can be sure that the place or environment is the vehicle of emotionally strong events or is perceived as a symbol" (Tuan 1974).

One aspect emphasized in his analysis is the lower variability of urban experience and reduced physical contact with the natural environment in developed societies (i.e., literally, un-involved): "What's missing people in advanced societies (and hippie's groups seem to pursue) is a smooth, unconscious engagement with the physical world, that prevailed in the past when the pace of life was slower and which children still enjoy" (idem). In fact, children have an open-minded involvement, indifferent for oneself, and vague rules of beauty.

While not necessarily the direct cause of topophilia, the environment provides the sensory stimuli that act as the perceived image and shapes our joys and ideals: "what we decide to pay attention (value or love) is an accident of individual temperament, purpose and cultural forces that act at a particular time" (*ibid.*). In short:

Topophilia takes many forms and varies in intensity and emotional range. It's a start describing what they are: ephemeral visual delight; sensual delight of physical contact; attachment to a place for being familiar, because it is home and represents the past, because it evokes pride of possession or creation; the joy in things due to animal health and vitality (*ibid.*).

From his innovative, for the time, and still refreshing analysis, we are particularly interested in the association he rebuilds³ between the notions of emotion, motivation and movement, ending with:

“Human beings have persistently sought an ideal environment. As it stands, it varies from one culture to another, but in essence it seems to entail two antipodal images: the garden of innocence and the cosmos. [...] Thus we move from one to another [...]; seeking a balance that is not of this world “(*ibid.*).

In her analysis of spatiality in motion, Giuliana Bruno crosses the realm of emotion, constantly returning to the place of topophilia, although in a somehow distinct perspective:

Although I have found inspiration in this work, my engagement with the notion of topophilia stems from a very different premise. In order to explain the love of place, Yi-Fu Tuan ended up establishing a system of values for places, ultimately making claims for ideals of landscapes in an evaluative structure based on binary oppositions and harmonious wholes. By contrast, I have used the term topophilia to describe that form of cinematic discourse that exposes the labor of intimate geography – a love of place that works together with the residual texture of cineres. Such work is driven by a passion for mapping that is itself topophilically routed not on wholeness but on the fabric of lacunae. [...] This is the site of (in)visible traces, inscribed and laid bare, yet enduring erasable on the white fabric of the screen. (Bruno 2002)

It's precisely this dynamic mapping of affection we explore in this paper, resulting not from a univocal sense of place but from interpretive openings, voids or tears requesting repair, imaginary patches that overlap without, however, leaving a mark. In this sense, space, as the film screen, becomes a place precisely when accommodating the projections we do of what affects us, making us participants of an individual wholeness, after all the same that Tuan craved.

3. Since the words have the same etymology: the Latin *motus*, “movement.”

2.3. Affect in the Construction of Place

Thrift (2007) in the presentation of non-representational theory proclaims a geography of what happens to relate space and affect. He starts by the event and its essential feature - the surprisingness - to describe the world-in-motion we live, in which decisions have to be made for the moment, every moment. A momentary world, awaiting each one's action. A world that is not foreshadowed is a world of radical possibility, where each real event arises among many alternatives, where the possibilities exceed actualities: "in a becoming, one term does not become another, rather, each term encounters the other and the becoming is something between the two, outside the two" (Smith, 1997: xxx, apud Thrift, 2007). But if something exceeds the event, what is it? Thrift argues that this excess is a 'virtual' expressive dimension that can be summarized as a generation of signals seized in practice: "the sign is an encounter rather than an act of recognition, and it can only be felt or sensed: signs act directly on the nervous system" (Marks 1998: 38 apud Thrift, 2007). This constant delezian becoming is thus always performative (sensorimotor and corporeal) and interpretive, allowing us to pass from the abstract nature of the concept of event to the concrete nature of the notion of body.

This eventual thus corporeal form of realization is the touchstone of affect in the construction of place. In this concept of embodiment is interwoven an important role for the affect that should be clarified. Affect is not only emotion, nor is it reducible to the affects or perceptions of an individual subject: "Percepts are not perceptions, they are packets of sensations and relations that outlive those who experience them. Affects are not feelings, they are becomings that go beyond those who live through them (they become other)" (Deleuze 1995: 137, apud Thrift, 2007: 116). And more:

affect is synaesthetic, implying a participation of the senses in each other: the measurement of a living thing's potential interaction is its ability to transform the effects of one sensory mode into those of another. . . . Affects are virtual synaesthetic perspectives anchored in (functionally limited by) the actually existing particular things that embody them. The autonomy of affect is its participation in the virtual. Its autonomy is its openness. Affect is autonomous to the degree to which it escapes confinement in the particular body whose vitality, or potential for interaction, it is. Formed, qualified, situated perceptions and cognition's fulfilling functions of actual connection or blockage are the capture and closure of affect. Emotion is the interest's (most contracted) expression of that capture - and of the fact that something has always and again escaped. Some-

thing remains unactualised, inseparable from but unassimilable to any particular, functionally anchored perspective. That is why all emotion is more or less disorienting, and why it is classically described as being outside of oneself, at the very point at which one is most intimately and unshareably in contact with oneself and one's vitality. Actually existing, structured things live in and through that which escapes them. Their autonomy is the autonomy of affect. (Massumi 1997b, apud Thrift, 2007)

Besides the affect of living things there is a world of other things, things that have their own resonances, so artfully captured by actor-network theory: "Latour's famous example of the automatic door closer and the weighted hotel key are both just the simplest of the means by which bodies are guided along particular paths by things." (Thrift 2007) The encounters with other things are growing in importance and as a result, the nature of these other things became increasingly active, providing a greater decentralization of 'human' subject. People thus become quite ill-defined constellations that are spread around the world:

not confined to particular spatio-temporal coordinates, but consist of a spread of biographical events and memories of events, and a dispersed category of material objects, traces, and leavings, which can be attributed to a person and which, in aggregate, testify to agency and patienthood during a biographical career which may, indeed, prolong itself well after biological death. The person is thus understood as the sum total of the indexes which testify, in life and subsequently, to the biographical existence of this or that individual. Personal agency, as inherent in the causal milieu, generates one of these 'distributed objects', that is, all the material differences 'in the way things are' from which some particular agency can be abducted. (Gell 1998, apud Thrift 2007)

From these custom constellations Thrift extracts the tools to address the founding element of meaning: creativity. Many contemporary thinkers addressed the issue without, however, stimulate applied research on the subject, making the understanding of certain forms of expressive action that are important for the analysis of the urban phenomenon:

"a whole category of social and cultural action, usually termed play, is unable to be grasped. Play is a process of performative experiment: 'The ongoing, underlying process of off-balancing, loosening, bending, twisting, reconfiguring,

and transforming the permeating, eruptive / disruptive energy and mood below, behind and to the side of focused attention' (Schechner 1993) which is brought into focus by body-practices such as dance and which 'encourages the discovery of new configurations and twists of ideas and experience' (Schechner 1993). It is the world of the 'subjunctive enacted' (Sutton-Smith 1997), the world where possibilities are acted out. [...] Such meta-communication presupposes fantasy produced through intersubjectivity, and is characterized by quirkiness, redundancy, and oddity. It is, in other words, about producing variation" (Thrift 2007).

This is the practical knowledge mode of experimental basis we use in daily urban life.

Thrift analyses dance as an example of performative experience process and mode of understanding the expressive potential of public space:

To begin with, dance can help us to understand urban 'skills'. Day after day, all kinds of skills of expression are constantly deployed in the city, delineating time-spaces in which something significant and worthy of notice is to occur. These 'minor' skills include all the everyday means of negotiating the city – driving the car, walking the pavement, crossing the street – and the knowledge stemming from those encounters (sometimes formalized in City Guides and A-Zs)... In turn, these skills produce a city which is in continual flux. According to Lefebvre (1995) apprehending the to and fro of these skills of expression itself requires the cultivation of special skills of 'rhythm-analysis', which will apprehend the city as a series of times, polyrhythmically interacting with one another to produce a 'music of the city'. (idem)

From this analysis emerges a category of experience, already addressed by Breton, Benjamin, de Certeau, and other scholars of the city that can be accessed with proper preparation: a process of tuning based on a lyrical expectation and willingness to experiment. This type of awareness seems to open the spaces of urban eventuality, each one with their own senses of possibility.

From the analysis of dance, Thrift also extracts the key innovations of non-representational theory. The first is the attempt to produce 'therapeutic' interventions rather than claim the grand theory. The second is the focus on a class of experiences seldom addressed, the trivial, the interactive, the game: "moving towards a poetics of encounter which both conveys a sense of life in which meaning shows itself only in the living, and which, belatedly,

recognizes that the unsayable has genuine value and can be felt ‘on our pulses’” (Wittgenstein 1969, apud Thrift 2007). The third is methodological and questions the traditional tools (ethnography, focus groups, and the like) for being cognitive in origin and effect:

Non-representational work, in contrast, is concerned with multiplying performative methodologies which allow their participants equal rights to disclosure, through dialogical actions rather than texts, through relation rather than representation. In particular, therefore, it has tried to enhance ‘performance consciousness’ (Denning 1996) by turning to examples of the intensification of presence provided by the performing arts – art, sculpture, theatre, dance, poetry, music. (Thrift 2007)

Recognizing the importance of dialogical action is understanding, as Martin Buber (1937), that life can not be restricted to the scope of transitive verbs: what I do, what I buy, what I eat or I own. It takes a “you”. The one that says “you” does not own anything, and in fact, has nothing: just remains in relation. The relationship is our principle and cities may be seen as means of turbulent relationship and therefore affect. This affect manifests itself continuously in events that may occur on a large scale or simply be part of the daily routine life. The attachment to a place is not nourished only by episodic encounters or extraordinary deeds.

The construction of place is a continuum. It has the flavours of everyday life, familiar spaces, sharing, common hours, intimacy, slow conversations, time spent on details, laughter and tears, and entrusted exposure. Given this absolute ubiquity of affect as a vital element of the city it may be thought that the affective record would constitute a substantial part of urban studies. Nothing more wrong. With some honourable exceptions, such as Walter Benjamin and Richard Sennett (1994), to read about affect and cities we need to seek pages of novels or poems stanzas. How to explain this gap in the knowledge about the city? Thrift outlines three reasons:

One is a residual cultural Cartesianism (replete with all kinds of gendered connotations): affect is a kind of frivolous or distracting background to the real work of deciding our way through the city. It cannot be a part of our intelligence of that world. Another is concerned with the cultural division of labour. The creative arts already do that stuff and there is no need to follow. A third explanation is that affect mainly figures in perceptual registers like proprioception which are not easily captured in print. (Thrift 2007)

And points out as many to justify the urgency of an affective approach to the city:

First, systematic knowledges of the creation and mobilization of affect have become an integral part of the everyday urban landscape: affect has become part of a reflexive loop which allows more and more sophisticated interventions in various registers of urban life. Second, these knowledges are not just being deployed knowingly, they are also being deployed politically (mainly but not only by the rich and powerful) to political ends: what might have been painted as aesthetic is increasingly instrumental. Third, affect has become a part of how cities are understood. As cities are increasingly expected to have ‘buzz’, to be ‘creative’, and to generally bring forth powers of invention and intuition, all of which can be forged into economic weapons, so the active engineering of the affective register of cities has been highlighted as the harnessing of the talent of transformation. (idem)

Each of these three reasons points out to the relevance of affect, although it was always a constant of the urban experience, it is now, more than ever, prone to a proposed activation (often manipulated) and is getting closer to the networks pipes and cables that provide the basic mechanisms and root textures of urban life, becoming as a set of binding elements and relay working continuously establishing new biographies and emotional topographies, “com açúcar, com afeto” (in English, with sugar, with affection) as Chico Buarque composed.

2.4 What Is or Can Be Affect in the Construction of Place?

To progress we need to answer this question. The problem is that there is no stable definition of affect. Affect can mean several things that are normally associated with words like emotion and feeling, and the consequent repertoire of terms such as anger, shame, envy, fear, disgust, anger, shame, sadness, pain, grief, love, happiness, joy, hope, astonishment... We will follow the instructive literature review of Nigel Thrift (2007), which begins by setting aside the approaches that work with the notion of individual emotions (as found in much of the empirical research in sociology and psychology) and focuses in approaches working with a notion of emotion as motion in the literal and figurative sense, as does Giuliana Bruno (2002):

None of these approaches could be described as based on a notion of human individuals coming together in community. Rather, individuals are generally understood as effects of the events to which their body parts (broadly understood)

respond and in which they participate. In each case affect is understood as a form of thinking, often indirect and nonreflective true, but thinking all the same. And, similarly, all manner of the spaces which they generate must be thought of in the same way, as means of thinking and as thought in action. Affect is a different kind of intelligence about the world, but it is [emotional] intelligence nonetheless, and previous attempts to either relegate affect to the irrational or raise it up to the level of the sublime are both equally mistaken. (Thrift 2007)

Thrift considers four approaches (and respective epistemologies): affect as a set of bodily practices that produce visible behaviours (phenomenology and hermeneutics); affect as drive (psychoanalysis); affect as the property of the active result of an encounter (Spinozo-Deleuzian); and finally affect as a universal expression of emotion (Darwinian).

“Each of them depends on a sense of push in the world but the sense of push is subtly different in each case. In the case of embodied knowledge, that push is provided by the expressive armoury of the human body. In the case of affect theory it is provided by biologically differentiated positive and negative affects rather than the drives of Freudian theory. In the world of Spinoza and Deleuze, affect is the capacity of interaction that is akin to a natural force of emergence. In the neo-Darwinian universe, affect is a deep-seated physiological change involuntarily written on the face.” (idem)

But how can we think the activation of affect through sound if these notions seem to imply different tracks and even different ontologies? Thrift begins by addressing the four changes in the affective tone of the (Euro-American) cultures that are redefining the exercise of power in the transformation of the urban landscape: the way that seeks to make affect an increasingly visible element; on its continuous mediatization; in the growth of new ways of assessment based on sensory records; and, finally, in the design of urban space. This research is mainly interested in the last two, being the first two in some way involved in these latter.

The works of Heidegger, Merleau-Ponty and Varela show how the structure of the expectation of the world (its background, where sound as definitely something to say) is configured by bodily practices that have complex genealogies. More recent work has contributed to this understanding, emphasizing the degree to which these bodily practices rely on emotions as a vital element of apprehension of the world by the body. The embodiment space is expanded by a fleeting but crucial moment, a preconscious frontier in constant motion, and emotions are a vital part of the anticipation of this moment by the body. We can thus understand emotions as a way of body thinking (Le Doux 1997; Damásio 1999, 2003).

It derives a microbiopolitics of the subliminal: the ability to operate the small gap between action and cognition (about half a second) that became detectable, the amount of time that shapes the moment. Increasingly, urban spaces and times are designed to invoke an emotional response according to practical and theoretical knowledge derived and encoded by several sources ranging from psychoanalysis to the performing arts. It follows that the affective response can be projected in the spaces, often from something that seems irrelevant. Although the affective response can never be guaranteed, the fact is that this is no longer a completely random process: “It is a form of landscape engineering that is gradually pulling itself into existence, producing new forms of power as it goes.” (Thrift 2007)

From his analysis we can extract some tracks for the architectural theory and practice that we seek to illuminate: corporeal because it uses the sensitive evidence we have learned since childhood as cultural signifiers of intensity, embedded in time and in space, resisting the paradigm of reading-writing-text but still intelligible to an awoken audience, as various forms of (e)motion, and subliminal because it operates in the gap between action and cognition as a kind of visceral shorthand only possible in small spaces and subliminal times. As an example of visual approach that seems to follow these premises we may consider the Butterfly House by davidclovers in Poyntelle, Pennsylvania (USA), seeking an empathetic relationship with the context. This project can be interpreted as a manoeuvre of phenomenological survival that questions the notion of ‘self’ and ‘other’, the natural and the artificial, involving the user in the process of construction of meaning through a set of optical effects that generate three-dimensional visual ambiguities.



Figure 2. Butterfly House render

Thrift ends, drawing as a path to follow (among others) the work resulting from alliances between the social sciences and the arts that is leading to the formation of a new type of cultural engineering: “The marriage of science and the arts is often called ‘engineering’ and this seems to be the right term for the kind of theoretical-practical knowledges that are

now being derived, ad hoc knowledges of the ad hoc which can simultaneously change our engagements with the world.” Is this the crux of the matter: how to intensify our engagement with the world without modifying it? For Thrift, the answer lies in the new ecologies of belonging that transcend the social and have a performative bio-logic: “I have tried to begin to show that the challenge of affect is, at least in part, a challenge to what we regard as the social because it involves thinking about waves of influence which depend upon biology to an extent that is rarely recognized or theorized in the social sciences.” (Thrift 2007) Consequently, a new and fertile field is emerging where the affect practices can be understood and worked. This field is at the intersection of bodily practices and technology and results in the reinvention of several space crafts, among which naturally stands out the practice of architecture, in particular its aural dimension, we seek to address here.

3. Weak Architecture: Strong Affect

Architecture in every form or type is an experience, thus dealing with phenomena that are, as defined by Seamon (2000): “things or experiences as human beings experience them.” As experience, according to Steven Holl (1993), involves a certain vulnerability: “[e]xperience of phenomena – sensations in space and time as distinguished from the perception of objects – provides a ‘pre-theoretical’ ground for architecture. Such perception is pre-logical i.e., it requires a suspension of a-priori thought. Phenomenology, in dealing with questions of perception, encourages us to experience architecture by walking through it, touching it, listening to it.” Architecture involves an opening not only to the sensorial realm, but also to the possible revelation of meaning with ontological implications. This revelation is interpreted differently from individual to individual. To deal with this open and plural ontological significance, Gianni Vattimo (1983) introduced the provocative notion of ‘weak thought’ (*il pensiero debole*).

Behind the propositions of this phenomenology is an interpretation of contemporary cultural conditions. We live a fragmented reality of overlapping virtual and ‘real’ times that is presented precisely as juxtaposition: a discontinuity, something that is in complete contrast to a single, unique, closed and complete system. Vattimo claims that a lot of the generally accepted certainties that have sustained our monolithic culture are not certainties at all. He says that, in order to see them as they are, we need to find a type of ‘weak thought’

whereby our strongest and most basic intellectual assumptions are dissolved from within and replaced with a more flexible set of possibilities, which we should avoid moulding into yet another fixed and static foundation for thought: “[w]e shall no longer be conditioned by a single image, a single interpretation. [...] one can no longer say that there is a golden number, an ideal measure that can be used in the construction of buildings or the planning of cities, nor even that there are basic natural needs, since it is increasingly absurd to try to distinguish them from new needs induced by the market and therefore superfluous, not natural [...]” (Vattimo 1988). Vattimo argues that traditional metaphysics has privileged ‘strong thought’ in the form of ‘reason’ and, following nihilistic thinkers such as Nietzsche and Heidegger, advocates instead the ontological as a form of ‘weak thought’, where Being itself becomes an “unnoticed and marginal event”.

Architecture is traditionally associated with narrative, based in a formal logic of coherence and legibility, causal, linear, visual, that facilitates understanding but reduces the complexity of the experience. Mystery, the instrument of enhanced engagement and affective density is subtle, open, haptic, and necessarily improbable except for those who experience it, for which it becomes inevitable. Here is the fundamental difference of the approach we propose here. The question is not only the information – “natural elements, figurative art, or ornament” (Salingaros and Masden 2006) – nor its organization, but the way it presents itself: the experience of mystery, in architecture as in theology, “as of nudity, often muteness, fragility, doubt, silence and night; is an experience of not knowing, not seeing, not having the power... It is a repeated no that paradoxically ends up becoming a meeting place.” (Tolentino Mendonça 2012) After all the same essential fragility that nature manifests at birth, as recalls Tarkovsky in *Stalker* (1979):



Figure 3. Stalker snapshot

Pallasmaa (2000) says our culture aspires to power and dominance and this ambition also characterizes western architecture, an architecture that seeks a strong image and impact. This approach to architecture does not respond to the need of mystery referred above, which results in emotional and hence existential enrichment of human life. Vattimo introduced the notion of 'weak ontology' and 'fragile thought' (with affinities with Goethe's "delicate empiricism") that identifies the need of the effort to understand the meaning of anything through a prolonged empathic contemplation based in direct experience. In this line we can also speak of a 'subtle' or 'weak' architecture or, more precisely, an architecture of weak structure and image. While the first – strong – wishes to impress through a singular exceptional image and the consistent articulation of form, the architecture of weak image is contextual and responsive, is more concerned with the actual sensory interaction than with idealized and conceptual demonstrations.

Ignasi de Solà-Morales was one of the first to project the Vattimo's ideas in the reality of architecture in an essay entitled "Weak Architecture" published in 1987 where he offers a theory of architecture after the crisis of the modern project, calling it 'weak architecture', in reference to Vattimo's 'weak thought' that fits the loss of the plea and the desire of representation: "La interpretación de la crisis del Proyecto Moderno sólo puede hacerse desde lo que Nietzsche llama "la muerte de Dios", es decir, desde la desaparición de cualquier tipo de referencia absoluta que de algún modo coordine, "cierre", el sistema de nuestros conocimientos y de nuestros valores, a la hora de articularlos en una visión global de la realidad." (Solà-Morales 1987: 72-73) The end of the classical period, of the vision of a closed and complete universe as if it was a finished whole. A universe where there was no place for the diversity of time, the Big Bang and Darwin's evolution.

Weak architecture is built, therefore, on the transition from an 'enlightened' culture, in which the 'enlightened' architect expresses the order of the world through architectural form, to an 'existentialist' culture, in which each individual constructs his own reality based on experience. This 'individualization' of experience, confirmed by neurosciences, allows an approach to the initial conjecture of this work: the affective role of soundtracks in the construction of place.

Other features of weak architecture are its decorative and monumental condition. Decorative as to what is accessory and does not requires an attentive reading because it emerges from the periphery, the surroundings, the atmosphere. In this sense, it is diffusive and becomes the opening that enlarges awareness. Monumental, not as a representation of the absolute, but in the sense that Foucault gives to it of trace or resonance. Solà-Morales develops these ideas based on concrete works of artists like Duchamp and Sierra, and architects

as Jujol, Hoffmann and Melnikov, defending the aesthetic experience as the more relevant model of a weak construction of reality. The art world, which includes architecture, appears as a kind of reality reserve that can feed on humans. It does not intend to be a central experience from which one can deduce the organization of all reality, but be produced in a subtle, peripheral and fragmentary way, with the ability to insinuate, rather than determine, a more intense and deeper understanding of reality.

Another notion that brings us to the concept of weak architecture is the Deleuzian fold telling us that the subjective and the objective are not distant fields and sometimes intersect, giving rise to folds of the same reality. And that's very enlightening to this approach to architecture because the encounter occurs precisely when the time of the subject and the time of the object meet, like a wrinkle in their own journeys, a co-motion, a moment of poetic and creative intensity. This set of the precariousness of the event and the extemporaneous folding of reality can only be decorative. In its most common sense, the decorative is not essential, is not substance but 'just' accident. Solà-Morales outlines it like that which does not want to be central, not to impose itself. This recognition of the tangential value, of a certain fragility, is possibly its condition greatest elegance and its strength. It's like the sound of the bell after ringing. It has to do with the taste of poetry after reading it, the savour of music after listening, to the pleasure of architecture after experiencing it: "Es la fuerza de la debilidad. Aquello que el arte y la arquitectura son capaces de producir precisamente cuando no se presentan agresivas y dominantes, sino tangenciales y débiles." (Solà-Morales 1987: 85)

We can identify, even before 1980, some examples of architecture capable of reproducing the conception of weak thought: Álvaro Siza's bank buildings and Frank Gehry's house in Santa Monica (previous image) are references to consider. In these works we see an acceptance of the precarious relationship that architecture has with the physical and social environment that dispels the modernist heroism and facilitates a sort of convalescence in the fragmentary. These fragments constitute themselves precisely as material inscriptions of possible inconsistencies of the milieu. Siza (1980) says: "an architectonic proposition whose aim is to go deep [...] can't find support in a fixed image, can't follow a linear evolution. [...] Each design must catch, with the utmost rigor, a precise moment of flittering image in all its shades, and the better you can recognize that flittering quality of reality, the clearer your design will be. It is the more vulnerable as it is true."

The problem identified by Siza (1980) remains present, and Yaneva and Latour (2008) recognize it: "the problem with buildings is that they look desperately static. It seems almost impossible to grasp them as movement, as flight, as a series of transformations." We perceive the world as a process, constantly changing, and we cannot not reach any higher level of

consciousness and sense of place without grasping this dynamic. Only then we are aware of ourselves, the world, and the constancy of this inevitable and mysterious relationship. It is this dynamics that architecture should reveal, allowing the user to understand his deeply personal experience of space and, from there, build his place in the world. We need, therefore, to conceive an architectural device that, unlike Marey's 'photographic gun', transforms (the vision or sensation) of something seemingly static in a multisensory synthesis of its flow, an essentially projective instrument, imaginative, cinematic, something as Giuliana Bruno's (e)motion picture, which enables intimate experiences open to multiple interpretations: "a polyphonic instant in the heart of the chaotic metropolis." (Solà-Morales, 1992)

It is precisely in cinema that Juhani Pallasmaa (2000) will fetch the necessary analogies, notably in the films of Tarkovsky or Antonioni where the 'weak' narrative, based on ambiguity and improvisation, creates an intentional distance between the image and the story with the objective of weakening the logic of the narrative, creating an associative field of images that arouses strong personal interpretations. Andrei Tarkovsky's *Stalker* (1979), for example, takes us on a journey of inner discovery where is more important the insinuating and mysterious path, than the place where it gets. Also on weak architecture what matters is the journey because that's where we can find meaning. We know the starting point and we have an expectation of the arrival, it is nevertheless along the route that we can be distracted and, in this mode of peripheral perception and expanded awareness, build our own place in reality. This process can happen in the city by applying subtle strategies, with minimal need for physical intervention, suggesting to the user a new gaze, diffuse, involved, so that it ceases to be an external element and becomes a participant, accepting a moral responsibility in the progression of events.

No other filmmaker of the modern era has created such indelible images of the urban universe and, with such a deliberate ambiguity, recalls in its audience such intense perceptions about what moves his characters as Michelangelo Antonioni (Samuels, 1972) who says: "We know that under the image revealed there is another which is truer to reality and under this image still another and yet again still another under this last one, right down to the true image of that reality, absolute, mysterious, which no one will ever see or perhaps right down to the decomposition of any image, of any reality." With a background in architecture, obsessed with the appearance of the contemporary city, Antonioni was interested above all in the presence of figures in urban or desert landscapes, and in no other film this clearer than in *The Passenger* (1975). What looks like a thriller is just the structure, because the dense and real suspense is actually the imaginary hook that leaves us oscillating between issues of identity, the riddle of existence and solitude. The actions on the screen are the medium

through which the images unfold. Actors and plot are parts of the scenario. The atmosphere overrides everything.

In short, weak architecture is not concerned with reinventing form or function but in fragmenting spaces to enable the possibility of an imaginary interpretation that may take it to be transformed in personal images. The soundscapes that constitute our aural experience of the city are certainly important in the process of weakening architecture. In the next section we will identify two conceptual tools that can be used for this to happen.

3.1. Ambiguity and Improvisation

Kracauer (1964) considers the volubility of the city as a starting point for improvisation and consequent appropriation, making it a good yardstick to measure the value of a city: “The value of cities is determined on the basis of the number of places in them that are conceded to improvisation.” The decomposition or fragmentation of spaces contains within it the possibility of an imaginary interpretation, which may lead to its transformation into personal multi-sensory images. Conversely, a city without ambiguities or tensions has no social or aesthetic value. This is a radical philosophical and theoretical outcome of a proposal, which takes the general characteristics of the cities of southern Europe as a starting point: “They admittedly are purposefully designed, with tracks, cars, benches, and cathedrals. But invisibly spread fingers plunge into the organism, separating all that belongs together. The whole is dismembered into tiny pieces, and doubts are raised concerning its totality. Nowhere are the places of rupture so frequent as in the cities of the south.” (Kracauer, 1964)

Neurosciences research reinforces this direct relationship between ambiguity, improvisation and the construction of place. According to Zeki (2006), our brain has a biological need to increase its neural efficiency and tries to satisfy it on a continuous quest for knowledge about the world. To make this activity feasible it must trivialize the visual event because, as refers Zeki, “the brain is only interested in obtaining knowledge about those permanent, essential, or characteristic properties of objects and surfaces that allow it to categorize them.” Thus, in its daily activities, our brain scans the world, quickly builds and organizes its images, and with its propensity for structural patterns, spends little or no cognitive energy with familiar or easily categorizable events. It’s the other events, those that it cannot easily categorize, that devotes more cognitive energy trying to classify them through memory (neural circuits that connect different parts of the brain and are activated when we recall something) or through consciousness, building new connections.

Zeki believes ambiguity is fundamental to trigger multi-sensory experiences, reading ‘ambiguity’ not in the conventional sense of ‘uncertainty’, but as a certainty, the certainty

of many equally plausible interpretations. The ambiguity in this neurobiological definition is, therefore, the obverse of constancy, it is “the ability to represent simultaneously, on the same canvas, not one but several truths, each one of which has equal validity with the others.” (Zeki, 1999) It is therefore more-than-representational, as intended by Thrift. The built environment can be an important catalyst for biological demand and weak architecture exploits it by evoking something less familiar, something that forces the brain to pause, engage its various sectors and reflect on the new phenomenon found. In short: the brain enjoys the challenge of a good puzzle, but vision is such a powerful sense that makes the use of ambiguity needed to drive significant thus memorable multi-sensory experiences.

Stephen Greenblatt, the founder of ‘the new historicism’, in his essay “Resonance and Wonder” (1990) gives special critical attention to how wonder’s boundary might be extended and made to resonate. This wonder should “intensify resonance between what’s in and what’s outside of the artefacts themselves.” The conclusion is an apology of hybrid strategies that use wonder to arouse the desire for resonance. When compared with Pallasmaa and Zeki, the difference is in the strength. While Pallasmaa and Zeki propose a weak approach based on ambiguity, Greenblatt defends a strong approach through visual marvelling. We are trying to approach a third and also subtle way through aural experience.

3.2. Aural Experience and Place

Let us now focus on how the aural dimension of architecture influences our sense of place by extending the premise advanced by Steen Eiler Rasmussen (1959), R. Murray Schafer (1977), and Juhani Pallasmaa (1996) that the experience of architecture involves all the senses. Although the idea is not new, only a few studies have explored the way in which multisensory architecture influences the inhabitants of a space. Because of differences both in light and sound and in the neurobiology of seeing and hearing, aural architecture is distinct from visual architecture, and each has the capacity to enhance or diminish place attachment and satisfaction.

First we must understand that sound is not merely a sonic representation of a visual occurrence. The aural produces a perspective and depth of field not possible through visual phenomena alone. Sound is all around us and is not bound by the same restrictions that limit our ability to see with our eyes. It is equal to, if not more important than, sight in creating the space in which we find ourselves. Media theorist Marshall McLuhan writes in his essay “Visual and Acoustic Space”:

We who live in the world of reflected light, in visual space, may be said to be in a state of hypnosis. Ever since the collapse of oral tradition, before the age of Parmenides, Western civilization has been mesmerized by a picture of the universe as a limited container in which all things are arranged according to a vanishing point, in linear geometric order [...] The term *sensus communis* in Cicero's time meant that all the senses were translated equally into each other. It was the Latin definition of man in a healthy state, when physical and psychic were constant and distributed in a balanced way to all sense areas. In such a condition it is difficult to hallucinate. In any cultural arrangement, trouble always occurs when only one sense is subjected to a barrage of energy and receives more stimulus than all the others. For modern Western man, that would be the visual state. By neglecting ear culture, which is too diffuse for the categorical hierarchies of the left side of the brain, Mankind has locked itself into a position where only linear conceptualization is possible. [...] Acoustic space is both discontinuous and nonhomogenous. Its resonant and interpreting processes are simultaneously related with centers everywhere and boundaries nowhere. Acoustic and visual space structures may be seen as incommensurable, like history and eternity, yet, at the same time, as complementary, like art and science or biculturalism. (Cox and Warner 2004)

By selecting and combining materials and shapes, architects embed their respective intentions in structures that we see, hear, and feel:

To communicate the artistic, social, emotional, and historical context of a space, however, architects almost exclusively consider the visual aspects of a structure. Only rarely do they consider the acoustic aspects. The native ability of human beings to sense space by listening is rarely recognized; indeed, some people think such an ability is unique to bats and dolphins. But sensing spatial attributes does not require special skills—all human beings do it: a rudimentary spatial ability is a hardwired part of our genetic inheritance. (Blessner and Salter 2007)

Besides offering sound cues that can be interpreted as objects and surfaces, aural architecture can also influence our emotions, even if we are not conscious that the aural is itself a sensory stimulus, we react to it:

We may experience a living room as cold or warm independent of its actual temperature, or a train station as lonely and forbidding independent of its actual appearance. The acoustics of a grand cathedral can create an exalted mood; those of a chapel can enhance the privacy of quiet contemplation; those of an elevator can produce the feeling of encapsulation and, in the extreme, claustrophobia. The acoustics of an open area can produce feelings of either freedom or insecurity. (idem)

Aural architecture, with its own aesthetics and meaning, complements visual architecture. Visual and aural meanings may align and reinforce each other or not. For example, we may sense the visual vastness of a cathedral through the eyes but also through the ears by enveloping reverberation, and this causes a feeling of absolute and divinity to those with religious beliefs. On the other side, imagine dining at a fashionable restaurant whose interiors suggest a sense of harmony and elegance, but whose acoustics emphasizes noise, causing stress, anxiety, and psychological tension. The visual and aural attributes are in this case conflictual and this may eventually be intentional: aural discomfort induces customers to leave sooner, which may increase the economic return for the owners, at least on a short-term perspective.

To investigate aural experience, we first need to understand the basics of listening. What does it mean to be aware of sound or spatial acoustics?

Aural awareness progresses through a series of stages: transforming physical sound waves to neural signals, detecting the sensations they produce, perceiving the sound sources and the acoustic environment, and finally, influencing a listener's affect, emotion, or mood. Notice that this conceptualization provides a continuum from the physical reality of sound to the personal relevance of that reality. (ibid.)

At one extreme, there is raw sensation. It comprises detecting an auditory stimulus that has no meaning or affect, as for example, laboratory signals composed of pure tones, transient clicks, or noise bursts. If we ignore minor physiological differences, there is little behavioural variability among individual listeners when detecting such sounds. Raw sensation is predominantly a biological property of a species.

Farther along, the next step is perception. This is essentially comprised of cognitive processes, containing the individual listener's personal history, that convert raw sensation

into an awareness that has a certain meaning. Perception integrates cultural influences and personal experiences. For example, understanding speech requires knowledge of the words—meanings and conventions specific to the culture—in order to decode sounds. Perception does not require the sound to have any relevance to life; a spoken sequence of random numbers can be perceived as linguistic objects, a sequence of musical notes can be perceived as a melody, and a sound source can be localized. Perception is predominantly a property of cultural exposure.

At the far end of the continuum, we find emotionally engaged listening. In this case, sounds produce a visceral response, a heightened arousal (Thayer 1989), and an elevated state of mental and physical alertness. Such sounds have personal meanings and associations for the listener. In some cultures, certain kinds of music are so powerful they are used to create trances, altered states of consciousness (Rouget 1985; Besmer 1983). Listening experiences have the capacity to produce overt or subliminal affect. Overt affect corresponds to strong feelings, whereas subliminal affect corresponds to subtle arousal. We are mostly interested in listening experiences that have the capacity to produce subliminal affect.

Even though a listener may clearly perceive and decode the information in a sound, the experience may produce neither overt nor subliminal affect. There are at least two reasons why listening might be experienced as irrelevant. First, the sound and acoustic space may be without meaningful content for a particular listener; there is nothing biologically relevant being communicated. Second, the listener may not be paying attention to the sound and space. Even if these are emotionally charged, you may not be engaged in focused listening; indeed, you may have tuned out altogether, ignoring all sounds while attending to daydreams. In both cases, sound is nothing more than background noise, quickly forgotten. (Blessner and Salter 2007)

Is this background noise, especially in the second case, when the listener is not paying attention, so insipid or innocuous? We need to explore the process of emotions to be able to respond to this question. How are emotions triggered? This is the question that follows and António Damásio answers:

Quite simply, by images of objects or events that are actually happening at the moment or that, having happened in the past, are now being recalled. [...] Whether “live,” reconstructed from memory, or created from scratch in one’s imagination, the images initiate a chain of events. Signals from the processed images are made available to several regions of the brain. Some of those regions are involved in language, others in movement, others in manipulations that

constitute reasoning. [...] On occasion, however, certain stimuli are ambiguous enough to activate more than one site, leading to a composite emotional state. A bittersweet experience is the result, a “mixed” feeling arising from a mixed emotion. (Damásio 2010)

In short, the triggering of emotion requires an emotionally relevant stimulus, depends on specific activation areas, comprises complex action programs involving the body, and is perceived by the subject in the form of a feeling. Furthermore, we may conclude that ambiguous stimuli trigger more complex emotions, usually less intense but more involving. This may be the potential of background sounds or urban soundtracks, as open matter of peripheral perception, in the process of weakening architecture and consequent place making.

4. Soundtracks

To clarify some key terms used in this paper, the adjective aural, which parallels visual, refers exclusively to the human experience of a sonic process; hearing, to the detection of sound; and listening, to active attention or reaction to the meaning, and emotions contained within sound. When you listen carefully with your eyes closed, you engage in attentive listening—intensely focusing on the sounds of life in the immediate environment. Take a moment to imagine the world from its sounds: the singing birds foreshowing the onset of spring in the park, the creaking of a rocking chair on a front porch, the laughter of children at the playground, or the sound of music piercing through the open window. Solely through sound, an entire environment, complete with memories and emotions, comes alive. Indeed, we feel included in the life of the soundscape: the auditory equivalent of a landscape. (Blessner and Salter 2007) Whereas landscapes can be comparatively static and sometimes almost lifeless, soundscapes, of necessity, are dynamic: they require animated activities to produce sonic events. In tribal societies where survival is a continuous struggle against hidden events, soundscapes are frequently more relevant than landscapes (Feld 1996).

Researchers who have studied the soundscapes of old settlements have noted that particular sonic events—soundmarks—were the auditory counterparts of landmarks (Truax 2001). Soundmarks are sounds that are unique and high status, often with important social, historical, symbolic, and practical value. The sounds of church bells, foghorns, railroad sig-

nals, factory whistles, fire sirens are examples. In many towns, only those individuals who lived within the auditory perimeter of the most important soundmarks were considered citizens of the town. Indeed, the size of a community was effectively determined by its acoustic geography—terrain features having noticeable acoustic effects, such as flat plains, dense forests, gentle hills, deep valleys, craggy mountain peaks—and by the vagaries of the local climate. (Blessner and Salter 2007)

For the purposes of this paper it is particularly important a second element of soundscapes: soundtracks. Its traditional definition is related with film: soundtrack is intentional sound that accompanies moving images in narrative film (Deutsch 2007) This does not exclude sounds that are captured accidentally (such as ambient noise most often associated with documentary footage); rather it suggests that any such sounds, however recorded, are deliberately presented with images. In our case, the definition is expanded to include the intentional sounds that accompany any environment and intensify it, the fragment of a soundscape that invites the perceiver to fill the space with his own consciousness. A soundtrack usually comprises two different (but not mutually exclusive) elements: sounds that encourage us to believe what we see, and sounds that invite us to feel something about what we are seeing. All elements of the soundtrack operate on the perceiver in complex ways, both emotionally and cognitively. The recognition of this potential to alter the viewer's reading of a film might encourage architects to become more mindful of using soundtracks, musical or non-musical sonic events, which, as we shall see below, are likely to shape the emotional environment through which the user experiences the city.

4.1. Sound in Tarkovsky's *Stalker*

As soon as the sounds of the visible world are removed from it, or that world is filled, for the sake of the image, with extraneous sounds that don't exist literally, or if the real sounds are distorted so that they no longer correspond with the image – then the film acquires a resonance. (Tarkovsky 1987)

Resonance and wonder are two elements particularly present in the films of Tarkovsky. These elements are articulated not only through image, as postulated by Greenblatt, Pallasmaa and Mallgrave (2011), but in the dialogue between image and sound. The analysis of the soundtrack of Tarkovsky's 1979 film *Stalker* will help us understanding how the use of sound may create a unique perceptual awareness in an audience. Rather than attempting to reveal meanings and symbols in the film, this analysis explores how, through a sensitivity

to the possibilities of sound in film, it is possible to transcend the confines of its traditional uses and enable in its perceiver the freedom to engage that allows for the individual's own sensitivity and mind to take an active role in creating a personal connection and meaning.

Stalker (and this is true of all Tarkovsky's films) is very much focused on the characters' intimate processes and how it is the individual who creates reality. Reality is not a predetermined set of values and rules that can be applied collectively but is constantly shifting and blurring, as the nature of the Zone itself. The essence of *Stalker* is oblique. It does not aim to clear up these anomalies, but rather to pose metaphysical questions for the viewer to engage with.

Stalker has something of a pilgrimage, as it traverses a path from one point to another, knowing that what is essential is the disposition and not the destination itself. This is the definition of a contemplative poetics, focused in a deed stripped of self, of fear and desire. Tarkovsky is therefore, focused on total experience, not of one part but of the whole, "a continuous examination of our perceptual awareness of the world and a continuous extension of our ability to understand the nature of that world" (Irwin 2000). This kind of examination of how we define our reality and the transience that surrounds us can be found in the films of Andrei Tarkovsky and is central to the theme of this paper. His films feel as if they have led us into Malevich's 'desert' and left us where all that was familiar and known has disappeared. Underneath this, however, is offered the opportunity to engage with the multidimensionality of reality. The soundtracks offer a complex and multidimensional experience of his films and create an intensified experience of listening that is very unusual within cinema. We will be focusing in particular on the use of sound in *Stalker*, and how its uses challenge the perception of reality and enable the complete involvement of its listeners.

By dissecting and analysing *Stalker*, it is possible to understand the methods, processes and objectives that facilitate and inform a deeper insight into how the sound is functioning and the affect it has on its audience. Tarkovsky uses sound in order to define place, whether that be literal, psychological or existing as some kind of parallel reality. He allows sound the time to evolve, develop and build the space, often before the viewer is aware of what is occurring visually. It is also his use of sound that creates a concealed precision and intricate development within the progress of the film, allowing individual soundscapes time to unfold, defining what is apparently obvious and/or revealing what is hidden from the auditor. The experience is often one of moving (sometimes noticeably, sometimes imperceptibly) between 'causal listening' and 'reduced listening'⁴. It is the blurring of the two modes that Tarkovsky

4. Causal listening consists of listening to a sound in order to gain information about its cause (or source) and

manages to manipulate so effectively. (Smith 2007) This is attained by a complex amalgam of strata, where sound and music are rarely illustrative, always retaining the feeling that they are operating as more than representation as proposed by Thrift in his non-representational theory.

We can find here some affinities with Cage's use of noise and consider it as the decorative dimension of weak architecture: a peripheral element of perception. Kim Cascone, assistant sound designer on David Lynch's *Wild At Heart*, compares Lynch's work to *Stalker*. He observes that Lynch creates a sound world that is not contained within the screen but one that forms a dimensional space around it:

off-screen evocations of a type of space always existing beyond our periphery, just out of reach or dismissed as background noise. This is how their work achieves viral contagion: it lodges itself into your psychic membrane and starts to blur your dreams with real life. This blurred boundary is where the most interesting cinematic experience takes place, and awaits those curious enough to explore them. This is how film sound does its most damage, how it permanently infects the host body and alters our perceptual experience of life. (Cascone 2003)

In some parts, the soundtrack is so resonant and expressive that the absence of music is not missed in the development of the dramatic tension. The richness of dynamics and textures effectively acts as score which allows the diegetic sounds space to invoke their own innate musical qualities. A good example is the scene of the trolley train journey. The train can only be seen when the characters first sit down, we do not see it for the rest of the scene. The sound is the only evidence of its presence. The absence of the visual here plays a dual role. The close-up on the faces of the characters makes us overlook the surroundings and consequently the physical journey becomes an inner journey. In addition, separating the sound from its source over the period of the journey takes the auditor through a process that starts in the mode of causal listening moving to reduced listening. Here, as in *Stalker's* house, the sound of the environment is practically non-existent. The effect is to draw the viewer further and further into the inner worlds of the characters coaxed by the mesmerizing repetitive sound of the handcar. The delicate and precise balance between natural environment and the *musique concrète* leads to an ambiguity of time and space that makes the scene so

the reduced listening mode 'focuses on the traits of the sound itself independent of its cause and of its meaning (Chion 1994).

profoundly effective. As with the trains and music heard in Stalker's house, the boundaries between diegetic and non-diegetic are being sensitively explored. A very careful blending of diverse tonal and distorted organic elements clouds the distinction between natural sound, sound design and music, encouraging the audience to question the very nature of the reality presented to them on the screen and to viscerally join the characters on the beginning of their "journey into the heart of darkness" (Peachment 2001: 1004).

It is largely through the absence of sound that the Zone evokes such a haunting and isolated sensation. Tarkovsky achieves this not through silence but by calling attention to certain sounds such as the cry of a cuckoo (a recurring aural theme in several of his films) or a ghostly breeze with no visual reference. This stripped-down soundtrack encourages a much stronger emotional impact as richer surreptitious sound elements periodically infiltrate the barren landscape, acting more as a metaphorical representation of the psychological state of the three characters and/or the abstracted consciousness that is the Zone itself. The source of this sound is unseen and therefore belongs to the realm of reduced listening. This use of sonic representation acts as an illusive score, whilst still allowing the sound to feel very much an extension of space. Again there is a pause within the story where there can be reflection, the use of abstracted sound raising questions and enabling connections that do not need to be answered or revealed but allowing for the visceral connection to something parallel to the immediate experience, something outside of human intellectual understanding. (Smith 2007) Using sound in this way also encourages reduced listening. Although we know the cause of the sound, separating the sound and placing it on an alternative image produces a heightened perception of both visual and aural space. The innate qualities of each sound are allowed to inhabit their own dimension and be experienced more viscerally. The image is therefore imprinted with a poetic quality. This visceral connection with sound is so strikingly different that there is the feeling of catharsis – the sense of 'hope' that Tarkovsky regarded as so important in his filmmaking.

The film's sound closing is like the opening, we can hear the sound of a train passing noisily and see vibrating some objects on the table, Beethoven's "Ode to Joy" enmeshed on the edge of perceptibility. The initial interrogations remain. What is real and what is illusion? Tarkovsky definitely leaves us in Malevich's desert. The use of discontinuous and inconsistent sounds found in Stalker leads to what Slavoj Žižek called 'ontological undecidability': "It seems as if Nature itself miraculously starts to speak, the confused and chaotic symphony of its murmurs imperceptibly passing over into music proper" (Žižek, 1999). This is the space of affect, of visceral connection that, through alienation, generates the bond of appropriation by making us decompose the anonymous zone and build a proper place.

Although Tarkovsky is very meticulous with all elements of the sound in his films – music, dialogue, diegetic and nondiegetic sounds – it is in the spaces he leaves that allows these other elements to play out their idiosyncratic, hypnotic patterns. “Silence is where he hands over completely to the audience. We are invited to fill the space with our consciousness. This is the space of dreaming. Through his precision of structure in his film-making he invites us into a meta-physical world with no boundaries” (Pangborn 2006) (Smith 2007)

Traversing the sound tracks of Tarkovsky’s cinematic world leads the perceiver into a background of contradictions and abnormalities that will lead only to frustration and confusion, if sought to be understood through logic or rational thought. However, if the perceiver allows his conscious mind to renounce control and construct an intuitive connection to the film, then it makes the way for a surprisingly fulfilling experience.

4.2. Experiment #1: Walkie Talkie, Lisbon, 1999



Figure 4. Walkie Talkie view of installation.

Walkie Talkie is the title of a sound installation executed as part of idealities, an urban intervention realised in the context of the bicentenary of Almeida Garrett⁵'s birth. The pro-

5. João Baptista da Silva Leitão de Almeida Garrett, Viscount of Almeida Garrett (February 4, 1799 – December 9, 1854) was a Portuguese poet, playwright, novelist and politician. He is considered to be the introducer of the Romanticism in Portugal. He is regarded as one of history's greatest romantics and a true revolutionary and humanist.

ject idealities brought forth tendencies and suggestions that, in either an oblique or explicit way relate to the garrettian cultural mould. Much like Garrett himself, who cultivated and devoted a diversity of very distinctive discourses, from the poet to the playwright, from the journalist to the politician, from the novelist to the historian, idealities refuses the use of monologues and offers an unexpected and subtly interactive feature.

The experiment was located in Chiado, an area of the city of Lisbon that was the stage of one of the most violent fires of its history on August 25, 1988. The fire had its initial origin in Rua do Carmo and then propagated to Rua Garrett, where the installation is located, and only thanks to the great efforts made by the fire-fighters was it possible to avoid its propagation to the surrounding areas, all of them also historical areas. This fire caused the destruction of 18 buildings, some of which were quite emblematic of the commercial activity of the city: the Chiado Stores, the Eduardo Martins Store, the Ferrari Pastry Shop, the Batalha Shop, and other shops dedicated to traditional commerce. Many offices and houses were also destroyed. It is estimated that about 2,000 people lost their jobs.

Walkie Talkie was conceived as a catalyst of urban rehabilitation and was executed at the end of the long process of reconstruction lead by Álvaro Siza. The site – the entrance of the inner courtyard of one of the blocks redesigned by Siza – is a space related to all others in a way that neutralizes or inverts the circuit of existing relations. It is a non-place, the volumetric negative of built masses that surround it and negation of the existence in its surroundings. There is a place, but the place does not exist; and this absence of a support that cannot translate into absent support nor absence as support, provokes and resists all binary or dialectic determination, leaving room for the interpretation of an emanating composition: the trans-site par excellence. The intention of this installation was to stimulate a sensory awakening, unconscious at first, and then conscious, re-creative, playful even, persisting in the perception of space the intensity of the lived moment. The character of the space and the conceptual premises of the project suggested the creation of a subtle spatial element that would function as an escape point from Chiado (and from ourselves) to a physical (the courtyard) and psychological (the self) inner journey.



Figure 5. Passer-byes looking into the courtyard.

The apparatus comprised one shotgun condenser microphone (Sennheiser MKH 70), one digital audio delay processor (DBX Digital Dynamics Processor), one microphone pre-amplifier (Tascam MA-8) and two outdoor speakers. The microphone was discreetly installed 3 meters up the street between two balconies (Figure 5) and captured the sounds of the area of the sidewalk beneath it. This sound was then delayed 3 seconds and produced in the speakers subtly installed in the passage to the courtyard. Any passer-by would therefore be able to hear the specific soundscape he had perceived (or not) three steps before, on her/his way, walking down the street.

This provided an experience of *déjà-écouté*, a surprising echo or resonance coming from an unexpected location, something similar in aural terms to the visual sensation of *déjà-vu*. Observations registered 83% of the passer-byes slowing their pace (or even stopping) and gazing through the passage into the courtyard (image below); 27% of these eventually stepped into and crossed the space of the courtyard. Separating the sound from its source takes the perceiver through a process that starts in the mode of causal listening moving to reduced listening. The effect is to draw the perceiver to an ambiguity of time and space that makes the event so profoundly effective, encouraging him to question the very nature of the reality presented and to viscerally engage on a “journey into the heart of darkness” similar to the one performed by the characters of *Stalker*.

4.3. Experiment #2: Soundtrack, Guimarães, 2012

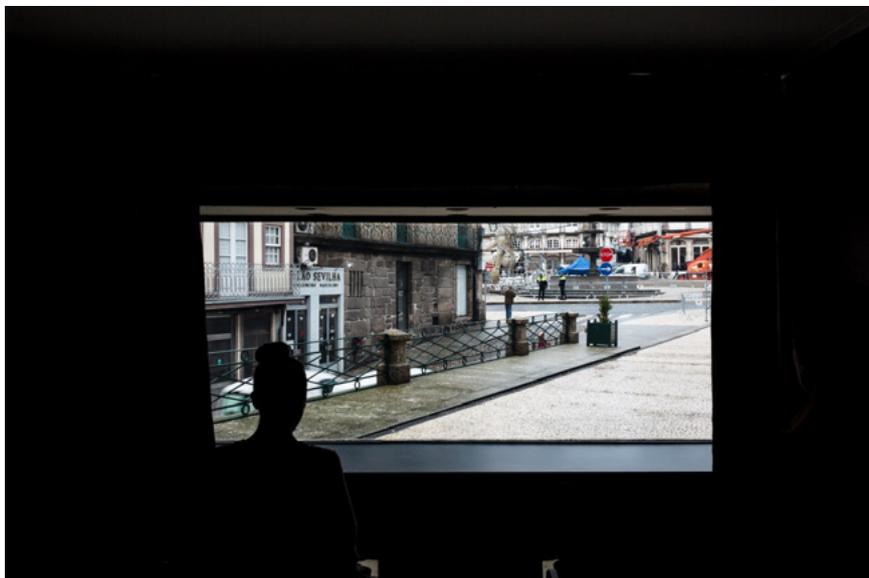


Figure 6. Soundtrack's view (photo: Hugo Santos Silva).

Soundtrack is an ephemeral installation that was presented in Guimarães, European Capital of Culture, from December 19 to 23, 2012. Inside a derelict shop, a small set of tier benches was assembled for an audience of 20 persons. The heartbeat sound of the audience is captured and amplified inside the shop while they watch the motion of the city and the public space.

The pocket auditorium was installed in Largo 25 de Abril, a small and retracted square in front of one of the main public spaces of Guimarães – Largo do Toural – that was renewed in 2011, by Maria Manuel Oliveira. Soundtrack was conceived as a catalyst of re-appropriation of this public space. The site is again a banal space that doesn't have a particular story but relates with very important landmarks of the city. It is a point of passage and also a space of concealment from the urban dynamics of the main core of the city.

In a conversation with Doris von Drathen, sculptor Rui Chafes asks very suggestively: “how can a sculpture happen in space so that thus arises an opening to another world, which is actually a liberation from this everyday life?” The way Chafes raises the question suggests a certain devaluation of “everyday life” which justifies the need for an escape to “another world”, a liberating alienation, denoting a sense of pessimism or difficulty in dealing with reality.

This experiment wanted to replace this question within a new perspective: how can an intervention happen in a public space so that thus arises an opening to the world, to reality

as it is, in this “everyday life”, enabling each person to interpret and create “another world” (your reality) from it (and not in spite of it)? The “liberation” in this case does not signify being able to have, but being able to not have, waive, abdicate, the objects but not the life (or significance) contained therein, whether of «everyday» or of «another world».

Soundtrack sought a way to stimulate the individual construction of place through audio and visual experience in a strategy similar to that identified by Juhani Pallasmaa⁶ in the films of Tarkovsky or Antonioni in which the ‘weak’ narrative, based on improvisation, intentionally creates a distance between the image and the story in order to weaken the logic of the narrative, originating a field of associative images that arouses strong personal interpretations. This is an attempt to translate this cinematic strategy into the city experience, suggesting to its users a new more involved look, so that they cease to feel and act as spectators and become full participants.

The interior space is simply defined by a gypsum board wall painted black, mirror film and a black curtain on the window, tier benches with twenty chairs, and one table. The apparatus comprised also four ECG wireless sensors (Plux), one laptop, one soundboard and two speakers. Four volunteers among the audience were invited to wear the ECG wireless sensors. These Low-noise ECG triodes are specially designed for local differential placement and make ground for unobtrusive signal acquisition. The ECG works mostly by detecting and amplifying the tiny electrical changes on the skin that are caused during the heart muscle cycle during each heartbeat. Its state-of-the-art design maximizes the sensor performance providing high-resolution signals.

6. ‘The Diffuse Image: fragile architecture, atmosphere and emotion’ written for *Soundtrack* and partly based on the author’s earlier essay ‘Hapticity and Time: notes on fragile architecture’ (2000), published in *Juhani Pallasmaa: Encounters 1, Architectural Essays*, Peter MacKeith, editor, Rakennustieto Publishing, Helsinki, 2005.



Figure 7. Soundtrack's entrance and improvised auditorium with partition (photo: Hugo Santos Silva).

The performance started with the curtains closed and the typical announcement: “Good afternoon! The performance is about to start. We remind you that the use of mobile phones is not permitted, nor any type of audio and video recording. Thank you and enjoy the performance.” Then, the curtains open, enabling the audience to see the exterior space through the window. The heartbeats start to be diffused in the room, at first one by one and later mixed, generating a literally live soundtrack. The duration of each performance was approximately 45 minutes. Observations registered 8% of dropouts. This provided an experience of intimate resonance that led, in some cases, to altered states of consciousness with descriptions similar to trance.

As in the soundtrack of *Stalker*, although we know the cause of the sound, disconnecting the sound and reproducing it on an alternative image, the image of the living city, creates a heightened perception of both visual and aural space. The innate qualities of each sound, banal exterior urban sounds included, are allowed to inhabit their own dimension and be experienced more viscerally. The image of the city is therefore imprinted with a poetic quality. This visceral connection enabled by the sound is so strikingly different that there is the feeling of catharsis that leads to what we may call the construction of place.

5. Conclusion

Interactive sound installations such as the ones analysed in the previous section of this paper encourage the audience to become participants in the construction of place by generating, listening and reacting to sounds extracted from the everyday life and/or environment. This sounds may be found, recuperated, or remembered. This practice is based on intervening in public spaces in such a way that people's experience of the space is enhanced by its new articulation that interrogates the pre-existing space and identifies and underlines the key phrases of the language in place through the reuse of banal sounds which are normally filtered out in ordinary day-to-day life.

John Cage used two tools, in music, that may be useful in this weakening of architecture through the de/re/composition of urban soundscape: the accentuated practice of chance to arrange and select the sounds and the durations of a piece, and the introduction of noise (from the physical impossibility of silence) within a composition as an equivalent to conventional musical sound.

There is no such thing as an empty space or an empty time. There is always something to see, something to hear. In fact, try as we may to make a silence, we cannot. For certain engineering purposes, it is desirable to have as silent a situation as possible. Such a room is called an anechoic chamber, its six walls made of special material, a room without echoes. I entered one at Harvard University several years ago and heard two sounds, one high and one low. When I described them to the engineer in charge, he informed me that the high one was my nervous system in operation, the low one my blood in circulation. Until I die there will be sounds. And they will continue following my death. One need not fear about the future of music. (Cage 1961)

He took the world of noise and chance to penetrate the concert hall, following in this respect the example of Duchamp, who did the same thing in relation to the art gallery and museum. The next step was simply to leave this uncertain world and forget the sceneries of the concert, the stage, and so on. This was the theoretical foundation of happening, but also of several works on the body and on the landscape: "In Cage's cosmology (built on Asian philosophy) the real world was just perfect if we could hear, see, and understand it. If we

could not do that it was because our senses were closed and our minds full of preconceived opinions.” (Kaprow 1996)

In Western societies there is a difficulty digesting these ideas, and those who embrace them are more talkers than doers. It is here, in any case, that lies the main interest for this work of Cage’s innovations in music: these experiences can be a great invitation to the art of living, and, with this invitation, art may disappear and give way to the richness of life and everyday experience. Here’s what we propose in this interventions in public space: an opening, an introitus, an awakening of the senses and consciousness⁷, opening the door to an interpretation and a deeper understanding of the ordinary reality of the pre-existing space.

What happens when we are attentive to everything, particularly to routine behaviour, is that it changes. Attention transforms what we pay attention to. Just think of the most basic operations of everyday life, for example, walking. When walking on the sidewalk do you walk straight or irregularly? What is your normal speed? Do you usually cross the street diagonally? Do you look at the shop windows? Do you look at the passers-by? What part of their body do you look at first? What is the minimum distance that you keep from others? Do you hear their conversations? How many different sounds can you distinguish and identify? And how many odours?

If you want to rebuild this whole system of operations while walking, you’ll notice that they seem to take longer than they should and that everything happens due to chance, or at least nothing seems to add up. You may never have reflected on the amount of movements you do automatically or the physical sensations they provide. You could easily develop a fascination with the rhythm of your steps, the movement of your feet, the act of looking at the different colours of the eyes of passers-by. Then, realizing that everything is strange you would notice you’d just entered the territory of the familiar unfamiliar.

These events contain, indeed, the meaning of life. From the moment in which art similar to life participates in its daily source, intended to be as life, it provides an interpretation and thus a ‘meaning’. But it is not life in general that has a meaning; one cannot experience a generalization. Only life in its particular aspects can be experienced. The meaning here is

7. The simple and classic definition of consciousness from the dictionary - the perception by the organism of his own being and his environment - allows us to easily imagine how consciousness brought human evolution to a new order of creations that would not be possible without it - the moral conscience, the social and political organization, the arts, the sciences, technology - and that are of fundamental importance in the field of urban studies. Thus, we cannot study the urban landscape nor understand it if we do not consider the centrality of human consciousness in the analysis of the interaction of the human being with his environment. Damásio (1999) defines consciousness in a enlightning way: “At its simplest and most basic level, consciousness lets us recognize an irresistible urge to stay alive and develop a concern for the self. At its most complex and elaborate level, consciousness helps us develop a concern for other selves and improve the art of life.”

not just variable and unfixd, but also inventive. It's what we add, by our imagination and our interpretation, to what we do. The artists whose artistic production processes seek to resemble life itself are, in the same way, conscious inventors of the same life that also invents them (or at least they try to be as conscious of it, as they can).

Interpreting life, is that life? Interpreting life, is that 'life'? 'Life' is simply another way of life? Am I playing with words or posing real questions about life? The life of birds, flowers and volcanoes, simply exists. But when I think of life, it becomes 'life'. Therefore lifelike art is played somewhere between the attention we give to the physical process and the interpretation. It is of the order of experience, yet, it is impalpable. Requires quotation marks like life, but loses them as the un-artist⁸ loses art. In a nearly parallel and equally tortuous route, the 'soundtrack' may as well lose the quotation marks and be a source of meaning for the city.

It is not necessary for the true always to take on material form, it is enough that it should flutter to and fro, like a spirit, promoting a kind of accord; as when the companionable pealing of a bell rings out, bringing us some little measure of peace. (Goethe)

8. "L'artiste expérimental d'aujourd'hui est l'Un-Artiste. Non pas l'anti-artiste, mais l'artiste vidé d'art." (Kaprow 1996). In "Education of the Un-Artist", Allan Kaprow elaborates four passwords for members of the art club: Nonart, Antiart, Art-art, and Un-art. Originally published in *ArtNews*, n. 3, pp. 34-39, 1972. The author used the version published in Allan Kaprow, *Essays on the blurring of art and life*, Jeff Kelley (Ed.), University of California Press, 1993.

REFERENCES

- Bagozzi, R. P.** (1978). "The construct validity of the affective, behavioural and cognitive components of attitude by analysis of covariance structures." *Multivariate Behav Res*; 13: 9-31.
- Besmer, F.** (1983). *Horses, Musicians, and Gods: The Hausa Cult of Possession-Trance*. South Hadley, Mass.: Bergen and Garvey.
- Billig, M.** (2006). "Is my home my castle? Place attachment, risk perception, and religious faith." *Environment and Behavior*, 38, 248-265.
- Blessner, B. and Salter, L.-R.** (2007). *Spaces Speak, Are you Listening?* Cambridge, Mass.: MIT Press.
- Bonnes, M. and Secchiaroli, G.** (1995). *Environmental psychology: a psychosocial introduction*. London: Sage.
- Brown, B. B., and Perkins, D. D.** (1992). "Disruptions in place attachment." *Human Behavior & Environment: Advances in Theory & Research*, 12, 279-304.
- Brown, B., Perkins, D. D., and Brown, G.** (2003). "Place attachment in a revitalizing neighborhood: individual and block levels of analysis."

- Journal of Environmental Psychology*, 23, 259–271.
- Bruno, G.** (2002). *Atlas of Emotion: Journeys in Art, Architecture, and Film*. London: Verso.
- Buber, M.** (1937). *I and Thou*. Edinburgh: T&T Clark.
- Buttimer, A., and Seamon, D.** (Eds.) (1980). *The human experience of space and place*. London: Croom Helm.
- Cage, J.** (1961). *Silence*. Middletown: Wesleyan University Press.
- Casakin, H. and Billig, M.** (2009). "Effect of Settlement Size and Religiosity on Sense of Place in Communal Settlements." *Environment and Behavior* November 2009 vol. 41 no. 6 821-835.
- Cascone, K.** (2003), Viral Space: The Cinema of Atmosphere, http://www.acs.ucalgary.ca/~tstronds/nostalgia.com/TheTopics/Tributes/another_kind_of_insert_2.jpg. Accessed May 3, 2014.
- Chion, Michel** (1994), *Audio-Vision* (trans. C. Gorbman), New York: Columbia University Press.
- Cox, C. and Warner, D.** (2004). *Audio Culture: Readings in Modern Music*. New York: Continuum.
- Cuba, L., and Hummon, D. M.** (1993). "A place to call home: identification with dwelling, community, and region." *Sociological Quarterly*, 34, 111–131
- Damásio, A.** (1999). *The Feeling of What Happens*, London: Vintage.
- . (2003). *Looking for Spinoza: Joy, Sorrow and the Feeling Brain*, London: Heinemann.
- . (2010). *Self Comes to Mind : Constructing the Conscious Brain*. New York: Pantheon.
- Deutsch, S.** (2007). "Editorial". *Soundtrack*, Volume 1, Number 1: 3-13.
- Eisenhauer, B. W., Krannich R. S., and D. J. Blahna** (2000). "Attachments to special places on public lands: An analysis of activities, reasons for attachments, and community connections." *Society Nat. Resources* 13:421–441.
- Feld, S.** (1996). "Waterfalls of song: An acoustemology of place resounding in Bosavi, Papua New Guinea." In S. Feld and K. Basso (eds.), *Senses of Place*. New Mexico: School of American Research Press.
- Fried, M.** (1963). "Grieving for a lost home." In L. J. Duhl (Ed.), *The urban condition: People and policy in the metropolis* (pp. 124–152). New York: Simon & Schuster
- Fullilove, M. T.** (1996). "Psychiatric implications of displacement: contributions from the psychology of place." *American Journal of Psychiatry*, 153, 1516–1523.
- Giuliani, M. V.** (2003). "Theory of attachment and place attachment." In M. Bonnes, T. Lee, and M. Bonaiuto (Eds.), *Psychological theories for environmental issues* (pp. 137–170). Aldershot: Ashgate.
- Giuliani, M., Ferrara, F., and Barabotti, S.** (2003). *One attachment or more?* Ashland, OH: Hogrefe & Huber.
- Greenblatt, S.** (1991). "Resonance and Wonder", Chapter 3 in Karp, Ivan and Lavine, Steven (eds.), *Exhibiting Cultures: The Poetics and Politics of Museum Display*. Washington: Smithsonian Institution Press: 42–56.

- Greider, T., and L. Garkovich** (1994). *Landscapes: The social construction of nature and the environment*. *Rural Sociol.* 59(1):1-24.
- Groat, L.** (1995). "Introduction: place, aesthetic evaluation and home." In: Groat L, editor. *Giving places meaning*. San Diego (CA): Academic Press: 1-26.
- Gupta, A. and Ferguson, J.** (1997). *Culture, power, place: Explorations in critical anthropology*, Durham: Duke University.
- Gustafson, P.** (2001). "Roots and routes: exploring the relationship between place attachment and mobility." *Environment and Behavior*, 33, 667-686.
- Hay, R.** (1998). "Sense of place in developmental context." *Journal of Environmental Psychology*, 18, 5-29.
- Hidalgo, M. C., and Hernández, B.** (2001). "Place attachment: conceptual and empirical questions." *Journal of Environmental Psychology*, 21, 273-281.
- Holl, S.** (1993). "Phenomena and Idea" in Yukio Futagawa (ed.), *GA Architect 11: Steven Holl*. Tokyo: A.D.A. Edita: 12.
- Hummon, D. M.** (1992). "Community attachment: local sentiment and sense of place." In I. Altman, and S. M. Low (Eds.), *Place attachment* (pp. 253-278). New York: Plenum Press.
- Irwin, Robert** (2000), webcast, Robert Irwin on Abstraction, Rice University: <http://webcast.rice.edu/speeches/20000323irwin.html>. Accessed 2 May 2006.
- Jorgensen, B. S., and Stedman, R. C.** (2001). "Sense of place as an attitude: lakeshore owners attitudes toward their properties." *Journal of Environmental Psychology*, 21, 233-248.
- . (2006). "A comparative analysis of predictors of sense of place dimensions: attachment to, dependence on, and identification with lakeshore properties." *J Environ Manage*; 79: 316-327.
- Kaprow, A.** (1996). *L'art et la vie confondus*. Paris: Centre Pompidou.
- Kyle, G. T., Graefe, A., Manning, R., Bacon, J.** (2004). "Effects of place attachment on users' perceptions of social and environmental conditions in a natural setting." *J Environ Psychol*; 24: 213-225.
- Kyle, G. T., Graefe, A., and Manning, R. E.** (2005). "Testing the dimensionality of place attachment in recreational settings." *Environment and Behavior*, 37, 153-177.
- Kracauer, S.** (1964). *Straßen in Berlin und anderswo*. Frankfurt am Main: Suhrkamp Verlag.
- Latour, B.** (2005), *Reassembling the social - an introduction to Actor-Network-Theory*. Oxford: Oxford University Press.
- Low, S. M., and Altman, I.** (1992). "Place attachment: a conceptual inquiry." In I. Altman, and S. M. Low (Eds.), *Place attachment* (pp. 1-12). New York: Plenum Press.
- Mallgrave, H. F.** (2011), *The architect's brain: Neuroscience, Creativity, and Architecture*. Chichester: Wiley-Blackwell.
- Manzo, L. C.** (2005). "For better or worse: exploring multiple dimensions of place meaning." *Journal of Environmental Psychology*, 25, 67-86.

- . (2003). “Beyond house and haven: toward a revisioning of emotional relationships with places.” *Journal of Environmental Psychology*, 23, 47–61.
- Merleau-Ponty M.** (1964), ‘Cezanne’s Doubt’, in Merleau-Ponty M., *Sense and Non-Sense*. Evanston: Northwestern University Press: 19.
- Mesch, G. S., and Manor, O.** (1998). “Social ties, environmental perception, and local attachment.” *Environment and Behavior*, 30, 227–245.
- Moore, R. L., and Graefe, A. R.** (1994). “Attachments to recreation settings.” *Leisure Sciences*, 16, 17–31.
- Ng, C.** (1998). “Canada as a new place: the immigrant’s experience.” *Journal of Environmental Psychology*, 18, 55–67.
- Nordenstam, B. J.** (1994). *When communities say NIMBY to their LULUS: Factors influencing environmental and social impact perception*, Paper presented at the 14th Annual Meeting of the International Association for Impact Assessment, Quebec, Canada.
- Pallasmaa, J.** (1996). *The Eyes of the Skin: Architecture and the Senses*. London: Academy Group.
- . (2000). “Hapticity and Time”. 1999 RIBA Discourse Lecture. London: EMAP Architecture.
- . (2005), *The eyes of the skin*. Hoboken: Wiley.
- Peachment, Chris** (2001), *Review of Stalker in Time Out Film Guide*, 9th ed., London: Penguin Books.
- Pretty, G. H., Chipuer, H., and Bramston, P.** (2003). “Sense of place amongst adolescents and adults in two rural Australian towns: the discriminating features of place attachment, sense of community and place dependence in relation to place identity.” *Journal of Environmental Psychology*, 23, 273–287.
- Rasmussen, S.** (1959). *Experiencing Architecture*. Cambridge, Mass.: MIT Press.
- Relph, E.** (1976). *Place and placelessness*. London: Pion Limited.
- . (1997). “Sense of place.” P. 205–226 in *Ten geographic ideas that changed the world*, Hanson S. (ed.). New Brunswick: Rutgers University Press.
- Riger, S., and Lavrakas, P. J.** (1981). “Community ties: patterns of attachment and social interaction in urban neighborhoods.” *American Journal of Community Psychology*, 9, 55–66.
- Riley, R. B.** (1992). “Attachment to the ordinary landscape.” In I. Altman, and S. M. Low (Eds.), *Place attachment* (pp. 13–35). New York: Plenum.
- Rouget, G.** (1985). *Music and Trance: A Theory of the Relations between Music and Possession*. Translated by B. Biebuyck. Chicago: University of Chicago Press.
- Salingaros, N. and Masden II, K.** (2008). “Neuroscience, the Natural Environment, and Building Design”, Chapter 5 of *Biophilic Design: The Theory, Science and Practice of Bringing Buildings to Life*, edited by Stephen R. Kellert, Judith Heerwagen, and Martin Mador. New York: John Wiley: 59–83.
- Samuels, C.** (1972). *Encountering Directors*. New York: G.P. Putnam’s Sons: 15–32.

- Scannell, L. and Gifford R.** (2010). "Defining place attachment: A tripartite organizing framework." *Journal of Environmental Psychology* 30: 1-10.
- Sennett, R.** (1994). *Flesh and Stone: The Body And The City In Western Civilization*. New York: Norton.
- Seamon, D.** (1979). *A geography of the lifeworld*. New York: St. Martin's.
- . (2000). "A Way of Seeing People and Place: Phenomenology in Environment-Behavior Research", in S. Wapner, J. Demick, T. Yamamoto, and H Minami (eds.), *Theoretical Perspectives in Environment-Behavior Research* (pp. 157-78). New York: Plenum, 2000.
- Schafer, R. M.** (1977). *The Soundscape: Our Sonic Environment and the Tuning of the World*. New York: Knopf.
- Siza, Á.** (1980). "To Catch a Precise Moment of the Flittering Image in All Its Shades", *A+U* 123 (December 1980): 9.
- Smith, S.** (2007). "The edge of perception: sound in Tarkovsky's *Stalker*", *Soundtrack* Volume 1 Number 1: 3-13.
- Solà-Morales, I.** (1987). "Weak Architecture/Arquitectura Débil", *Quaderns d'Arquitectura i Urbanisme* 175 (October-December 1987); translated in Solà-Morales, Ignasi de, *Differences: Topographies of Contemporary Architecture*, ed. Sarah Whiting, trans. Graham Thompson. Cambridge: MIT Press, 1996.
- . (1992). "Place: Permanence or Production", in *Anywhere*, ed. Cynthia C. Davidson. New York: Rizzoli, 1992; reprinted in *Differences: Topographies of Contemporary Architecture*. Cambridge: MIT Press, 1996: 101-102.
- Stedman, R.** (2002). "Toward a social psychology of place." *Environment and Behavior*, 34, 561-581.
- Stoop, D.** (2000). *Sonic Boom: The Art of Sound*. London: Hayward Gallery.
- Thayer, R.** (1989). *The Biopsychology of Mood and Arousal*. New York: Oxford University Press.
- Thrift, N.** (2007). *Non-Representational Theory*. London: Routledge.
- Truax, B.** (2001). *Acoustic Communication*. London: Ablex.
- Tuan, Y.** (1974). *Topophilia: A study of environmental perception, attitudes, and values*. Englewood Cliffs, N.J: Prentice Hall.
- Tuan, Y. F.** (1977). *Space and place: The perspective of experience*. Minneapolis: University of Minnesota Press.
- . (1980). "Rootedness versus sense of place." *Landscape* 24(1):3-8.
- Twigger-Ross, C. L., and Uzzell, D. L.** (1996). "Place and identity processes." *Journal of Environmental Psychology*, 16, 205-220.
- Uzzell, D., Pol, E., and Badenas, D.** (2002). "Place identification, social cohesion, and environmental sustainability." *Environment and Behavior*, 34, 26-53.
- Varela F. J., Thompson E., and Rosch E.** (1991). *The Embodied Mind: Cognitive Science and Human Experience*. MIT Press.
- Vaske, J. J., and Kobrin, K. C.,** (2001). "Place attachment and environmentally responsible behavior." *Journal of Environmental Education*, 32, 16-21.

- Vattimo, G. and Rovatti, P. A.**, eds. (1983). *Il pensiero debole*. Milano: Feltrinelli.
- Vattimo G.** (1988). "The End of Modernity, The End of the Project?" in Leach N. (ed.), *Rethinking Architecture*. London: Routledge: 143-144.
- Vorkinn, M., and Riese, H.** (2001). "Environmental concern in a local context: the significance of place attachment." *Environment and Behavior*, 33, 249-263.
- Williams, D. R., and Stewart, S. I.** (1998). "Sense of place." *Journal of Forestry*, 98, 18-23.
- Zeki, S.** (1999a), "Art and the Brain," *Journal of Consciousness Studies: Controversies in Science & the Humanities* (June/July 1999), vol. 6, n. 6-7: 77.
- Zeki, S.** (1999b). *Inner Vision: An Exploration of Art and the Brain*. Oxford: Oxford University Press.
- , **S.** (2006). "The Neurology of Ambiguity", <http://www.vislab.ucl.ac.uk/pdf/ambig.pdf>, accessed March 6, 2014.
- Zizek, S.** (1999), "The Thing from Inner Space", <http://www.lacan.com/zizekthing.htm>, accessed June 2014.

A Proposition Toward a Politics of Listening (Geographies and Atmospheres)

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Abstract

This paper explores some of the acoustic landscapes of Sector V New Town/Rajarhat: a quickly growing satellite city and special economic zone in West Bengal, Kolkata. Embedding these in their physical and economic geographies, this paper indicates the potential for incorporating a sonic method into how we approach and make sense of urban and urbanizing spaces. By playing with this tension between the affective and the semiotic, it argues for a perspective that brings the nuanced registers that listening requires to the analytical practices of the social sciences. Through such experimentation sound becomes a means to engage with, and elaborate upon, contemporary social-economic and political landscapes that require polyphonic and dynamic readings. At the same time the paper shows the importance of incorporating geo-economic and political critiques into sound discourses and practices.

Keywords: listening, geopolitics, Rajarhat, special economic zone, affect, atmospheres

1. Introduction

The sounds of a place reveal much of its conditions. By listening to a place we get a sense of the shifting terrains that make up its ecologies; an attention to the collective, spatial-temporal character of sound allows us to apprehend and understand the atmospheres of the places we witness, inhabit and move through (Thibaud 2011). Through careful listening we are able to encounter sound as a way of 'knowing', as an acoustemology.

In this paper I want to introduce a proposition on listening to atmospheres that has relevance for a relational materialist politics. By this I mean a politics that is attuned to the differential and unequal access to resources (such as work, housing, mobility, education, healthcare) and social relations that tend to be experienced and reproduced through processes of contemporary capital. Politics, as I am using it, is less orientated toward rigid systems that see capitalism as a 'thing' in the world, than toward the complex ways that such processes and conditions assemble and decompose; it is an understanding of capital as a way of relating and being affected. Sound is useful to this orientation precisely for its ability to accommodate such complexity, bringing together possibilities for affective and semiotic approaches. It is this specific combination – a capacity for attending to those highly contingent and contagious atmospheres of a place, and to infrastructural, discursive and material systems, that makes sound interesting for geo-politics.

In this paper I want to signal two elements of this proposition: firstly, the importance of sound to the unfolding of atmospheres, secondly, the practice of acoustemology and what it means for a political geography.

2. Listening to affective atmospheres

My research in New Town/Rajarhat took place in 2011 in the frame of Transit Labour, a project exploring the changes in forms of work in China, India and Australia during what has been termed the 'Asian Century' (www.transitlabour.asia). Of dual focus were the logistics and information industries. Along with another sound artist, Sophea Lerner, and architect/geographer, Kate Hepworth, I undertook several days exploring the accelerating development of IT parks in the outskirts of Kolkata. We were working with the (Mahanirban) Calcut-

ta Research Group – a collective of scholar-activists exploring issues of autonomy, human rights, women’s struggles, forced displacement and migration, conflicts and borders. During the course of our fieldwork we became aware of the acutely overlapping elements of these high tech construction and agricultural environments. These were both visible (concrete building sites overtaking fields) and invisible (rhythms of work relative to time, the intersectional usages of space). The atmospheres of the sites we visited articulated these environments in myriad ways, and the specific properties of sound played a significant role in this articulation.

Critical to understanding atmospheres, and the importance of sound to them, are interrelations of space, materiality and affect. Bodies, human and more-than-human, along with objects, architectures and sensory stimulants such as smells, colours, textures, tastes are fundamental for the production and situation of atmospheres. As Ben Anderson writes

atmospheres are generated by bodies – of multiple types – affecting one another as some form of ‘envelopment’ is produced. Affective qualities emanate from the assembling of the human bodies, discursive bodies, non-human bodies, and all the other bodies that make up everyday situations (2009, 80).

The emergence of atmospheres has been linked to the extra-individual, miasmatic intensity of affect. Sound pervades environments and situations in excess of any individual or group. It is affective in so far as it comes prior to cognitive and discursive comprehension, independent of ‘bodily modes’ and indifferent to emotional products or narrations. Sound propagates intensity; it arises out of and through exchange. Working within and across space and infrastructures, sound creates atmospheres through its vibrations, pitches, amplitudes, frequencies, harmonies and disharmonies, which may be conducive to particular embodied states.

Furthermore, the interactions of space with sound are necessarily effected by the vast quantities of objects, corporealities, situations, desires and ideologies that propel them. In this sense, sound both fills space and is filled by the spaces into which it is projected. If, as R. Murray Schafer argues, “the general acoustic environment of a society can be read as an indicator of the social conditions which produce it” (1994, 7) then sounds are correlative to social contexts. We must take this further to suggest that political and economic conditions announce the character of the sonic environment at the same time as sounds iterate and reflect aspects of a political culture. Where and how sound is heard tells us something of how geographies are categorized and allocated, by whom they are populated and in what capacity.

One way to explore the economic and political conditions of contemporary life is by extending what has been called an acoustemological approach – an acoustic knowing derived from the intersections of sound, space and place (Feld 1996, 97). This is relatively common in sound studies, however, more effort must be made to include critical political analysis alongside concerns of the aesthetic, social and cultural.

3. Listening to New Town/ Rajarhat

Acoustic landscapes underscore the highly textured topographies of a space. The sites we visited in New Town were in the process of transition. These were predominantly areas with recent histories of conflict – state-assisted corporate acquisition of land and resources for the development of commercial and housing infrastructure. Established in the 1990's New Town is a planned satellite city directed toward the IT industries, built on cultivable land with water bodies formerly (and still currently) used for subsistence agriculture and animal husbandry. The signs of displacement are apparent; alongside the skeletons of business industrial centres and apartment buildings were farmers tending to small plots of land and moving rubble. What struck me across the different sites I visited were the tight consolidations of rural and urban sounds– which rather than being exceptional in their interruptive patterns, seemed integral to the rhythms of labour and reproduction. The particular assemblages of people and objects in these spaces, the ways that space is interpolated, were audible, oftentimes even more so than they were visible. The enmeshing of rural and urban acoustic landscapes were evocative of the transversals, complicities and antagonisms that such construction processes engender.

The three building sites we encountered were in various stages of development. While from the outside they appeared frenetic and were surrounded by heavily populated roads and shops, they contained vast stillness: long tracts of concrete lying inert, clanging heard only through far off echoes. This stillness was intersected by concentrated nodes of activity apprehended acousmatically: a room full of workers arc welding, children pushing wheelbarrows over stone and dirt mounds, a security guard singing while walking through a half finished car-park, the splashing and thudding as a group of men heaved mud onto the bank of a lake, dozens of cows grazing in the background only a few miles away from corporate buildings.

The mobilities and interstices of noise and silence on re-listening highlights the concatenations of activity and stillness within these processes. To recall Blesser and Salter (2007), we sense dimensions of depth and size in the resonances of rooms, steel and concrete frames, the clatters of heavily populated food stalls, the thick passing of traffic. In the satellite city of Rajarhat one starkly hears the tensions unfolding primitive accumulation into neoliberal urban commerce and the daily rhythm of its progression through the tenors of voiced instructions and conversations, the amplitude and speed of construction, but also the stalling and evacuation of sound. We also hear our own interruptions, the mishandling of recording devices, buzzing from a broken microphone, weather interference, dialogues, and our often failed negotiations to enter property.

4. Conclusion

There are a few points I would like to emphasise here on how an acoustic analysis can be generative for the economic social sciences. The first has to do with the forces of power such a reading illustrates. The sonic elements that constitute the landscape are products of value systems articulated in this case through practices of accumulation by dispossession, re-territorialisation and employment, embedded in capital expansion. By paying attention to the compositions of a place we can hear how power is critical to the everyday unfoldings of geographies. Secondly an acoustemological approach definitively reminds us that the production and reception of knowledge – in this case through listening – is never passive, nor are the technologies used to record, transduce, edit, playback and disseminate it. How knowledge, here sound, is framed and analysed, speaks to dynamics of power, and this is in no way obfuscated. Thirdly, such an approach can help us to experiment with polyphonic epistemological (re)productions in that the landscapes of sound are always shifting and contextual. This helps us to hone a sensibility attenuated to the interpretative and creative activity of knowledge production at the same time as requiring us to be sensitive to the resonances and disjunctions we are exploring. I would argue that an orientation toward the sonic aspects of geo-political and economic processes opens up a means to work with dense materials in ways that do not seek to enclose or reduce their multivalencies, but that can hold in conjunction historical and contemporary tendencies with situational specificities.

To be sure, to usefully employ methods of acoustemology for listening to atmospheres we need to understand them in the same way as we do any empirical device – as infused with conditions and limitations that require hesitation and questions rather than definitive assertion. If we are to approach sound as a way of knowing we need to reflect on what it reveals about the stakes of our hearing. We have to ask: what does it mean to listen, to be a listener, and to produce sound as knowledge? How do we recognise the moment of recording for what it is, one moment in a world of many, affected by the technologies of digitisation, interpretation, editing? And if we acknowledge this, how can we discover and unravel the threads of what we are hearing while we translate them? Attention to the soundings of atmospheres can contribute to a practice of research that is finer in its reading. This is a useful perspective to take if we wish to engage the relational and material political elements that contribute to these atmospheres, and the differential economies of sound that in part compose them.

REFERENCES

Anderson, Ben. 2009. "Affective atmospheres".

Emotion, Space and Society 2(2): 77–81.

Blesser, Barry and Salter, Linda Ruth. 2007.

Spaces speak, are you listening? Experiencing aural architecture. Cambridge: The MIT Press.

Feld, Steven and Basso, Keith H. eds. 1996. *Senses*

of Place. Santa Fe: New Mexico: School of American Research Press.

Schafer, Raymond Murray. 1994. *The Sound-*

scape: Our Sonic Environment and the Tuning of the World. Rochester: Destiny Books.

Thibaud, Jean Paul. 2011. "The sensory fabric of

urban ambiances". *Senses and Society* 6(2): 203–215.

Toward a Civically Engaged Sound Studies: ReSounding Binghamton

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Abstract

This paper explores “ReSounding Binghamton,” a civic engagement effort designed to move my sound studies work from theory to methodology to praxis, particularly focusing on the production of social difference via listening and how differential listening practices creates fractured and/or parallel experiences of allegedly shared urban spaces. I want to enable my students to mobilize sound studies not just as an analytic filter to help them understand the world, but as a method allowing meaningful engagement with it. Working with local residents and using asset-based theories of civic engagement, my students developed projects that sought to *re-sound* the city of Binghamton, enhancing existing forms of communication, amplifying hidden sounds and histories, and creating new sounds to *resound* throughout Binghamton’s future.

Keywords: Civic Engagement, Social Difference, Listening, soundwalk, methodology

I want to enable my students to mobilize sound studies not just as an analytic filter to help them understand the world, but as a method enabling more meaningful engagement with it. This essay explores “ReSounding Binghamton,” the first phase of my pedagogical efforts to move my sound studies research from theory to methodology to praxis in the classroom and in my larger community. In particular, I am working to intervene in the production of social difference via listening and the process by which differential listening practices create fractured and/or parallel experiences of allegedly shared urban spaces.

Inspired by ongoing efforts such as ReBold Binghamton—a local visual arts group—and two collaborative city planning efforts Blueprint Binghamton and the Binghamton Neighborhood Project, I have worked to articulate sound studies methods with long-term community engagement interventions.¹ My first step was to task the upper-level undergraduate students in my Spring 2014 introductory sound studies course “How We Listen” with a collaborative final designing community engagement projects that identified and addressed an issue in Binghamton, the de-industrialized town in upstate New York housing our university. My students’ proposals ranged from rain-activated sound art, to historical sound walks that layered archival sounds with current perceptions, and a “noise month” sound-collection and remix project designed to challenge entrenched attitudes. They then presented the projects via a public poster session open to faculty members, administrators, community representatives, and peers.

Working with local residents and using asset-based theories of civic engagement, the students’ projects sought to *re-sound* Binghamton, enhancing existing forms of communication, amplifying hidden sounds and histories, and creating new sounds to *resound* throughout Binghamton’s future. While the students initially set out to “fix” Binghamton—bringing year-round residents into the world as their largely 18-21 selves heard it—the majority opened their ears to alternative understandings that left them questioning the exclusivity of their *own* listening practices. Students realized that while they may have inhabited Binghamton for the past few years, they hadn’t been perceptually living in the same town as year-round residents, and, conversely, that the locals’ tendencies to hear students as privileged nuisances had historical and structural roots. Working on “ReSounding Binghamton” with my stu-

1. ReBold Binghamton is a student organized group that seeks “to bridge the gap between Binghamton University and the Binghamton community through the collaborative power of public art.” <<http://reboldbinghamton.com>>. Blueprint Binghamton is a citizen-driven city planning effort; full text is available at <<http://blueprintbinghamton.com>>. The Binghamton Neighborhood Project, directed by David Sloan Wilson, is a research-driven “collaboration between Binghamton University and community partners to understand and improve the quality of life in our region”<<http://bnp.binghamton.edu>>.

dents convinced me that sound studies methodologies can spark the kind of self-realization that leads to civically engaged citizens.

The historical, theoretical, and methodological groundwork that scholars of sound have laid in recent decades toward heightened social and political understandings of sound—fantastic in volume, quality, AND reach—have equipped sound studies scholars with powerful critical tools with which to build a more directly civically engaged sound studies, one as much interested in intervention and prevention as continued reclamation and recovery. For example, sound artists and acoustic ecologists have been at the forefront of what might be called an activist sound studies. The historical, theoretical, and methodological groundwork that scholars of sound have laid in recent decades toward heightened social and political understandings of sound—fantastic in volume, quality, AND reach—have equipped sound studies scholars with powerful critical tools with which to build a more directly civically engaged sound studies, one as much interested in intervention and prevention as continued reclamation and recovery. For example, sound artists and acoustic ecologists have been at the forefront of what might be called an activist sound studies. The work of Hildegard Westermark (2007), Barry Truax (2001) and R. Murray Schafer in the World Soundscape Project (World Sound Scape 2014), for example, has been foundational to sound studies latest fluorescence. Inspired by their work, recent pieces such as Maile Colbert’s “The Sound of Disaster: Our Relationship to Sound in Danger”—published first in *Sounding Out!* (Colbert 2012) and then expanded in the 2014 *Cochlear Poetics* volume of *Mono* published by the University of Porto—interrogate how sonification can help us understand climate change by citing Andrea Polli’s *Sonic Antarctica* (Polli 2008)—the album she produced during her residency with the National Science Foundation that documents iceberg breakage caused by the Tohoku tsunami—and Mark Behren’s field recordings of Norwegian glacier melting as foundational models among others by Bernie Krause and Peter Cusack. However, while installations and field recordings certainly cue important interventions —often with an ear toward a global impact—they may not, on their own, perform cultural work as sustained, multi-generational, or locally enmeshed as civic engagement projects can. What happens when we understand recording and provocative installations as methodologies rather than end products, as actions rather than as objects?

However, while installations and field recordings certainly cue important interventions —often with an ear toward a global impact—they may not, on their own, perform cultural work as sustained, multi-generational, or locally enmeshed as civic engagement projects can. What happens when we understand recording and provocative installations as methodologies as much as an end products, as actions rather than as objects?

Scholar-artists such as Linda O’Keeffe have begun to fuse audio artistic praxis with the more social science-oriented field of urban studies, and her arresting presentation at the 2013 European Sound Studies Association conference in Berlin, “Methodologies for Exploring the Urban Soundscape with Teenagers,” revived my belief in sound studies’ ability to disrupt present perceptual frameworks and more directly shape our perceptual and spatial futures. O’Keeffe’s community project, highlighted in “(Sound)Walking Through Smithfield Square in Dublin” (2014) set out to solve an audio-spatial problem at the very heart of the city: why did planners’ efforts to “rehabilitate” the landmark Smithfield Square—which had been a public market for hundreds of years—bring about its demise as a thriving public space rather than its rejuvenation? Equipping local students with recorders, O’Keeffe documented the students’ understanding of the space as “silent,” even though it was far from absent of sound. She noted the students’ use of “silence” as distinct from dominant notions of retail “quiet” sought by new middleclass shoppers in the Square, rather it stood for their own silencing, “an absence of activities, life, general sounds of community, consumption and production.” O’Keeffe noted local teenagers did not feel welcomed by the newly wide-open and hushed square; the reverberation of their sounds as they grouped together to chat made them feel uncomfortable and surveilled—so it remained a space of egress for students rather than a gathering place.

Importantly, O’Keeffe’s conclusion moved beyond self-awareness to political praxis; she presented her students’ self-documentation to Dublin city planners, intervening in Smithfield’s projected future and attempting to prevent similar destruction of other thriving city soundscapes unaligned with middle-class sensory orientations. O’Keeffe’s work sparked me to think of listening’s potential as advocacy and agency, as well as the increasing importance of reaching beyond the identification of diverse listening habits toward teaching people to understand the partiality and specificity of their sonic experience in combination with the impact listening—and the power dynamics it is enmeshed in—has on the lives, moods, and experiences of themselves and others. Listening habits, assumptions, and interpretations do not just shape individual thoughts and feelings, but also one’s spatial experience and sense of belonging to (or exclusion from) larger communities, both actual and imagined. Learning to understand one’s auditory experience and communicate it in relation to other people enables new forms of civic engagement that challenge oppression at the micro-level of the senses and seeks equitable experiences of shared space to counter the isolating exclusion compelled by many urban soundscapes.

O’Keeffe’s project also made me rethink how space-sound is shaped through social issues such as class inequity, particularly in my community of Binghamton, a small town of ap-

proximately 54,000 currently facing profound economic challenges. Binghamton's industrial history dates back to the mid-nineteenth century and it weathered several booms and busts, with the rise and fall of several cigar factories, the Endicott-Johnson shoe factory, and its most famous company, International Business Machines in 1911. Most recently, it has suffered an extended bust. The end of the Cold War in the early 1990s devastated the region's economy—then primarily based in defense—and the economic downturn of the early-1990s provided a knock-out punch, severely impacting the region in ways it has yet to recover from: the behemoth local IBM relocated to North Carolina, manufacturing jobs permanently decreased by 64%, and the population shrank almost by half. Recent climate-change induced disasters have also left their mark; massive floods in 2005 and 2011—on a geographic footprint historically flooding only 200-500 years—displaced thousands of low-income residents, destroyed many businesses, and collectively caused close to 2 billion dollars in damage (Kilganon 2011). The global recession of 2008 left over 30% of Binghamton's residents below the poverty line, including 40% of all children under 18. (gobroomecountry.org 2013).

The campus, 16,000 undergraduate and graduate students strong, often seems remote from the Binghamton I have just described. Only 6% of Binghamton University students are drawn from the local area, Broome County. There are actually more out of state students (7%) and foreign students at BU (8.6 percent) than local residents (Princeton Review 2014). The vast majority (60%) of BU's students hail from the New York City area, a site of historical tension with the rest of the state; political groups such as "Unshackle Upstate," which often posts billboards in Binghamton, regularly advocate for secession, arguing that New York City's "different" needs bring the rest of the state down. In this context, "different" arises as racial code for immigrants, people of color, and/or poorer residents. Indeed, Binghamton's student body is more racially diverse than Binghamton, although not as much as residents commonly perceive (although its surrounding area, Vestal, is 88% white (Census 2010) and—even though the campus serves many first-generation college students, students with large financial aid packages, and students employed while matriculating, their class privilege is amplified by Binghamton's intense poverty. These longterm structural fissures have led to tensions between the university students—problematically pegged by Binghamtonians as wealthy outsiders and frequently racially targeted, as the campus is far more diverse than the surrounding community—and full-time residents, whom the majority of students call "Townies" and treat as the backdrop to their "college experience" at best and as a lower life forms at worst. The tense affect of the divide hangs palpably in the air over town and on campus, even more so now that Binghamton proper is economically dependent on the campus for its survival—Binghamton University is now the city's third largest employer.

O’Keeffe’s exploration of differently-classed residents’ divergent perceptions of Smithfield Square prompted me to consider that, while students and so-called “Townies” may inhabit the same physical spaces in Binghamton—they may live next to each other, encounter each other at Walmart, and drink pitchers side by side on State Street—they are not in fact *living* the same place, and they are experiencing, interpreting, and *acting on* the same auditory information in drastically different ways. As Rachel Dwyer remarks in her “Editorial: A Sonic Geography: Rethinking Auditory Spatial Practices” (2012), the map can no longer confine itself to the description of a static territory, as it is called to account for the multiplicity and general mutability of contemporary spaces.” Binghamton, actually Binghamtons—sounds differently to each group, both in terms of the impressions and interpretations of various auditory phenomena, but also the syntax of the soundscape (the order of importance of individual sounds at any given moment). Embodied aural perceptions shaped by class, race, age, and differing regional experience may in fact drive many of the “town and gown” conflicts—noise complaints most obviously—and exacerbate others, particularly mutually distorted perceptions that students bring Binghamton down and that residents are, as one student cruelly stated in the campus newspaper *Binghamton Pipedream* on May 8, 2012, “creatures” from “an endless horror movie.” Figuring out how to *re-sound* Binghamton—teaching people that perceptual differences exist and helping them to communicate their experience and understand the impact they have on the lives, moods, and experiences of themselves and others—can help Binghamton *resound*—easing some of the town’s deep tension while most importantly, provoking recognition of the larger structural challenges faced by contemporary residents, both temporary and year-round.

So how to address this divide, both its everyday affect and its historical roots? And how to use sound studies to do it? Honestly, I had no idea. I did know I did not want to impose a community project on my students that did not have their buy in and creative energy behind it. Ultimately, I decided to drop the individual sound studies research paper and presentation I had previously assigned in favor of a group-sourcing project that students to design a sound-studies based community project. I asked my 41 undergraduates to design a project together, troubleshoot their ideas with community members and stakeholders, and present poster pitches at an open-house presentation that would take place during our final exam period. The became the first phase of a longer-term project, with the most workable idea serving as the basis for the next iteration of my course in Fall 2014, which would move closer

toward an eventual full-blown service learning experience. However, the assignment proved to be pedagogically valuable in its own right, not just as a prelude to future work.²

Rather than merely switching out the research paper for a project, I re-arranged my entire course to scaffold the proposal assignment, providing students with the critical thinking skills to imagine a project of this type. We began with theoretical and methodological materials that would introduce them to sound studies—none of my students were familiar with the field and its assumptions—and ground their thinking in the idea that listening is a complex sociocultural, political, and critical practice. While we read and discussed multitude of pieces on listening, the students reported four scholars as especially inspirational to the project: Yvon Bonenfant’s theorization of “queer listening” (Bonenfant 2010) as a listening out (rather than the more normative taking in), Regina Bradley’s work on race and listening in American courtrooms that focused on how white lawyers discredit witnesses speaking black dialects, Maile Costa Colbert’s artistic imagining of a “wayback machine” (Colbert 2013) and Emily Thompson’s work on noise and time/space/place, both in *Soundscapes of Modernity* (2004) and in her new interactive “Roaring Twenties” (Thompson 2013) project on the online journal *Vectors*. For example, student Daniel Santos, whose group designed the “Binghamton Historical Soundwalk Project” I selected to continue in Fall 2014, reported in a voluntary survey:

The relationship between sound and time was very useful to our project; we understood the concept that no city ever sounds the same after a long period of time, and we sought to take advantage of this fact. Through our residents’ stories, we learned that Binghamton was once booming with sound from numerous, lucrative industries. Walking into a factory brought an industrial cacophony: card punchers thudded as steel was pounded against steel. However, today, a walk into these factories results in an eerie silence. We wanted our soundwalk participants to realize and become affected by this lack of and difference in sound, and raise pertinent questions: what happened to these sounds? Why is there such a large difference in sound levels? Where do I place myself within this soundscape?

2. I have created the ReSounding Binghamton website to update students and community participants on the ongoing project, last modified December 2014. <<https://binghamtonsoundwalkproject.wordpress.com>>.

In addition to providing students a firm theoretical and methodological foundation, I worked with Binghamton's Center for Civic Engagement—a highly successful model program founded in 2010—and in particular with Assistant Director Christie Zwahlen, to equip students with basic-but-solid knowledge that would enable a new understanding of community work. We asked them to read selections from “Building Communities From the Inside Out: A Path Toward Finding and Mobilizing a Community's Assets” John Kretzman and John McKnight (1993) and *Service Learning in Higher Education* by Barbara Jacoby and associates (1993). These texts brought home two major principles to students: 1) that service learning has a pedagogical component; it is important to a project's success that students learn something through their work rather than merely donating time or skills, 2) Community engagement works best when based on identifying and mobilizing a community's assets rather than implementing an external project addressing perceived deficits. Again from Santos:

Whenever I think of community service, I usually think of something that is done by an outside party for a group of people in need; there is a certain level of separation. I thought that with this project, we would find the problem ourselves and solve it ourselves. However, I soon found out that this was impossible. In order to complete this project, we would need the help of community members, which would allow us to take advantage of the residents' unique strengths. I've learned that community service doesn't come from the outside; community service works best when it comes from within. Community service is most effective when those impacted are actively involved, rather than just being recipients of a “service.”

The two key concepts of civic engagement meshed especially well with the students' evolving understanding of listening as multifaceted, political, and deeply impacted by temporal and spatial contexts, because it required the students to engage directly with community members and learn how to listen to their voices, histories, and needs.

For both civic engagement and sound studies, Christie and I introduced students to the various methods used to solve problems and answer our most important questions. For civic engagement, Christie focused on the asset map, which forced students to think of the surrounding community in terms of its strengths rather than the weaknesses they could already readily list. This exercise not only flipped their perspective a bit, but helped them imagine and hone their project by identifying community stakeholders who would be receptive to their inquiries. In terms of sound studies, I introduced them to a multiplicity of methods

through readings, experiential activities, and process writing, in particular sound provocations and sound walks that students found them quite important to their conception of the final project. According to student Hannah Lundeen's post-project survey, the sound walks she performed proved especially fruitful:

Initially, solving a community issue through sound seemed next to impossible. It wasn't until sitting down and thinking about the sound studies methods of soundwalks that it became clear. I liked soundwalks because they are a way to engage anyone in sound studies. They are an easy concept to explain to people who may not have thought much about their soundscape previously. They are an active and fun way to engage all community members in listening well.

As Lundeen's experience shows, interweaving these methods formed the foundation of their community projects, enabling their inquiries regarding understanding differences in listening, how to enable people to recognize and discuss aspects of their listening, and to provoke some kind of impactful social change.

The final third of the semester was devoted to working on the final project. Following an initial period of research and discussion, students narrowed down their project ideas, identified and met in person with potential community partners—ReBold Binghamton, Binghamton's Center for Technology & Innovation,³ the Parks Department and several City Council members were especially helpful—and put together their proposals, emphasizing their new understandings of listening and its relationship to space and place via community mobilization. Students prepared a 7-minute gloss of their projects for public presentation that

- identified an issue (supported by research)
- described how project addressed the issue
- presented community asset map as a foundation
- shared list of potential community partners
- discussed sound studies methodologies supporting the project
- estimated benchmarks for the project's completion
- projected the project's long-term outcomes
- prepared personal reflections on the process.

3. Binghamton's Center for Technology and Innovation is a non-profit organization whose "mission is to document and present in context the inventions and industrial innovations of New York's Southern Tier." Accessed 9 December 2014 from <http://www.ctandi.org/>

Here is a sampling from the rich palette of student project pitches:

- **Restoring the Pride:** A public art initiative building rain-activated sound sculptures.
- **BUCS: Binghamton Unites Community with Sound:** A public group karaoke project.
- **Safe and Sound:** A “kiosk walk” of 10-interactive electronic sound art pieces that increase downtown destination traffic by day and operate as a “blue light” safety system by night.
- **Blues on the Bridge Junior:** A children’s music stage at one of Binghamton’s most popular yearly events.
- **Happy Hour:** A weekly campus radio show designed to combat seasonal depression.
- **Listen Up!: Sound Month Binghamton:** An annual themed digital “sound collection month” in March with accompanying “sounds of Binghamton” remix project. This project fosters community habituation to “Others” sounds while also tracking long-term changes in the soundscape and in residents’ ideas of noise.
- **Sound Walk Through Binghamton:** Historical soundwalks through several areas in Binghamton, where archival sounds of the past (some compiled from recordings, some performed) are placed in continuity and contrast with contemporary soundscapes.

While we have enjoyed observing the students’ personal and intellectual growth, Zwahlen and I understand that this iteration of the project does not constitute civic engagement *as of yet*. The second and third phases of “ReSounding Binghamton” will seek community partners for the research and implementation of the “Sound Walk Through Binghamton” project. At this first stage, the students raised key questions toward sustaining such efforts long term: how to work with—and *equitably* solicit contributions from—community members rather than organize classroom-first? How to increase community involvement on a campus that is a foreboding maze at best—and how to increase student traffic in the many sites not reached by Binghamton’s limited public transportation? How to deal with student turnover in a long-term project? How to ensure that a soundwalk will function critically and multivalently and not just as a flattened tourist attraction or city public relations campaign? Most importantly, how to share sound studies epistemology beyond the classroom, creating listening experiences that not only take social differences and inequities into account but potentially re-script them? As we move forward with long-term development, we will undoubtedly encounter more questions.

However, even at ReSounding Binghamton’s earliest stages, I know that guiding my students to integrate sound studies methodologies with asset-based service learning provided them with a transformative experience concerning the powerful resonance of applied

knowledge and civic engagement. It created meaningful connections between them and a local community suddenly made significantly larger through listening. For my students, listening became more than a metaphor or an individualized act of attention, rather they began to understand its role as a material conduit of location, outreach, and connection. As a student shared in my anonymous teaching evaluations: “This class was different, but in a very good way. It has been so involved with the human experience, more so than with other classes.” In the middle of the so-called “humanities crisis,” this response points to the potential power of a civically engaged sound studies, a branch of the field combining research with praxis to reveal the role of listening in the building, maintenance, and daily experiences of diverse communities in the city spaces they mutually inhabit but often do not fully and equitably share.

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REFERENCES

- Yvon Bonenfant**, “Queer Listening to Queer Vocal Timbres,” *Performance Research* 15:3 (2011) 74-80.
- Regina Bradley**, 1 July 2013, “To Sir, With Ratchetty Love: Listening to the (Dis)Respectability Politics of Rachel Jeantel,” *Sounding Out!* 9 December 2014, <http://soundstudiesblog.com/2013/07/01/disrespectability-politics-of-rachel-jeantel/>
- Maile Colbert**, 2012. “The Sound of Disaster: Our Relationship to Sound in Danger” *SoundingOut!* 9 December 2014, <http://soundstudiesblog.com/2012/07/18/listening-to-disaster-our-relationship-to-sound-in-danger/>
- Maile Colbert**, 8 July 2013. “The way Back Sound Machine: Sound Through Time, Space, and Place.” *SoundingOut!* 9 December 2014, <http://soundstudiesblog.com/2013/07/08/wayback-sound-machine-sound-through-time-space-and-place/>

- Rachel Dwyer.** 2012. "Editorial: A Sonic Geography: Rethinking Auditory Spatial Practices." *Interference: A Journal of Audio Culture* 9 December 2014, <http://www.interference-journal.com/articles/a-sonic-geography/editorial-issue-2/>
- Factfinder.census.gov.** "Vestal, town, Broome County, NY" 9 December 2014, <http://factfinder2.census.gov/faces/table-services/jsf/pages/productview.xhtml?src=CF>
- Gobroomecounty.org.** 2013. "Broome County Community Health Assessment 2010-2013," 9 December 2014, <http://www.gobroomecounty.com/files/hd/pdfs/BC-CHA2010-2013Sec1AppB.pdf/>
- Barbara Jacoby and Associates,** *Service Learning in Higher Education* (Jossey-Bass, 1996).
- Corey Killganon,** 9 September 2011, "Flooding Persists in Southern Tier of New York," *New York Times*, 9 December 2014, <http://www.nytimes.com/2011/09/10/nyregion/ny-region-in-triage-mode-as-flooding-persists.html/>
- John P. Kretzman and John L. McKnight,** *Building Communities from the Inside Out: A Path Toward Finding and Mobilizing a Community's Assets* (ACTA Publications, 1993).
- Linda O'Keeffe,** 10 February 2014, "(Sound) Walking Through Smithfield Square in Dublin." *SoundingOut!* 9 December 2014, <http://soundstudiesblog.com/2014/02/10/sound-walking-through-smithfield-square-in-dublin/>
- Linda O'Keeffe,** 4-6 October 2013, "Methodologies for exploring the urban soundscape with teenagers" paper presented at the meeting of the European Sound Studies conference. Berlin, Germany.
- Polli, Andrea.** 2008. *Sonic Antarctica*. CD on Gruenrecorder.
- R. Murray Schafer,** 1977, *The Soundscape Or the Tuning of the World* (New York: Destiny Books).
- "State University of New York at Binghamton," 2014, *Princeton Review*, 9 December 2014. <http://www.princetonreview.com/State-UniversityofNewYorkatBinghamton.aspx/>
- Emily Thompson,** 2002, "Noise and Modern Culture, 1900-1933," *The Soundscape of Modernity: Architectural Acoustics and the Culture of Listening in America, 1900-1933* (Cambridge: M.I.T. Press), 115-168.
- Emily Thompson,** Fall 2013, "The Roaring Twenties" *Vectors* 9 December 2014, <http://vectors.usc.edu/projects/index.php?project=98>
- Barry Truax.** 1984. *Acoustic Communication* (Norwood, New Jersey: Ablex).
- Hildegard Westerkamp,** 2007, "Soundwalking" *Autumn Leaves, Sound and the Environment in Artistic Practice*, Angus Carlyle ed. (Paris: Double Entendre, 2007): 49.
- WorldSoundScape.** 2014. Last modified December 2014. <https://www.globalsoundscapes.org>

Promoting Awareness for the Acoustic Phenomenon: a Survey of Pedagogical Practices and Research Projects Developed at EA/CITAR

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Abstract

At EA/CITAR (School of Arts/Research Centre in Science and Technology of the Arts), sound has always assumed a fundamental role, both in academic research and curricular offer, featuring a Master Program in Sound Design and a Doctoral Program Specialization in Computer Music. This paper presents an overview of some recent artistic/research projects undertaken by students and researchers at this institution, which stimulate the user/listener awareness for the acoustic phenomenon. Furthermore, we describe three pedagogical practices, stemming from Soundscape and Film Sound studies, which aim at training students to avoid the devious influence of sight on the assessment of soundscapes.

Keywords: Acoustic Ecology, Audiogames, Soundscapes, Awareness, Pedagogy, Sound, Film Sound, Sound Design

1. Introduction

The acoustic phenomenon plays a fundamental role in the lives of most species. From fish to humans, insects to large-scale animals, sound (and its propagation) accounts for an important share of the communication processes occurring both at the interpersonal level and between individuals and the environment. However, in the saturated soundscapes of modern urban centers, the signal-to-noise-ratio has decreased to a point where meaningful sonic exchanges between the environment and citizens have become scarce, limited in distance or painfully loud. In order to change this situation is important to regain control and sense of identity over urban soundscapes, which, in our opinion, starts by creating awareness for the acoustic phenomenon among citizens.

The research projects described in this text all share the same underlying goal of inciting the listener to gain a deeper conscience about the auditory phenomena. For the sake of clearness, we have opted for grouping the projects under the following categories: 1) Audiogames, 2) Tools and 3) Soundscape Sensing Applications. A brief outline of each of the projects is presented next, followed by the description of the pedagogical practices.

2. Audiogames

An easy way to explain to a layman the concept of audiogame is to describe it as a videogame without image. Despite the over simplification and incorrect approach, the image of someone playing on a game device making sole use of auditory stimuli represents a faithful picture of what most audiogames look (and sound) like. For our present endeavor, audiogames are considered a privileged resource as they represent excellent examples of what (Pausch 2008) denominated by “head-fake”: an indirect learning method “that teaches people things they don’t realize they’re learning until well into the process”.

In this section we present two examples of audiogames, both designed and developed at UCP: Murky Shooting (Joao Cordeiro 2011; Joao Cordeiro, Baltazar, and Barbosa 2012) and Sound of Horror(Gonçaves 2014).

2.1. Murky Shooting

Murky Shooting is a first-person shooter game, a sub-genre of shooter games characterized by displaying a view from the player perspective. In the case of audiogames, that is accomplished by providing the user with an auditory perspective of the character they control in the game. It was initially developed a desktop version for OSX in Max/MSP version 5 and later a mobile version for iOS programmed in C++/openFrameworks. The audio output is to be listened with headphones in order to increase immersion and avoid contamination by external sounds. The initial version used HRTF¹ for sound specialization in order to have an improved matching between the auditory perception and the real experience. The objective of the game is to hit a target as many times as possible over a time limit. A noisy crow perched on a high voltage cable represents the target. Its position on the cable changes over time and is made accessible to the player through the crow's caw (sample sound), which changes its panoramic according to the crow's horizontal position on the cable. Different game levels are set by varying the amount of time the crow remains still in one place: decreasing the time increases the difficulty. On the entry level the crow remains still during five seconds before updating its position, decreasing one second per each level. Player has access to unlimited munitions, yet it has to recharge his/her weapon every eight shots. This control feature was included to dissuade players of indiscriminate shooting and is implemented differently in the desktop version and mobile version.

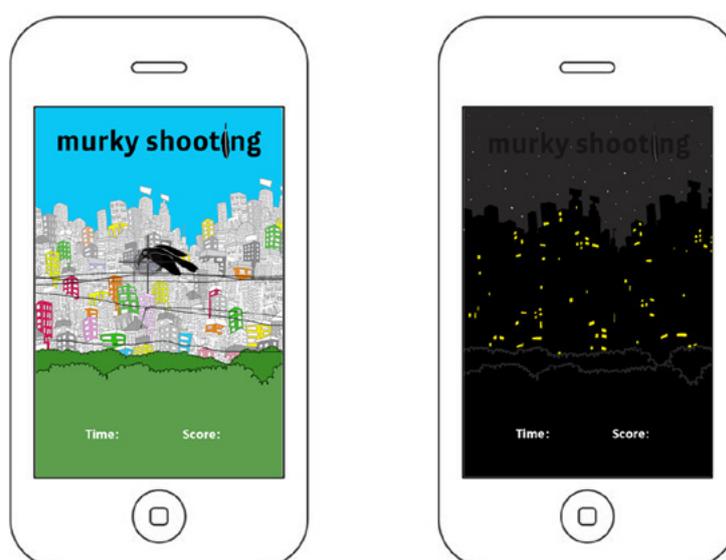


Figure 1. Murky Shooting GUI: daylight mode (on the left) and night mode (on the right).

1. HRTF – Head Related Transfer Functions.

In order to aid the player during the hunting task there are auxiliary sound guides that indicate the crosshairs position. These guides are blip-like sounds (synthesized sound) that change pitch and frequency of occurrence consistently with the distance to the target. Moving away from the crow's position lowers the pitch and decreases the number of blips. When the crosshairs are on sight with the crow, a burst of noise is triggered. Player has then the opportunity to hit the crow and increment his/her score. A background sound composed of a quiet city ambient was added to the game in order to set the context for the action. A celebration sound plays every time the player hits the crow and a rifle sound is heard on every shot.

The game has two distinct modes: 1) in "daylight mode" the player can see the crow and the crosshairs moving on the screen. This mode exists for practicing purposes, allowing the users to understand the match between sound and game action. 2) In "night mode" the player does not have any visual feedback.

Both versions of the game (mobile and desktop) were systematically tested. The most important conclusions were that the game could be learnt, users started to show a steady increase in the score after two gameplays. Nonetheless, for the sake of this paper, the results of qualitative analyses based on informal enquiries with the players disclosed rather interesting insights. In general the enquiries were surprised that such a visual game paradigm could be successfully played using basic and limited audio cues.

2.2. Sound of Horror

The Sound of Horror is an immersive and interactive installation, consisting of a single player first-person shooter survival horror audiogame. The user is placed in a confined space in the complete absence of light, in which he or she is subject to the attack of simulated monstrous creatures, manifested solely through sound, in 360 degrees.

The purpose of the game is the user's self-defense, for which he or she has access to a weapon, similar to a real shotgun that he can use to neutralize the attackers. In order to do so, the user has to successfully pinpoint every target in space.

There are several challenges placed upon the user: auditory acuity to locate the monsters, physical agility to point the gun at the creatures, swiftness to pull the trigger and control of the stress and anxiety before the increasing aggressiveness of the monster, which translates into the player's death if unsuccessful. The user is put under psychological pressure that increases throughout the game. The lack of accuracy or quickness will cause the attackers to get closer and closer to the point of virtually reaching the player physically before annihilating him. This impending panic contributes for the overall horror atmosphere, catalyzed by the darkness, while also acting as a stimulus to overcome the hurdles.

The primary interaction with the user is based on the sound of the game, the only feedback resulting from his or her actions. It is up to him or her to react to it by using the weapon. The player becomes aware of the unsuccessful shots through the creeping in of the monsters, which sound like they gradually get physically closer and become more violent. On the other hand, if the player hits the creatures, they will scream in agony. The game is structured into several levels, in which a new wave of monsters spawns, more agile and clever than before, forcing the player to adapt.

A 16.1 speaker system with discrete channels, setup in a circular setting with a diameter of 4.6 meters was used in the installation. For the real-time spatial synthesis of the dynamic sound sources, the Ambisonics technique was used (see (Gerzon 1985) for an insight on Ambisonics technology). The Nintendo Wii Remote, along with the Vicon Motion Capture system allowed for the tracking of the several actions for the weapon: point, shoot and reload. The programming of the game was accomplished using Max/MSP version 5.



Figure 2. Sound of Horror game set.

The presentation of The Sound of Horror took place in the Motion Capture Laboratory, in the School of Arts of the Portuguese Catholic University in May 2013. The game was played by a total of 25 people. A slight change on the game's protocol was made, by introducing a very dim lighting, so that the public could observe the player's movements. The result was surprising. The immersion of the player, as it was conceptualized, leaked out and was shared with all of the audience. An interesting case was a child that felt this so strongly that be-

came frightened and refused, at first, to play. General comments from users regarded the “intensity of the game”, “accuracy of the weapon and positioning of the targets” and “feeling of improvement along the gameplay over different levels”. No systematic gamability testing was accomplished.

3. Tools

The assessment of sound qualities is a common practice across different professional and scientific areas. Acousticians, Sound Engineers, Environmental Attorneys, Musical Instrument Builders are some of the groups of people that have to deal with measuring and analyzing sound. Typically, the sound assessment is made through a combination of objective and subjective analysis. In this section we present a framework created for soundscape assessment in laboratory, which is a combination of both objective and subjective analysis, expanded with an active participation of the test subject.

3.1. MMucS

MMucS - Massive Multichannel Speaker Setup (Joao Cordeiro, Barbosa, and Santos 2013), is a soundscape assessment tool that privileges aspects of Ecological Validity of auditory stimuli and Representative Design during listening tests. It is comprised of a room featuring a multichannel surround system of 16 discrete speakers (©Genelec 6010A plus a subwoofer), a custom made software for sound spatialization, video canvas and projector, a SPL meter, a midi controller and a set of audiovisual samples featuring HD video and 6 channels audio recordings. The room area is approximately 75m², with stonewalls, concrete floors and minor acoustic treatment (black flannel curtain converging the surrounding walls). The goal of this system is to accomplish listening tests in laboratory, assessing real or artificial soundscapes, in a way that the test subject’s experience in the laboratory matches the experience in a real scenario. This is accomplished in different levels: first, the original soundscape is recorded with a microphone array technique optimized for recording sound *atmospheres*² and diffused through a matching multichannel speaker setup; second, there’s a video canvas

2. IRT Cross (alsoknownbyatmoscross).

displaying real-scale video in front of the test subject, offering him or her the same visual perspective of the real scenario; third, the test subject is in contact with some furniture and objects from the real place.

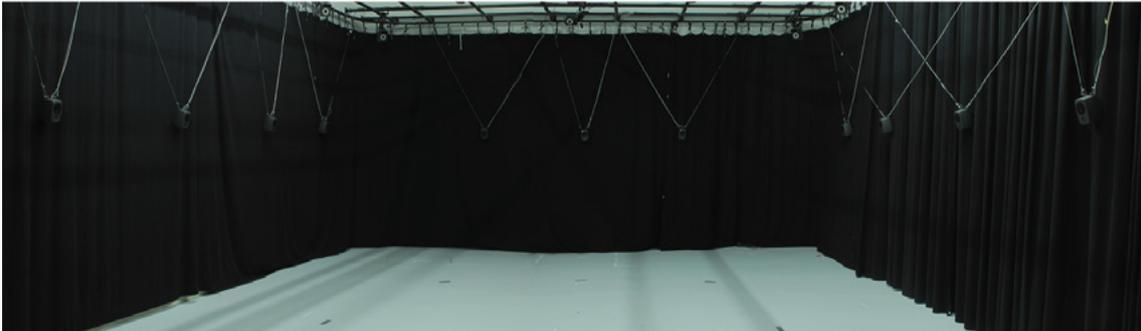


Figure 3. MMucS listening room featuring sixteen speakers(photography by Adrian Santos).

After setting up this test framework, we compared it against traditional techniques based on binaural recording and headphones listening. The results shown us that using a surround sound system that is headphone-free gives the test subjects a greater sense of reality even if some sound features are compromised (sound quality, fidelity).

Additionally, we have built a module for soundscape design, featuring four audio tracks, each one dedicated to a single category: dialogs, radio/tv, nature, cafeteria. Each track had four 6-channel surround samples, with a total of 16 samples and 256 possible combinations. The system allowed the user to select one sound for each track/category and modify its volume (a typical audio mixing process). No GUI was used; subjects interacted with the system using a tangible MIDI controller³. The sounds were reproduced using the surround system described before.

3. ©Behringer BCF2000.



Figure 4. MMucS being used during a listening tests (photography by Adrian Santos).

As mentioned before, the system was used and evaluated during a batch of systematic listening tests. The survey not only validated the assessment method as it told us that people agreed that the process of designing the soundscape was a efficient way of promoting awareness for environmental sound.

4. Soundscape Sensing Applications

In this section we describe two systems that have in common a sound-sensing mechanism as part of their core. This sensory characteristic is of high relevance in the interconnected world of sensor networks as it opens new windows of opportunity to understand our environment and routines. The two applications presented next are Hurly-Burly (Joao Cordeiro and Makelberge 2010; João Cordeiro, Barbosa, and Afonso 2013; Joao Cordeiro and Barbosa 2013a; Joao Cordeiro and Barbosa 2013b) - a sound-based social network application - and URB (Gomes and Tudela 2013), a system for automated analysis and storing of an urban soundscape.

4.1. Hurly-Burly

Hurly-Burly is a context-sensing mobile application for the iOS, comprised of three main blocks: soundscape-sensing, information visualization and relational database. It was developed as a research tool to be used in a broader research project about the Soundscape in the context of Mobile Online Social Networking, aiming at determining the extent of its applicability regarding the establishment and/or strengthening of new and existing social links.

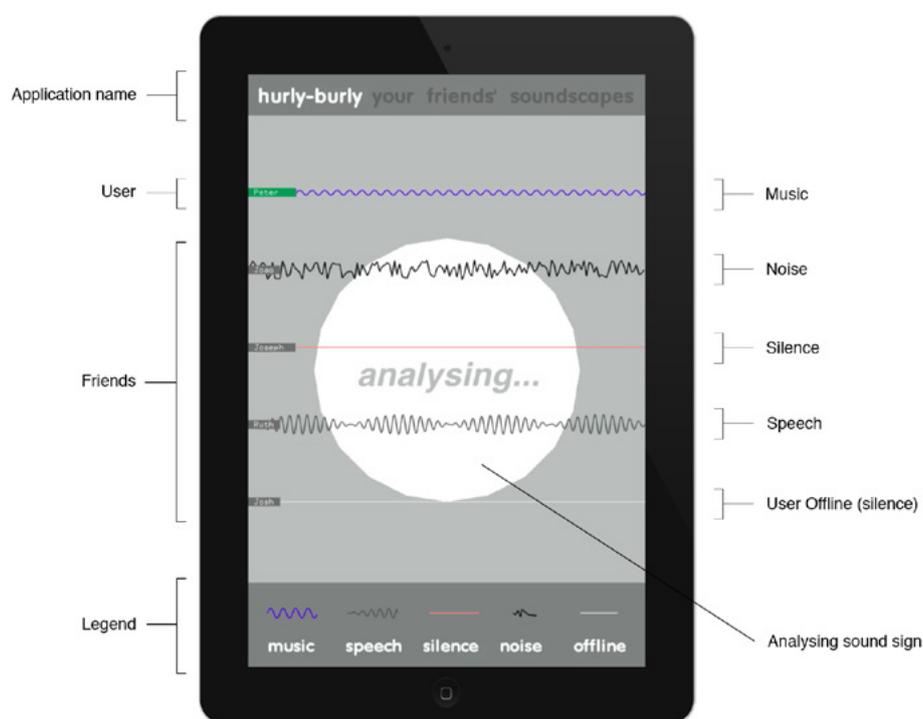


Figure 5. Hurly-Burly GUI for iPad (annotated).

Two main goals guided this prototypical research tool: collecting data regarding users' activity (both sonic and kinetic) and providing users with a real experience using a Sound-Based Social Network, in order to collect informed opinions about this unique type of Social Networking. The application – Hurly-Burly – senses the surrounding Soundscape and analyzes it using machine audition techniques, classifying it according to four categories: speech, music, environmental sounds and silence. A sample of users ran the application, gathering information about their acoustic environment and sharing it within their social network.

Results demonstrated that users, by visualizing long-term records of their acoustic environment, could identify the basic patterns of their quotidian activity and monitor their noise exposure, creating awareness for possible health problems. On the other side, exchanging this information with their peers allowed them to receive real-time non-intrusive informa-

tion, regarded as useful for enhancing social interactions. Using sound as an unexpected element on online social networking, brought users attention to the acoustic phenomenon and made them think about their sound environment, both by analyzing long-term records and comparing their soundscapes with their peers. Taking this approach a step further, by implementing this features on commercial applications, would increase the users awareness for the sonic environment.

4.2. URB

URB⁴ is a system for automated analysis and storing of an urban soundscape based on available and inexpensive hardware and open source software. It complements the traditional sound maps⁵, allowing the direct access to the sound features at any arbitrary moment since the system boot, thus facilitating the study of the soundscape evolution and allowing for its direct comparison between specific timeframes. Moreover, this system simplifies the access to the aforementioned datasets for artistic purposes. It was developed to be used not only by environmentalists and urban planners but also by artists with creative intentions.

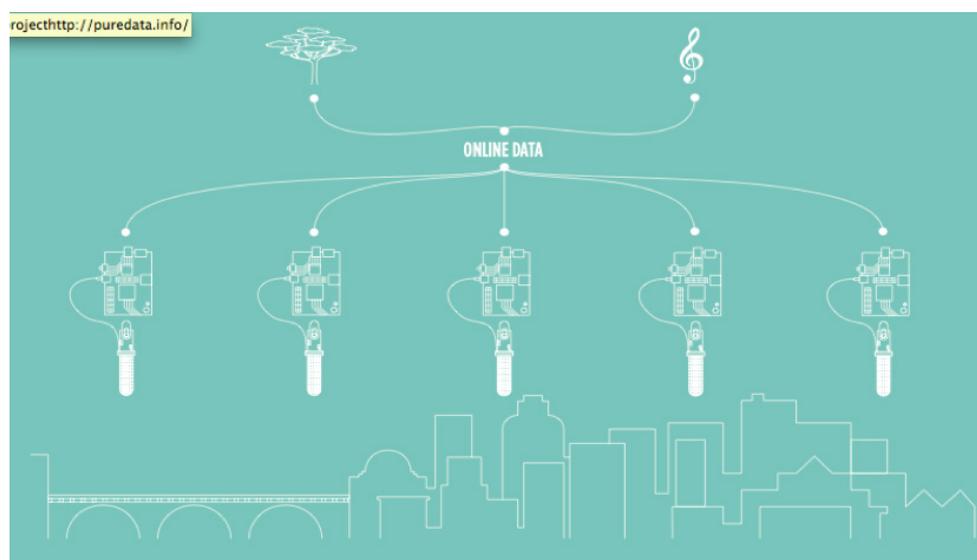


Figure 6. URB system (illustration by Diogo Tudela)

URB is part of an ongoing research project of exploratory nature, which emerged from the desire to find ways to use soundscapes as source material for significant artistic achievements. It aims to study the processes of capturing and storing the sound ambient and its

4. www.urb.pt

5. Sound maps are geographical maps that associate landmarks and soundscapes.

ecological decryption, specifically in its approach to artistic application. As such, in a first stage, seeks to understand how it is possible to capture and represent the most challenging variable of this massive sonic element that is constantly changing: its temporal axis. Grasping its nuances both on a scale of miniature time as in large time scales. In a second phase, attempts to understand the relevance of this information and its direct influence on the act of music and sonic creation. Therefore, our proposal is not only a continuation of the work already done, but also an artistic reinterpretation of sonic material that surrounds us and a study of how it influences us.

In a second stage a call was open to the musical and sound art community to work in the challenge of using URB⁶ in the creative process. From that call emerged several works that the main element used was the data compiled by the system. URB proved to be efficient in accessing the audio descriptors data retrieved from sound ambient, in particular their temporal variations. It also provided composers enough raw materials in order to devise their works and achieve a higher awareness about sound environment. The artistic outcomes all pointed into diverse realizations about the aesthetic significance of using URB's raw data (described in detail in (Gomes et al. 2014)). While some artists guaranteed musical elements such as melodies or formal coherences, others claimed that their instinct as composers induced them to adopt URB's metadata as a 'variation source', independent of the descriptors significance. In this case, even if the work is artistically interesting, there is not an evident correlation with the original source.

5. Sound Design Pedagogical Practices

In this section we describe three pedagogical practices we apply during the teaching of sound design courses, at different levels and stages of the academic path of our students. The aim of these exercises is to train the ear to perform judgment tasks detached from the devious influence of sight. Such skill is important to attain, particularly when designing sound for moving images, such as animations or feature films.

6. <https://vimeo.com/79103493>

5.1. Sound Sketching

Sound Sketching is an enhanced version of a soundwalk, where a group of four to five students walk through a given place having one of its elements blindfolded. Along the path, the blindfolded element listens to the soundscape and describes the different sounds he or she is listening, while other group element writes down this information, taking notes about the nature of the sounds, spatial features and temporal evolution (e.g. “car passing by on my left”, “loud music in a cheap radio”, “siren sound coming from behind”). At the same time, other members of the group record the soundscape (a few steps away from the other members to avoid capturing their voices) and take some pictures of the place. The second part of the exercise takes place at the sound editing room, where students try to reconstitute the soundwalk soundscape by searching and retrieving from a sound database, the sounds they have previously listed. The third part of the exercise is a critical listening comparison between the real soundscape and the one produced in the laboratory.

Soundwalk session

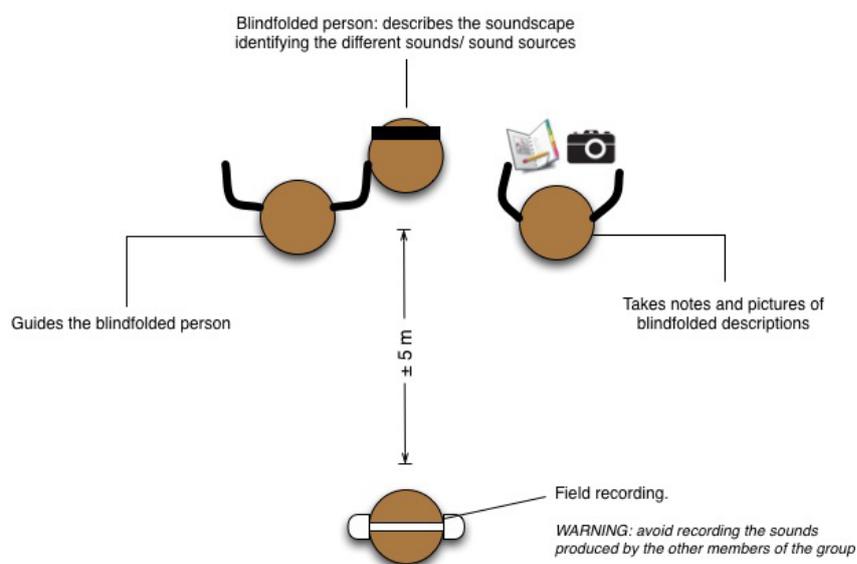


Figure 7. Sound Sketching exercise, recording layout.

Throughout the exercise several complementary learning outcomes are attained. During the first stage, students train critical listening on sound environments. Usually they will state that the blindfolded element will listen things that escaped their perception. Also at this stage, students learn how to do field-recordings. At the second stage, students realize that describing sounds in words is not a simple task. This is also the right time to teach them about basic sound categories (ambiances, voices, sound effects, natural vs. artificial, etc.) and

the three listening modes: causal listening, reduced listening, and semantic listening. Additionally, they learn or improve their audio editing and mixing skills, using common digital audio workstations. At the last stage students realize that producing credible soundscapes in postproduction it is possible but requires mastering different skills. They acknowledge that the everyday sound environment is rather complex, and that non-trained ears usually overhear the plenitude of an intricate soundscape. Frequently, because they may have underachieved some of the steps, the resulting soundscape not always replicates well the original one.

5.2. Complex Soundscape Annotation

The complex soundscape annotation is an exercise based on a blind analysis of complex cinematic soundtracks. The students are asked to analyze the sound of a movie excerpt (2 to 4 minutes) deprived from image. The sound excerpt should be rather complex, containing several layers of sound from different categories and defying sources and variations. The images that go with the sound should be an obvious reproduction of what is being heard. The goal of the exercise is to reverse engineer the process of designing and composing a sound track for a given image. By listening to the sound first, students do not contaminate their interpretation with meanings imposed by the visual narrative. By itself, the sound is open to several interpretations and suggest different images on the minds of the listeners. During the analysis, students write down the list of sounds, how they evolve and what meaning do they carry. After that, the complete audiovisual excerpt is played and students have the opportunity to find the links between the meaning and emotional content present in each medium. Depending on the video excerpt, the results can be rather surprising since some soundtracks have a high level of abstraction, even if they are meant to complement a “real” action displayed on screen. Regarding the leaning outcomes, students practice their skills on acousmatic analysis and learn how to identify creative processes for sound design for moving images, both at ideation and implementation stages.

5.3. Soundscaping for Real Environments

Soundscaping for Real Environments is an exercise where students are asked to design in postproduction the soundscape for a real place represented on a silent video footage. It is important that they do not have a prior knowledge of the place, as it would affect their interpretation of the images. During the first stage they watch the footage, identifying actions, elements and events. Later they select which sounds to use (either recording them or searching on a database) and edit the soundtrack on a DAW. The final step is to compare

with the real soundscape from the place. The learning outcome for this exercise regards the understanding of real soundscapes as a complex phenomenon, sometimes nothing obvious regarding the displayed images. Furthermore, students learn that the same place can “afford” different soundscapes and that, most of the times, it is a human responsibility to shape responsibly its sound environment.

6. Conclusion and Acknowledgments

In this paper we have present some of the projects and pedagogical practices developed at CITAR, which contribute for creating awareness for the acoustic environment. Nonetheless, this list is necessarily incomplete as a result of the profuse artistic and scientific production that every year takes place at this institution. Some examples not mentioned before include the organization of a seminar in 2012 on the topic “Sound Design For Electric Vehicles - A challenge and an opportunity?”⁷ and the work from all other researchers that collaborate with CITAR on the field of sound.

In conclusion, we strongly believe that educating the ear and the hearing is the first step towards a better acoustic environment. The proposals presented here are a few examples of creative approaches developed and tested systematically that can contribute to accomplish such goal.

7. <http://artes.ucp.pt/sound4ev/contest.php>

REFERENCES

- Cordeiro, Joao.** 2011. “Murky Shooting : Em Busca Da Primazia Sonora Nos Videojogos.” In *Acta Da 4a Conferência Anual Em Ciência E Artes Dos Videojogos*, edited by A. Ramires Fernandes, Bruno Oliveira, Verónica Orvalho, and A. Augusto de Sousa, 165 – 171. Porto: Sociedade Portuguesa de Ciências dos Videojogos.
- Cordeiro, Joao, Andre Baltazar, and Alvaro Barbosa.** 2012. “Murky Shooting: The Use of Auditory (non-Speech) Feedback on Mobile Audiogames.” In *Proceedings of*

- the 7th Audio Mostly Conference: A Conference on Interaction with Sound. Corfu - Greece, 40–43. AM '12. New York: ACM. doi:10.1145/2371456.2371462. <http://doi.acm.org/10.1145/2371456.2371462>.
- Cordeiro, Joao, and Alvaro Barbosa.** 2013a. “Using Smartphones as Personal Monitoring Tools for the Acoustic Environment.” In *Conferencias Y Comunicaciones de Tecnoacustica 2013 - 44o Congreso Español de Acústica*. Valladolid: Sociedad Española de Acústica.
- Cordeiro, Joao, and Álvaro Barbosa.** 2013b. “Monitoring Temporal Personal Information Regarding Soundscapes and Movement, as a Way to Enhance Social Interactions.” In *Presented at the 8th International Workshop on Haptic and Audio Interaction Design* [Short Paper - Not in Proceedings]. Daejeon.
- Cordeiro, João, Álvaro Barbosa, and Bruno Afonso.** 2013. “Soundscape-Sensing in Social Networks.” In *Proceedings of AIA-DAGA 2013 Conference on Acoustics*. Merano: EAA Euroregio.
- Cordeiro, Joao, Alvaro Barbosa, and Adrian Santos.** 2013. “A Soundscape Assessment Tool Based On A Massive Multichannel Loudspeaker Setup.” In *Proceeding of Echopolis-Days of Sound 2013: Sounds, Noise and Music for Re-Thinking Sustainable City and Econeighborhood*. Athina: SDMed.
- Cordeiro, Joao, and Nicolas Makelberge.** 2010. “Hurly-Burly: An Experimental Framework For Sound Based Social Networking.” In *Proceedings of the 16th International Conference on Auditory Display*, edited by Eoin Brazil, 109–113. Washington D.C.: International Community for Auditory Display.
- Gerzon, MA.** 1985. “Ambisonics in Multichannel Broadcasting and Video.” *Journal of the Audio Engineering Society*.
- Gomes, José Alberto, Nuno Peixoto, Filipe Lopes, G Costa, R Dias, and Alvaro Barbosa.** 2014. “Composing with Soundscapes: An Approach Based on Raw Data Reinterpretation.” In *Proceedings of the 2nd xCoax 2014: Computation Communication Aesthetics and X*. Porto, Portugal.
- Gomes, José Alberto, and Diogo Tudela.** 2013. “Urb: Urban Sound Analysis and Storage Project.” In *Proceedings of the Sound and Music Computing Conference*, edited by Roberto Bresin, 493–499. Stockholm, Sweden: Logos-Verlag.
- Gonçalves, Miguel.** 2014. “Ambientes Sonoros Interactivos E Imersivos.” Master Dissertation. Porto, Portugal: Portuguese Catholic University.
- Pausch, Randy.** 2008. *The Last Lecture: The Legacy Edition*. 1st edition. New York, USA: Hyperion.

Matadero Memoria Aural: Recovering a Lostscape Aurally

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Abstract

The present paper tries to summarise the project Matadero Memoria Aural focusing on pivotal themes such as urban transformation, sound or collective memory. Throughout theoretical references, the collective has established the essence of the project in which the importance of oral history, sense of place and community converge. In this sense, Sound Readers have been experimenting with sound, urban practice and different methodologies; eventually, they have launched an accessible online database with the results of their research.

Keywords: Soundscape, urban memory, history, sound studies, oral history, site-specific stories

1. Introduction

Over the course of 2013, thanks to a subsidy granted by the Department of Arts of Madrid City Council, the Madrid-based collective Sound Readers complied the research for *Matadero Memoria Aural*¹. The aim of the project was to reconstruct through sound the *lost-scape* of the former municipal slaughterhouse (Figure 1) – currently a contemporary creation centre which conserves the name of its original purpose: *Matadero Madrid*² – and its surroundings in Arganzuela district. This paper will expose different aspects of the development of the project in this once vibrant working class area, regarded between the mid-twenties and the late eighties as the belly of Madrid due to the presence of the slaughterhouse and the livestock market, as well as of the main wholesale fruit and vegetable market.



Figure 1. Municipal slaughterhouse under construction (1916). Source: <http://www.memoriademadrid.es/>

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1. Hereinafter referred to as MMA.
 2. *Matadero* is the Spanish word for slaughterhouse.

2. Sound Readers and the beginning of MMA

Sound Readers is an interdisciplinary collective formed in 2012, whose members³ come from various fields, including sociology, art history, music and design.

During a residency in Matadero Madrid cultural centre, Sound Readers decided to launch MMA, in part as the result of a series of shared interests. These included the potentialities of experimental podcasting; walking as an aesthetic practice – from the rediscovery of the city through the flâneur’s strolls to the situationist drifting exercises; and, above all, a wish to address memory-related topics from a sonic perspective –but at the same time inspired by the practices of collectives like Ultra-Red or Escoitar.

As a matter of fact, Sound Readers’ name alludes to the writings of Walter Benjamin, in which he invites one to read the history of what is not yet written. Furthermore, the project is also inspired by Andreas Huyssen’s texts, especially in his urban memory and palimpsest concepts in which he proposes that “we have come to read cities and buildings as palimpsests” (Huyssen 2003, 7) since:

“An urban imaginary in its temporal reach may well put different things in one place: memories of what there was before, imagined alternatives to what there is. The strong marks of present space merge in the imaginary with traces of the past, erasures, losses, and heterotopias.” (Huyssen 2003, 7)

Taking into account the theoretical background and the importance of the urban memory and landscape, we will now explain the area of Arganzuela where Sound Readers experimented and created the project.

3. There have been several members since the foundation of Sound Readers, but the ones active and who have made MMA possible are: Rubén Coll, Pablo D. Costa, Irene López and Piluca Martínez. Regarding this paper, it was conceived and written by Coll. López proposed some valuable modifications. Costa and Martínez are equally credited as authors due to their vital contribution to the MMA project and their technical support.

3. Describing the area

MMA was not only a project focused on the municipal slaughterhouse and livestock market turned into a cultural centre. Its impact on the environs was equally important in the re-search process (Figure 2). It was much needed considering the neighbourhoods of Chopera (where the “Pico del Pañuelo” housing colony, built in the early 1920s, is located: a total of 1500 dwellings for workers) and Legazpi (where the fruit and vegetable market was active between 1935 and the mid 1980s – and also Madrid Rio, a space which merges with the boundaries of Matadero Madrid. This is a large recreational and pedestrian area created over M30, one the main highways of the city, which runs parallel to the Manzanares river’s flow. Madrid Rio and the second life of the slaughterhouse are a result of the city’s land-use plan, responsible for the urban renovation of this zone and in some ways of the forthcoming gentrification of this traditional working class area.⁴

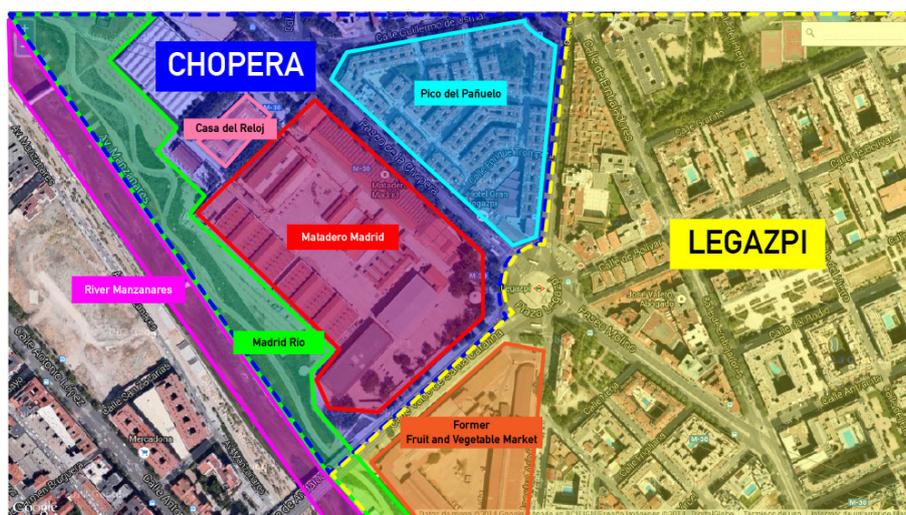


Figure 2. Map of the area.

Today Matadero Madrid is one of the most important cultural platforms of the Madrid City Council, thanks in part to its strategical location. But this centre has not always been a space devoted to the cultural production. Only since 2006 it has been in use as a cultural

4. The two neighbourhoods closest to the slaughterhouse are Chopera and Legazpi, both of which have traditionally sheltered migrant people. First after the Spanish Civil War – receiving people from other regions of the country – and later between the late twentieth and early twenty first century with the arrival of new residents from abroad, mainly Latin Americans. The Dominican community, for example, is quite important.

center. Its 165.415 square meters were designed during the first third of the twentieth century by architect Luis Bellido (1869-1955), who aimed to build a “small productive city” (Azurmendi 1979, 591) which would be active from 1924 to 1996.⁵ Besides its crucial role for Madrid food’s supply during part of the twentieth century, the bibliography and documents about the daily life around such an idiosyncratic space are scarce⁶ and practically nonexistent on the sonic side.⁷

The activity of the ever-present bulldozers could be considered in Murray Schafer’s terms a soundmark of the zone.⁸ But at the same time, bulldozers are not erasing everything. The Madrid City Council has declared the slaughterhouse and the Pico del Pañuelo housing colony as a cultural heritage site. This initiative could be regarded as part of the musealisation process of some of the oldest sites of the city, as well as a tactic to enhance them. This is a process in which Sound Readers have paradoxically and unintentionally contributed to with MMA.

4. Early phases of the project

The early steps – circa late 2012, early 2013 – of MMA consisted of a first contact with the area subject area of our research. An exploratory approach was taken, based on taking strolls without a precise direction, in the vein of the situationist driftings, although far from the subversive aspect of that practice which focuses on questioning the never-innocent urban planning. Sound Readers took advantage of its explorative potentials, trying to pay more attention to our ears than to any other sense in those walks.

5. In 1996 the municipal slaughterhouse was closed definitely due to the lack of proper infrastructures demanded after Spain entered the European Union. Its functions would be replaced by the creation of Mercamadrid Meat Centre in 1999, one the largest in Europe.

6. For their historical approach two references were very helpful since the beginning. First, the documentation for the refurbishment project of the municipal slaughterhouse published in 2005 by the Colegio Oficial de Arquitectos de Madrid (COAM). Second, the photography-based project *Muta Matadero* (2007) by No Photo collective.

7. Nonetheless, one must keep in mind that in the recent past there were other sound-based projects developed by other artists who worked on the same area. In 2010, *La Stargate* by Carolina Caycedo, a community-based project which employed excerpts of field recordings from Arganzuela district, sometimes using interviews with some of the neighbours. One year later, *Metros cuadrados de sonido* (Square meters of sound) was another interesting effort to try mapping sound snippets of the former slaughterhouse and the surrounding area. But none of these sound-related projects were really focused on the memory of the place or oral history.

8. For example, in the audio trails with Pedro, Juan y Ramón or Avelina it is easy to listen to the sound of the bulldozers in the background.

After some days walking across the different edifices of the slaughterhouse, and doing field recordings indoors, Sound Readers realised that the resulting audio files were not enough to explain what actually happened during decades in those buildings and their surroundings. Each one of the buildings had been designed for a specific purpose – slaughtering, quartering, storage, etc. – or for a particular animal – calves, pigs, lambs, poultry, cows. Listening to the echoes or reverberations of those enormous halls did not provide enough information about the different professions, the relationships among the workers (for example, the strong bonds of solidarity as we were later told), the interaction between the surrounding neighbourhoods and the slaughterhouse (closed for the non-workers but not strictly hermetic, permeating the everyday of the environs). Sound Readers' dilemma was how to reflect sonically that continuous flux during decades in a particular area which had become a sort of palimpsest.

As a project MMA did not aim to elicit nostalgia, but rather to bring alive stories or events – pleasant or not – happened in the past in this particular and constantly shifting area. Sound Readers produced a series of sound pieces that offer a very subjective and personal – almost musical – take on the acoustic properties of some of the buildings inside the slaughterhouse complex. Musician and audio technician Pablo D. Costa created the sound pieces inspired by the original purpose of the different slaughterhouse edifices (Figure 3).⁹ These compositions were played back at loud volume in each one of those usually empty and large spaces, in order to activate them through sound, recording them with a set of microphones scattered in different points of each building.

Despite this highly demanding effort and although satisfied with the results, Sound Readers thought it was necessary to deepen the sonic approach to the memory of the place from a different perspective.

9. They can be listened to on the MMA website layer entitled *Piezas Sonoras*.

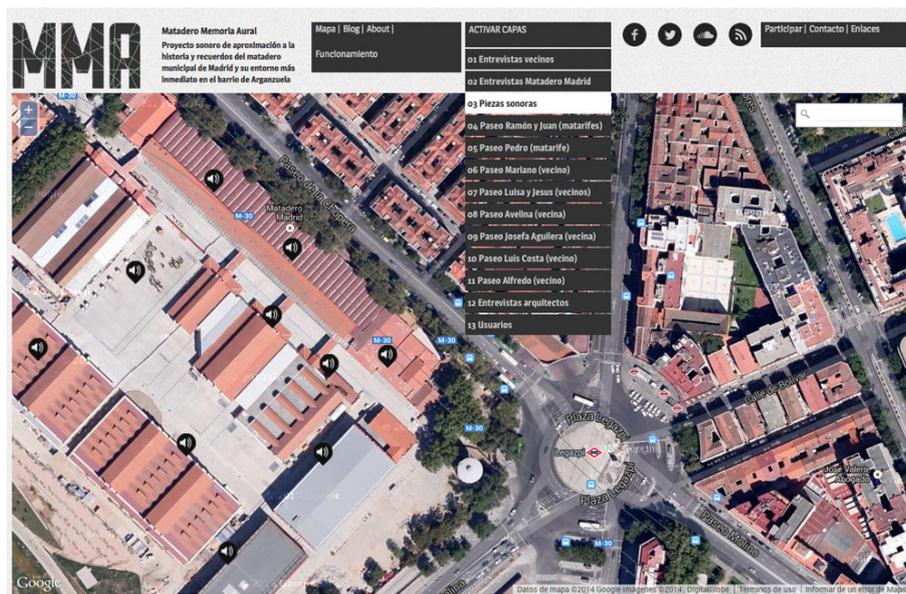


Figure 3. Sonic reinterpretations of the different slaughterhouse buildings.

5. Theoretical references

For that reason, referencing the work of Toby Butler and Isobel Anderson would be helpful. Both authors decisively influenced Sound Readers in engaging with a more oral history based project as a way to set out an hypothetical description of the long lost soundscape of the considered area.

On one hand, Sound Readers took from Butler's *Memoryscape* project his approach as an urban geographer who was trying to integrate through new technologies different practices from the fields of art, landscape and oral history. *Memoryscape* was the name chosen by Butler for a series of audio walks involving oral history recordings that allow (re)discovering the river Thames and its complex and mercurial history which was something unlikely from a more traditional and static perspective focused on the memorial and monumental aspects. The landscape was "interpreted and imagined using the memories of others" (Butler 2006) due to "the ability of spoken memory to make connections with other times, symbols and places." (Butler 2006)

Sound Readers adopted his concept of expanded audio guide as a tool that can transform a particular territory in a sort of site-specific piece. For this researcher, "the walks seemed

to engender a feeling of identity with the landscape.” (Butler 2006) For that reason, whenever possible, life interviews were carried out while strolling. The totality of the contents (interviews and sonic reinterpretations) were recorded in order to be listened to while going through the area, since the audio walk are an ideal resource “providing opportunities for people to build identity and empathy with their surroundings.” (Butler 2006)

On the other hand, Anderson’s text: *Voice, narrative, place: Listening to Stories* was equally influential. This was partially, owing to her vindication of the overlooked role of storytelling in sound art¹⁰ through the concept of site-specific stories, characterised by the fact that they “require the listener to engage creatively with their narratives and, therefore, induce a productive listening state.” (Anderson 2012) This particular kind of listening is crucial for the creation of identity bonds with the landscape because, through it, “the audience construct new meaning within their physical surroundings, transforming it from merely ‘space’, into ‘place’”(Anderson 2012), achieving one of the goals aimed by Sound Readers for MMA project: “Listening to stories of place, in place” enabling “the listener to see alternative landscapes intertwined with what is taken for granted as ‘reality.’” (Anderson 2012).

6. Methodology

The theoretical references mentioned pushed Sound Readers to search for residents of the neighbourhood (preferably long-term ones, but not exclusively so) and former slaughterhouse employees, as well as current cultural workers who could narrate how the area and their lives in it had changed. The task was not easy because most of them are very old,¹¹ and a lot of people had moved to other areas of Madrid, especially during the eighties, the decade that was the beginning of the decline of activity in the area.

Although, the goal was to do interviews while going around the area, sometimes it was not possible: the delicate health of some of the elderly interviewees or the impossibility of going out due to job obligations were not petty factors. And a good proportion of the time invested in field work consisted of earning the confidence of the potential interviewees. It

10. In fact, Sound Readers share her critique of Alan Licht’s words about the long prevailing definition of sound art as a medium that “rarely attempts to create a portrait or capture the soul of a human being, or express something about the interaction of human beings (Licht 2007, 14)” being its main focus the “sound as phenomenon of nature and/or technology.” (Licht 2007, 14)

11. One of our contacts, Jacinto, died some weeks after interviewing him. He was 92 years old and he worked most part of his life in the slaughterhouse as a meat deliverer.

was not an easy task to persuade the former slaughterhouse workers to return to their job place almost two decades after its closing (Figure 4). It was not necessarily a comfortable experience to revisit a place where they had spent the bulk of their lives working. A lot of them refused the request of being interviewed there.

A list of subjects was prepared as a guide for conducting the life interviews. That list included the following topics: Spanish civil war and post-conflict years, transformations on the urban landscape, sense of community, immigration, politics, solidarity between workers, etc.¹²

Sometimes Sound Readers asked the interviewees if they were able to remember a particular sound that could be identified with the area. Interestingly, most of them were notable to remember any sound from the past, nor from the present, although they didn't find it difficult to remember the unpleasant smell of dry skins from the slaughterhouse.



Figure 4. Sound Readers interviewing Ramón, one of the former slaughterhouse employees.

12. This is reflected in the use of tags in the mma.soundreaders.org web site, which makes a subject-based search easier.

7. Making the research accessible

The result of seven months of field work, from March to November 2013, of intense field work was uploaded into the mma.soundreaders.org internet domain, an exclusive web site designed to serve as a sort of repository for collecting the different recordings which included: sonic reinterpretations of the slaughterhouse spaces and life interviews. The web site presents all of these sound materials geo-located on a map. Among the interviews, a part of them were conducted while rambling, appearing displayed on the map as individual trails (Figure 5). The remainder appear geo-located on singular spots. But almost all the recordings were assigned to the locations where they were recorded.¹³



Figure 5. Display of one of the audio trails.

The MMA website was not only designed to be used for archive or compilation purposes. It was also conceived in order to transform the aforementioned area in a sort of site-specific piece. Through the use of mobile devices like smartphones and tablets (Figure 6), the latter freely available to the visitors of the current contemporary centre for several months,¹⁴ – the MMA website could work as an interface which allows the public to find many *site-specific* stories. It is possible to see on the screens which geo-located contents are closer in order to

13. There are a few exceptions: the Josefa Aguilera and Luisa & Jesus audio trails. They were interviewed in their homes because they were not able to go out due to health issues.

14. From 29th November 2013 to 28th February 2014, the period the project was showcased.

listen to (with the help of headphones) *in situ* the life narratives of some Arganzuela district inhabitants or the sonic reinterpretations of some spaces of the slaughterhouse.¹⁵



Figure 6. Tablet, headphones and leaflet available to the visitors of Matadero Madrid.

8. Oral/Aural

Up to this point, one could question whether a project like MMA – sound-based but mainly oral – was actually effective in recovering the sound of a definite lostscape, especially when the answers to the question about identifying a specific sound were not particularly fruitful.

Nevertheless, taking a wider definition of sound, the collected life interviews turn out to be really helpful in the reconstruction of that particular soundscape, always keeping in mind that sound could also be understood as “all that might fall within or touch on auditive phenomena (...) sounds heard by everyone or imagined by one person alone.” (Kahn 2001, 3) In that way, interviewees in their descriptions of daily tasks from the past provided, almost

15. Due to the totality of interviews collected in the MMA website are in Spanish, Sound Readers have created a video which try to summarize the aim of the project. It is a selection of excerpts from the repository of life interviews combined with images of the places where they were recorded. English subtitles are provided in order to overcome the linguistic gap and the video could be watched on line in the following link: <http://vimeo.com/100896895>

without realizing it, a huge amount of information about how the sound of that shifting urban landscape could be heard across decades.

Of course, it is highly speculative, but not less interesting that “Sound is also about associations, memories, feelings, experiences, imagery and thoughts.” (Anderson 2012). Thus, while strolling guided by the MMA interface, it is possible to listen to or imagine the sound of the shootings and bombings that affected the zone during the Spanish Civil War in the late thirties.¹⁶ Similarly, it is possible to imagine, during the after-conflict, how the soundscape was marked by the reintegration of the routine of productive life: the hubbub of the workers inside or outside their workplaces (for example: crowding the bars for lunch),¹⁷ the arrival of beasts to the slaughterhouse¹⁸, their sometimes sonorous slaughtering (specially pigs¹⁹) and quartering (done by hand without the help of mechanical devices²⁰), and the comings and goings of trucks and trains.²¹ Perhaps also the sound of political prisoners forced to work in the Manzanares river could be imagined.²²

Or sounds depicting different moments of the social life, like: children playing after school on the streets;²³ summer nights where neighbours talked until late in front of their houses²⁴ (a custom lost in the sixties with the arrival of television);²⁵ weekend gatherings not far from the river where the youths danced to the music played back on portable turntables;²⁶ the whispering of clandestine street sellers (*estraperlistas*) during the years of shortage.²⁷ And any other kinds of events like popular festivities²⁸ or incidents such as a fatal burning of several shanties²⁹ (today completely disappeared) or the expropriation of cultivation lands³⁰ leaving some families without a chance of making a living, (both in the fifties).

16. Listen to the interview with Antonio, owner of La Alcubilla bar and also the interview with Julio.

17. Listen to the spot number 3 in the audio trail with Mariano and also the interview with Nati, owner of Venta Matadero bar.

18. Listen to the spot number 4 in the audio trail with Pedro.

19. Listen to the interview with Josefa Ocaña.

20. Listen to the spot number 15 in the audio trail with Ramón y Juan.

21. Listen to the spot number 4 in the audio trail with Pedro.

22. Listen to the spot number 11 in the audio trail with Avelina.

23. Listen to the spot number 1 in the audio trail with Alfredo.

24. Listen to the spot number 7 in the audio trail with Josefa Aguilera and also the interview with Mari Carmen Rosa.

25. Interestingly this is a custom really missed by the elder residents that mourn the lack of a closer community life. In the last years the new Latin American neighbours in the area have recovered it but since then, and paradoxically, it is often criticised by the elder residents.

26. Listen to the spot number 6 in the audio trail with Luisa y Jesús and also the spot number 15 in the audio trail with Alfredo.

27. Listen to the spot number 3 in the audio trail with Luisa y Jesús.

28. Listen to the interview with Natividad.

29. Listen to the spot number 2 in the audio trail with Mariano.

30. Listen to the spot number 13 in the audio trail with Avelina.

The categorization by tags of the different subjects collected in the life interviews helps set out hypothetical soundscapes in different decades in a particular spot. This is a task in which Sound Readers currently work trying to set out how the explored area sounded in a more detailed way, in the vein of works like Reinhard Strohm's *Townscape Soundscape* or others inspired by it, for example, Miguel Ángel Marin's *Sound and Urban Life In a Small Spanish Town During the Ancien Régime*.

Although the field work process has ended, it does not mean that MMA is a closed or finished project. Sound Readers hope that other researchers find the MMA website helpful and that the public feels the wonder of rediscovering parts of Arganzuela's district through the voices of its inhabitants. Input from researchers, as well as the public, will determine the future of this project, in which the intertwining of the historical and the biographical as a set of geo-located narratives will hopefully contribute developing knowledge of an area in constant change.

REFERENCES

- Azurmendi, Luis.** *Madrid*. Madrid: Espasa-Calpe, 1979.
- Anderson, Isabel.** "Voice, narrative, place: Listening to stories." *Journal of Sonic Studies* vol. 2, 1 (2012), accessed May 20, 2014, <http://journal.sonicstudies.org/vol02/nr01/a10>
- Butler, Toby.** "Doing heritage differently." *Rising East* 5 (2006), accessed May 20, 2014, <http://www.uel.ac.uk/risingeast/archive05/academic/butler.htm>
- Huyssen, Andreas.** *Present pasts. Urban palimpsests and the politics of memory*. Stanford: Stanford University Press, 2003.
- Kahn, Douglas.** *Noise, water, meat. A history of sound in the arts*. Cambridge: The MIT Press, 2001.
- Licht, Alan.** *Sound Art*. New York: Rizzoli, 2007.
- Marin, Miguel Ángel.** "Sound and urban life in a small Spanish town during the ancient regime." *Urban History* vol. 29, 1 (2002): 48-59, accessed May 21, 2014, doi: 10.1017/S0963926802001050.
- Strohm, Reinhard.** "Townscape Soundscape." in *Music in Late Medieval Bruges*, 1-9. Oxford: Clarendon Press, 1985.

The Ordering of Sounds: The Homogenization of Listening in the Age of Globalized Soundscapes

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Abstract

During the last three decades, the big cities on our planet have undergone a significant acoustic change, resulting in an assimilation of their soundscapes and a loss of acoustic identity. The paper explores the parameters of auditory homogenization and reflect son its reasons. Dialectically, not only the phenomena itself are investigated, but also the ways of listening, as coined by offers, habits, media, and societies' basic principles, priorities, deficiencies and power relationships. How does the global homogenization of urban soundscapes affect and coin the conventions of organizing sounds? What do they reveal about our societal systems, and: can such an "order of sounds" be changed?

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Learning from Sonic Encounters: Listening Emplacement and Belonging in Osaka

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Abstract

This research presents the relationship between soundscapes, learning, and belonging in the Konohana ward of Osaka, Japan. Konohana's soundscape affords various modalities of intersensorial listening: from inside one's home, it is possible to hear neighbors' TVs and conversations, cars and motorbikes passing by, children playing in the street, trash collector vehicle jingles, the local noodle-cart's whistle and the tofu seller's passing bell. Belonging is constituted through these "sonic encounters" within the soundscape of everyday Konohana life. Yet these encounters hinge on learning how to appropriate perceptual, cultural and performative affordances of those sounds. The result is a multi-temporal, multi-sited assemblage of soundscape that affords an experience of a neighborhood through local, city, country and memorial emplacement.

Through ethnographic interviews, participant observation, and multisensory ethnographic methods of neighborhoods in Konohana the paper aims to contribute an analytical model of learning in soundscapes that interrogates how sonic affordances constitute belonging. By doing so, the ongoing research aims to interrogate the sociology and anthropology of sound and the manner in which sounds emplace listeners thereby facilitating learning, modes of knowing, feelings of belonging, aesthetic valuing and forms of practice.

Keywords: sonic encounter, mediation, emplacement, learning, listening, intersensorial

1. Introduction

Sound in ethnographic research and writing has been pursued by anthropologists and sociologists calling attention to the auditory culture of social life through soundscapes (Feld 1984, Feld and Brenneis 2004), mediating technology (Bradey 1999), situated learning (Rice 2008, 2013), political implications of listening (Hagen 2013; Hagen and DeNora 2011), and how sound and sound technology order urban experience (Bull 2000; Atkinson 2007). This paper aims to develop the literature addressing the “ethnographer’s ear” (Clifford 1986) within the sociology and anthropology of sound by taking the case of the Konohana neighbourhood in Osaka, Japan.

Konohana’s soundscape allows for a marked sense of ‘nearness’ due to the construction planning and material of many of its houses and buildings; from inside one’s home, it is possible to hear neighbors’ TVs and conversations, cars and motorbikes passing by, children playing in the street, trash collector vehicle jingles, the local noodle-cart’s whistle and the tofu seller’s passing bell. Various modalities of intersensorial listening present themselves through “sonic encounters” within the soundscape of everyday Konohana life that subsequently constitute belonging. Yet these encounters hinge on learning how to appropriate perceptual, cultural and performative affordances of those sounds. The result is a multi-layered assemblage of soundscape that affords an experience of Konohana through local, city, country and memorial emplacement.

In what follows, I outline a theoretical context and model of learning in soundscapes and then move on to discuss the specific sonic encounters in Konohana that aid in how one feels belonging to a place, what are the invisible traces of the place’s boundaries and how one learns these through listening.

2. Sound in Sensory Ethnography

The Konohana case study research sought to engage hearing and listening by examining site-specific contexts of how people configure their listening attention and their experiences of those places. The objective was to pursue how sounds have come to be valued by social groups and what social practices came to be shaped and constituted via listening. In

this sense, multisensory ethnographic fieldwork was crucial to understanding sounds' relationship to belonging in contemporary urban publics. Multisensory methods situated the research within a larger sensory framework that is not based on lexical description but rather on experience of place. Embodied perception, instead of semantically articulated meaning, looks toward how the senses organize the world, considering comprehensive, global dimensions of spatiality, experience and emplacement (Pink 2009).

The data presented here was collected over a ten-month period with six months living in the Konohana neighborhood. Crucial to the study was participant observation, both participating in sound making as a sonic participant and observing the soundscape, as it were, through guided walks and simply day-to-day habituation to Konohana's soundscape. To support the observation numerous phonographic and visual recordings were made, along with conducting nineteen ethnographic interviews with residents of Konohana. These interviews considered people's interaction with and in sonic environments and their relation to belonging. Within the techniques of conducting ethnographic fieldwork, interviewing is a primary means for revealing how people create meaning. Ethnographic interviewing relies not on the researcher's categorization of phenomena, but rather elicits information from the interviewee in order to arrive at better understanding of the subject's worldview (Spradley 1979, 48-49). The intent was not to focus on the sounds themselves per se, but rather people's relation and categorization of sounds, focusing on activity, practice and events.

3. Learning, Meaning, Sounds and Place

From Schaefer's initial prescription of soundscape's analytic features, its conceptual descriptive development has been widely employed. In many cases, this has reduced its use to a sensitizing variable or has rendered 'soundscape' as slippery in its interdisciplinarity (Kelman 2010, 214). This is even more the case when human and non-human activity is incorporated rather than excluded as background noise, showing the soundscape-listeners' amorphous relationship. Soundscape-as-context has thus been described as a multimodal experience (Raimbault and Dubois 2005, 342), rhizomatic in its non-linear change (Koutsomichalis 2013), a process of 'becoming' (Fors, Bäckström, and Pink 2013), which occurs through a "constellation of relationships" (Kelman 2010, 213), and could be more comparable to the fluidity of a seascape than landscape (Shelemay 2006, xxxiv). Each of these definitions attributes value,

in terms of analysis and interpretation, to dimensions of space, time and framing discourse in a constant process of negotiation and constitution between sound and listener. In other words, the soundscape is indexical in its meaning (Garfinkel 1967)—in addition to being perceptually communicative it furnishes material to which meaning is articulated, used and adapted contingent upon the emplaced listener. This indexical approach attributes power to sound, its social value and how it is used as a resource in learning. Learning how to hear and listen in specific soundscapes, then, is a socially distributed practice that mediates relationships between people, places and spaces.

Wenger's (1998) "community of practice" analyses learning as an on-going, collective project based on participating in and therefore learning from activity in context. Learning in this focus is situated (Brown et al 1989) and occurs at tacit levels of attention. Wenger's focus reveals two points: [1] learning happens *in situ* through teacher-apprentice activity, such as imitation and training; [2] from these relationships, dispositions emerge socially. The notion of sonic dispositions—how one orientates themselves toward a sound—is thus a political question when considering how, why and in what ways collectives, city councils, property developers and transnational organizations attribute different aesthetic value to 'quiet areas' or 'noise'. Moreover, learned dispositions are a critical building block in belonging.

In his study on social learning of dispositions in relation to becoming a marijuana smoker, Becker (1953, 237) notes that without social learning, "marihuana [sic] was considered meaningless"; not only is a "presence" of an object necessary for effects to happen, but one also needs "recognition". Therefore, to experience marijuana, one must be aware or conscious, which, as Becker argues (*ibid*, 240), emerges from interaction with others, particularly with "experienced users", or teachers. Recognition speaks to the complex, entangled process of how an object is mediated or discursively encountered within group cultures; yet this learned orientation is not always consciously articulated as Becker states. It also occurs at tacit, unconscious or even 'instinctive' levels of knowing; or to put it more simply: what 'naturally' feels good and what doesn't.

While sociological literature on social learning, as that of Wenger and Becker, has helped ground how objects' socially and culturally constituted meaning affects practice within situated clusters of people interacting, we are left wondering if this can be accurately applied to sounds: is the sound a honking car meaningless if we do not recognize it? Do we need a teacher in this case? Is the listener of one urban soundscape alien to that of another? Interactionist approaches can therefore rely too heavily on socially constructed meaning and thereby ignore properties of an environment. It is here that music sociologists have contributed to our understanding of practice by examining objects (such as music and sound) and

their properties (volume, intensity, pitch, frequency, real-time) within social environments and how these properties 'afford' various forms of activity (DeNora 2000). Growing out of perceptual psychology (Gibson 1977, 1979; Greeno 1994), DeNora outlines how people appropriate 'musical affordances', for example using a musical beat to help one concentrate, revealing how this activity is co-configured between environment and peoples' abilities. Similarly, Antoine Hennion (2005, 141) has addressed environmental learning in his pragmatic theory of reflexive taste through an ecological perspective of exposure, identification and attunement: "to train one's faculties and perceptions (both collectively and individually), to learn tricks and ways of doing things, to have a repertory, classifications, and techniques that reveal the differences between objects." Affordances and abilities contribute to an ecological understanding of how people articulate meaning to activity, learn from it and use it, often at tacit levels of knowing.

In Becker, DeNora and Hennion's studies, the process of meaning configuration via objects and with others who 'show the way' is one that is revealed through gradual, habitual, achieved and "built up" actions in an environment of use and learning. Tom Rice (2013), in his ethnography of sound in hospitals, ties together both situated learning, community of practice with an affordance perspective, shows the cultural categories of listening and learning in auscultation, detailing the learning process of listening attention, enskillment and use of auscultation by medical students. Rice concludes that listening is key skill in the transitional process of "becoming" a doctor.

This process of becoming is not dissimilar to the process of belonging through how one negotiates meaningful sounds in soundscapes that contributes to knowledge production. Within the anthropology of the senses, Howes (2003) and Pink (2009) have broached this question through the notion of emplacement as considering mind, body and environment. Fors, Bäckström, and Pink(2013) have developed an emplaced approach to sensory learning, where they draw on Massey's (2005) scholarship of 'place-events'. 'Place-events' are described as a flexible site that is not bound by materiality but can also mediate global frames and meta-local discourses, much like an archeology site is multi-temporal in its materials. Situated learning in a place-event, then, takes on a sensory dimension, that is not always bound by a teacher-apprentice relationship, and one in which learning similarly constitutes the place-event with meaning. Thus, learning in context is a "sensory-emplaced" project (Fors et al 2013).

For example, a person growing up in the northern part of the globe might be used to walking on snowy and icy roads—certain snow requires certain ways of walking, and some ice affords different actions (sliding or cracking) that coordinated how one distributes body

weight, how far one lifts their feet from the ground, or how long are their strides. This type of knowledge—or knowing—is not something taught as much as it is learned by doing through sensory emplacement as a patterned context along with imitation in situated learning, such as watching how an older brother might slide further on an icy patch or make a better a snowball. Such a description is similar to how MarcellMauss ([1935] 1979) has described tacit knowledge of the body as a ‘body technique’. However, as Rice (2013, 94-96) has pointed out, Mauss’s conception of ‘body techniques’ assumes a unity of the body, rather than an intersensorial, “relational focus” between the senses in contexts (Bull 2006, 6).

Weaving together these theoretical strands, we arrive at a form of knowing that emerges not just through perceptual transmission of sensory data but by engagement, enactment and appropriation of sensory material affordances, like touching snow and ice or listening to sounds, as described in the presented soundscape below. These sounds are contingent upon the relationship between mind, body and environment and a person’s abilities (however tacit those may be) that are configured, and attuned to a soundscape. The importance here for the study of sounds and soundscapes is the way in which sound is co-constituted through listeners, environments and practices and the meaning that subsequently emerges. To zoom in on this process of meaning emergence that occurs within soundscapes, I look toward a mechanism of encounter.

4. Learning from Sonic Encounters

Soundscapes are operationalized as environments of learning, one in which hearing and listening take on distinct localized practices. Learning these practices occurs when people participate in a framework of a sonic encounter, which facilitates learning how to appropriate sonic affordances. A sonic encounter can be identified as: [1] *perceptual*, addressing the material affordances and sonic information of the neighborhood (e.g., lack of private acoustic space); [2] *socio-cultural*, interrogating a patterned system in which sounds are embedded and articulated with meaning (e.g., contrast structures to other neighborhoods); and [3] *performative*, exploring how these meaningful sounds are used, deployed and displayed that constitute self and collective identity (e.g., a style or way of life associated with a neighborhood). I argue that these three levels of a sonic encounter emplace individuals and

collectives, which thereby provides material for belonging to multi-sited and multi-temporal places.

Within these encounters we have points of exchange between different types of sonic-based material and sonic participants: information (e.g., the jingle of a trash collection vehicle), emotions (e.g., relief from ‘hustle and bustle’ of a city centre) and consciousness (e.g., memory of childhood). These points of exchange show us two types of knowledge production: sonic literacy and auditory knowing. The former indicates explicit knowledge (I take out the trash when I hear a sound) whereas the latter suggests a tacit dimension to knowledge (a sense of calm when returning to Konohana). In either case we have an interplay and movement between the ‘known’ and the ‘unknown’, the familiar and unfamiliar. Using the case of sonic encounters in the Konohana neighborhood, I analyze this movement of learning and its relationship to emplacement.

4.1. Local Emplacement

Konohana is surrounded by a canal on three sides and Osaka Bay on one side and is characterized by buildings no taller than three to four stories. When crossing over a main bridge into Konohana, “it is possible to see the sky and smell the salty water,” as a resident observed (H., 39). The experience of smaller building heights to afford vision of the sky combined with a nearness to the sea is a primary differential marker of Konohana in the city of Osaka. After crossing this bridge into Konohana, you arrive to the Baika neighbourhood. Several distinct sounds are particular to this neighbourhood, two of which I present through field note vignettes are related to mobile food:

Tofu Hand Bell (1 April 2013):

Around 4.30pm everyday, I hear the sound of a single bell, which must be a hand bell, ringing and moving throughout the neighbourhood. Since December [the first three months I was living here], I was unable to identify from which direction the sound was coming from and what was its purpose. Today I waited outside [my flat] for the bell at its normal time. Only until I was on the street at this time did I see a man (~65 years old) on a bicycle selling fresh tofu. Attached to his bicycle in the front is a hand-held bell and a cooler full of fresh, cold tofu strapped down on the rear rack. The next day I waited inside until I heard his bell, hoping to buy some tofu, yet I was unable to catch him: how close he is to

[my] house is masked by the way the bell disperses sound and the fact that I can hear street sounds from all directions. I'll try again tomorrow.

Ramen Cart Flute (20 February 2013):

Late every evening, there is a sound I have not encountered before [in other places I have lived in Japan]... it sounds like a 'call' from a reed instrument. It is a short 'call'; only 2-3 notes played every 3-5 minutes. I first heard it in December [2012] and thought it might be from the local shrine, but I've now heard it nearly every evening since I moved into Konohana. Last week I found out that the reed flute call was played by a man (~70 years old) selling ramen noodles from a large red cart that he pulls behind him. I had followed the sound around the neighbourhood at night until I saw him in the street preparing a bowl full of ramen [noodles] for a neighbour. After ordering a bowl for myself, he told me that he's been selling ramen from the cart nearly every evening for the past fifty years. I've heard his 'call' just now again (9.30pm).

We can assess these sonic encounters as primarily communicative in function wherein one's abilities are attuned to the environment. This ability can be described as the practice of 'seeking out', which rests on the appropriation of the communicative nature of the sonic affordances. Yet to distil this sonic encounter down to its communicative function is to miss further inscriptions of meaning.

These sounds involve the human activity of engaging simple musical technology (bell and flute). In particular, though, it is the timbral experience of these technologies and their performance that attribute distinctive qualities to a Konohana soundscape: the wooden flute and steel bell have most commonly been replaced in other neighborhoods with automated sounds that represent the bell and flute. These automated sounds are consistent in their repetition and performance unlike the tofu and ramen seller in Konohana, where false starts and uneven jingles contribute to the 'humanness' of these sounds. Their presence is thus 'special' in Konohana articulating a 'local' meaning to the sounds. These brief examples show listening is a coordinated intersensorially: seeing (the sky), smelling (the saltwater), hearing (the bell and reed flute) and tasting (ramen and tofu). These affordances then appropriated to experience Konohana as a 'local place'.

Particularly this 'local' feeling occurs by sensing together through 'nearness' as a form of spatially. Nearness is then distinct to Baika's culture (e.g., patterned activity such as the

ramen and tofu seller), its material environment (e.g., simple building construction that allows for hearing outside), and its geographical location in the city (e.g., an island made from reclaimed land). Konohana's nearness, then, is singular when compared to other urban areas of Osaka. Thus Konohana as a local place with a local identity is experienced intersensorially through contrast to other Osaka neighbourhoods and revealed through sonic encounters with mobile food sellers' calls.

For Konohana, 'local' rests on the sonic fluidity between public-private spaces. A lack of sonic control over one's material environment and public-private space anticipates happenstance encounters. Thus the appropriation of affordances here takes shape in practice as a psychosocial 'letting in' (acceptance of the neighbourhood sounds) and 'seeking out' (pursuing the activity—tofu and ramen) which underpin the feeling of belonging. These practices, letting in and seeking out, help to constitute a particular way of life, one that is simultaneously situated within a city.

4.2. City Emplacement

Mondays and Thursdays are trash collection days in Konohana. The trash lorry plays an automated, continuous, repeating jingle, not dissimilar to a children's cartoon theme song. Although automated, it maintains a humanized sound with soft tonalities, which is pleasant when you encounter it. The jingle informs you of the truck's approach, allowing you to estimate its nearness to your house and how much time you have to deliver the trash to the street side. This sonic encounter is a point of exchange between perception, environment and participant: one's ability to hear is predicated on hearing outside sounds inside your house, which comes to underpin private-public interaction. While not entirely overwhelming, there is a distinct change in the smell in the air on Monday and Thursday mornings due to the piles of refuse on the street corners.

The trash lorry jingle is uniform across the city of Osaka yet does not exist in other Japanese cities. The jingle has two socio-cultural integration mechanisms of place:

1. City identity: Konohana is part of the Osaka life, governance, history and imaginary (thus it is not Tokyo, it is not Kyoto, it is not Nagoya).
2. Public-private integration: your actions as a municipal resident are coordinated and patterned by sound, which is dependent on hearing the lorry from within your house.

Again we see the practice of 'letting in' and 'seeking out' via sonic encounters, which emplaces a listener in a city place-event thereby affording a multi-sited belonging to both local and city.

4.3. Country Emplacement

So far we have considered emplacement via the appropriation of local and city sonic affordances. These above examples are communicative functions of sound in that they trigger a response but also contribute to patterning of time, contact points with neighbors and city, and participating in taste culture (cooking tofu).

To look at a further sonic encounter, which emplaces a listener within further spatiality, I examine the natural phenomena of earthquakes. Japan's natural disasters are not necessarily linked to a national-political-cultural identity but to the geographic experience of 'country' on a particular place on the globe, specifically, the Pacific Rim. One resident of Konohana describes the sonic encounter of an earthquake that emplaces the listener in the country of Japan:

When I'm falling asleep, I often feel my windows shake and rattle. I listen for a bit and feel how much the building trembles. I wait nervously and wonder if it is an earthquake. It is only until after I hear a large truck go by that I know it is not time to take cover or run for high ground [in case of tsunami]. Of course in April [13, 2013] it actually was an earthquake. (J., 48)

Here the feeling of sound, the vibrations, along with the rattle of windows is attributed to emplacement in Japan, a country habituated to earthquakes. Hearing and feeling an earthquake is a skill one learns to develop over time as a form of tacit knowledge that coordinates action, such as running for cover, running for high ground; these activities of safety again develop the practice of 'seeking out'. This tacit knowledge is not necessarily related to an emplacement in Konohana or Osaka, but rather to being in the country of Japan.

Drawing together these intersensorial listening practices, we have an experience of place at different sites—local, city and country. This multi-spatiality within the soundscape integrate and connect the inhabitant through the practices of letting in and seeking out that rest on competencies (anticipating disaster) and activities (taking out trash, eating) coordinated to the material environment (house, street) thereby affording explicit and tacit knowledge production. In short, emplacement frames the relationship between listening, knowing and belonging.

4.4. Memory emplacement

In addition to the multi-sited sonic construction of a place-event, the material environment also affords multi-temporality. In particular, cultural memory plays a role in shaping accept-

ance and the letting in of Konohana's soundscape in that it may be considered enjoyable or attractive. For many who live in Konohana, it is desirable not only because of low rental cost but also because of childhood nostalgia. On a walking tour of the Baika neighbourhood, a Konohana resident described how the neighbourhood provided material for nostalgia:

[Pointing] If you look up you can see the old [fishbone] TV antennae. Everywhere else [in Osaka], everyone has [satellite] dishes now. Here [Konohana] is very nostalgic for me, the neighbourhood reminds me of my childhood, where I grew up. There are very few cars, kids playing baseball in the street, these buildings [gesturing toward a row of houses]. It is very rare to find this [1950s] old-style in Japan nowadays. It's the Konohana style (laughing). (H., 39)

Similarly, others have commented on childhood nostalgia in Konohana, specifically in relation to the narrow alleys between houses:

I suppose [the alleys] are a waste of space, very poor planning. But I have very fond memories of running through alleys like this when I was growing up. Playing games like hide-and-seek with other kids. I guess I never realized how special these alleys¹ are. You can't do that in [contemporary] apartment blocks. (K., 37)

These above memories are revealed through lived past experiences: both 'H' and 'K' are from different districts of Osaka, which had at one time been similar to contemporary Konohana 'local' life. In relation to sounds, a Japanese visitor [from the Kanto district] to Konohana showed surprise at the sound of the ramen flute, illustrating a mediated memory:

Oh, I've only seen this old movies....Nowadays most people who sell ramen have a recording. This is an exceptional thing to have in your neighbourhood. (S., 40)

These sonic encounters trigger memory that are all contingent on the contrast to modern Japanese living, technological development and disappearing cultural practices. Old antennae, the ability to hear a reed flute from inside your home, to play between what is considered 'wasted space' in urban planning are all functions of residential non-development yet allow for feelings of nostalgia and thus and acceptance and aesthetic valuing of the

1. Less than one meter in width.

non-development. The material environment of Konohana therefore affords a nearness to the past that has disappeared from other environments in Osaka and is situated in both lived and mediated memory work.

5. Conclusion

The soundscape of Konohana consists of a series of sonic encounters wherein people appropriate sonic affordances for learning. As the reed flute, hand bell, trash lorry jingle, and window rattles reveal, sonic encounters are perceptual, cultural and symbolic paths to knowing a multi-temporal, multi-sited Konohana that emplaces individuals and collectives. This learning through emplacement, in turn, provides material for belonging.

Yet this may be belonging to only one or all sites within Konohana. From these examples of intersensorial encounters, we see that place is multi-temporal and occurring at non-mutually exclusive sites; in other words, one is at once 'local' in the neighbourhood, as they are in a city (Osaka), country (Japan) and existing at different points in time (both the lived and mediated past and present). These encounters are constituted by their related practices, letting in and seeking out, which are learned through emplacement and negotiated by individuals and groups. The place-event contextualizes the sounds, therefore context is the activity of emplacement.

Nearness is a dimension of spatiality that contributes to forming of place-related knowing and belonging via the sensory experience, facilitating commitment, investment and valuing of a place. The paper shows how people coordinate competencies and abilities to certain environments with different materials. Such an intersensorial affordance perspective allows for an understanding of how individuals are reconfigured through sensory emplaced learning as 'together' in neighbourhood, in city and in country.

REFERENCES

- Atkinson R.** 2007. "Ecology of sound: the sonic order of urban space". *Urban Studies*, 44(10), 1905–17.
- Becker, H.**, 1953. "Becoming a marihuana user". *American journal of sociology*, 59(3), 235–42.
- Brady E.** 1999. *A Spiral Way: How the Phonograph Changed Ethnography*. Jackson: University Press Mississippi.
- Brown, J.S., Collins, A., and Duguid, P.**, 1989. "Situated cognition and the culture of learning." *Educational researcher*, 18(1), 32–42.
- Bull, M.** 2000. *Sounding out the city: Personal stereos and the management of everyday life*. Berg.
- . 2006. "Introducing Sensory Studies". *Senses and Society*, 1(1), 5–8.
- Clifford J.** 1986. "Introduction: partial truths". In *Writing Culture: The Poetics and Politics of Ethnography*, eds. J Clifford, GE Marcus. Berkeley: University of California Press, 1–26.
- DeNora, T.** 2000. *Music in Everyday Life*. Cambridge University Press.
- Feld S.** 1990 [1982]. *Sound and Sentiment: Birds, Weeping, Poetics, and Song in Kaluli Expression*. Philadelphia: University of Pennsylvania Press.
- Feld, S. and D. Brenneis.** 2004. "Doing Anthropology in Sound". *American Ethnologist*, 31(4): 461–474.
- Fors, V., Bäckström, Å., & Pink, S.** 2013. "Multisensory emplaced learning: Resituating situated learning in a moving world". *Mind, Culture, and Activity*, 20(2), 170–183.
- Garfinkel, H.** 1967. *Studies in Ethnomethodology*. Malden MA: Polity Press.
- Gibson, J. J.**, 1977. "The theory of affordances". In: Shaw, R., and Bransford, J., eds. *Perceiving, acting, and knowing: Toward an ecological psychology*. Hillsdale, NJ: Erlbaum, 67–82
- Gibson, J.J.**, 1979. *The Ecological Approach to Visual Perception*. Boston: Houghton Mifflin.
- Greeno, J.G.**, 1994. "Gibson's affordances". *Psychological Review*, 101(2), 336–342.
- Hagen, T.** 2013. "Calling out to Tune in: Radio Free Europe in Czechoslovakia". In *Airy Curtains: Transmitting and Receiving Europe in the 20th Century*. Eds, Andreas Fickers, Christian Franke, Alec Badenoch. NOMOS-Verlag, 125–150.
- Hagen, T. with T. DeNora.** 2011. "From listening to distribution: non-official music practices in Hungary and Czechoslovakia from the 1960s to the 1980s". In: T. Pinch and K. Bijsterveld (eds). *The Oxford Handbook of Sound Studies*. Oxford University Press, 440–458.
- Hennion, A.**, 2005. Pragmatics of taste. In: Jacobs, M. and Hanrahan Weiss, N., eds. *The Blackwell Companion to the Sociology of Culture*. Oxford: Blackwell, 131–144.
- Howes, D.** 2003. *Sensual relations: Engaging the senses in culture and social theory*. University of Michigan Press.
- Kelman, A.** 2010. "Rethinking the soundscape: a critical genealogy of a key term in sound studies". *Senses and Society*, 5(2), 212–234.

- Koutsomichalis, M.** 2013. "On soundscapes, phonography and environmental sound art". *Journal of Sonic Studies*, 4(1). Available at: <http://journal.sonicstudies.org/vol04/nr01/a05>
- Massey, D.** 2005. *For space*. London: Sage.
- Mauss, M.** [1935] 1979. "Body techniques". In *Sociology and psychology: essays by Marcel Mauss* (trans. B. Brewster), 70-87. London: Routledge & Kegan Paul.
- Pink, S.** 2009. *Doing sensory ethnography*. London: Routledge.
- Raimbault, M. and D. Dubois.** 2005. "Urban soundscapes: experiences and knowledge". *Cities*, 22(5), 339-350.
- Rice T.** 2008. "Beautiful murmurs': stethoscopic listening and acoustic objectification". *Senses and Society*, 3(3), 293-306.
- . 2013. *Hearing and the hospital: sound, listening, knowledge and experience*. Sean Kingston Publishing.
- Shelemay, K.** 2006. *Soundscapes: exploring music in a changing world*. New York: WW Norton.
- Spradley, J.P.**, 1979. *The ethnographic interview*. New York: Holt, Reinhart and Winston.
- Wenger, E.**, 1998. *Communities of Practice: Learning, Meaning, and Identity*, Cambridge: Cambridge University Press.

Interviews

- H., 39.** Interviewed by author. Konohana, Osaka, Japan. 4 April 2013.
- J., 48.** Interviewed by author. Konohana, Osaka, Japan. 12 June 2013.
- K., 37.** Interviewed by author. Konohana, Osaka, Japan. 5 April 2013.
- S., 40.** Interviewed by author. Konohana, Osaka, Japan. 29 June 2013.

Soundscapes and the Temporality of Auditory Experience

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Abstract

Until very recently in the history of philosophy, sounds have been almost absent from serious philosophical consideration and auditory perception has rarely been considered for its perceptual specificity, superseded by the visual modality of perception. In an essay on metaphysics, P. F. Strawson conceived an exclusively auditory world as a thought experiment designed to consider an alternative conceptual scheme for the world. But since sounds wouldn't have, according to him, intrinsic spatial characteristics, an exclusively auditory world would only provide a temporal framework. Notwithstanding, there is now an intellectual consensus in philosophy that accords spatial features to sounds and spatial content in auditory perception, which provides a valuable cognitive resource for the spatial representation of the environment. Nevertheless, it seems reasonable to accept that sounds have a temporal constitution and that they are not only perceived in time, as can be proven by the study of auditory perception, but they even add to the perception of time itself. Moreover, we can think of sounds and aural properties as qualitatively enriching our experience of objects, events and our own self-awareness.

If the spatial aspect of auditory perception enables the perceiver with cognitive tools to build a descriptive and operational map of places and situations, then the temporal features provide qualitative elements for the weaving of acoustic narratives, inhabited with meaningful experiences that emotionally connect (or disconnect) the perceiver with (from) its environment.

What I aim to do in this presentation is then to highlight the temporal features of auditory experience through the phenomenological description and critical analysis of auditory perception, in order to show how soundscapes are interweaved with temporal elements that necessarily pervade the personal experience of places.

Keywords: metaphysics of sound, auditory perception, temporality, soundscapes, acoustic narratives

1. Philosophical awareness about an 'auditory world'

It is, nowadays, common place to assert that modern western civilization thought patterns have been dominated by visual perception and concepts. In fact, one cannot find many examples in the history of philosophy where other perceptive modalities are paid similar attention. In what concerns us here, *i.e.*, *sounds and auditory experience*, apart from some individual cases in ancient and modern philosophy – Aristotle, Locke, Berkeley or Condillac, and yet, all these were still dominated by a visual ideological frame –, it was not until very recently that philosophers have begun to seriously consider the aural modality of perception and the ontological specificities of sounds. It is now an emerging sub-area of philosophy, encompassing metaphysics, epistemology, aesthetics and philosophy of mind, and it has been originating a growing number of books and articles in the past few years. But it would not be fair to ignore an unexpected yet major contribution to the philosophical consideration of sounds, which can be found in a 1959 book, also responsible for the rebirth of metaphysics in the analytical tradition, *Individuals: An Essay in Descriptive Metaphysics* by British philosopher P.F. Strawson.

The reason for invoking this book at the beginning of this presentation is connected with the controversial yet pregnant thought experiment, presented in chapter 2, where Strawson entertains the hypothesis of a purely auditory world, and the consequences of its analysis for the characterisation of sounds. In his project of a 'descriptive metaphysics', in the context of an ordinary language philosophy, Strawson was focused on clarifying our conceptual scheme of the world. For that purpose, he was looking for a category of entities that would be objective and independent from references to other entities, so that they could ground a spatio-temporal framework where descriptive relations would be coherent and thus enable us to structure our conceptual scheme and effectively perceive our environment. He had found, in the first chapter, a category of referentially basic entities: *material bodies*. But, in the second chapter, he tested his hypothesis with an alternative category of objective entities: *sounds*. He has chosen sounds because he wanted to speculate over the possibility of building a conceptual scheme – different from ours – with reference to objective entities that were not material bodies and thus non-spatial¹ (since, according to Strawson, auditory experience is in itself non-spatial)². The triumph or misfortune of this thought experiment

1. The relevance of discussing basic non-spatial entities derives from Strawson's analysis of the Kantian claim that the notion of there being objective particulars should involve the notion of space (Strawson 1959, p. 62).

2. Delving deeper in his thought experiment, he was forced to postulate something he called a continuous 'mas-

is of no concern here, yet, this characterisation of sounds and the controversial assumption that auditory perception is essentially temporal and non-spatial encouraged me to seriously rethink the nature of sounds and sonic experience.

2. Scepticism about spatial audition

Most contemporary philosophical discussions on auditory perception – at least since (Casati & Dokic 1994) – put a strong focus on its spatial features, namely the location of sounds. Likewise, our empirical everyday interaction with sounds makes us naturally think of them in spatial terms. In fact, our ability to effectively detect and perceive the sounds of our spatial environment, in order to properly act and survive, seems to be one of the main evolutionary reasons for having audition as part of our perceptual system. So, we cannot avoid being at least baffled with Strawson's assumption of the non-spatiality of auditory experience. Strawson does not ignore that in our current experience we say that sounds “come from the right or the left, from above or below” or that they seem “to come nearer and recede” (Strawson 1959, p. 65), but his argument is that what we commonly ascribe to sounds as spatial features results from multimodal perceptual interaction (mainly with visual, tactile and kinaesthetic perceptions)³ and that such expressions have no intrinsically auditory significance⁴.

ter-sound', which would then provide a frame of reference, analogous to space, in order to allow the distinction and re-identification of particular sounds (Strawson 1959, p. 76).

3. The fact that humans are equipped with two directional aural receptors, ears, is also responsible for the spatial information perceived in auditory experience, namely via interaural time and level differences. Also see (Bregman 1990, pp. 79–83) and (Warren 2008, pp. 35–63).

4. This scepticism about spatial audition has been shared by other aspatial accounts of auditory experiences (O'Shaughnessy 1957) and by some proximal theories that locate sounds at or near the ears of the subject, despite the distant location of sound sources (NuDDS & O'Callaghan 2009, pp. 69–83 and pp. 117–125). To be fair, some of these theories do not deny that auditory experience may convey spatial information, insofar as it can represent spatial features or have spatial content, namely concerning the causes of sounds. According to these theories one should subtly distinguish between the location of sounds and the location of sound sources, as well as between the spatial content of auditory perception and the spatial properties of sounds themselves. Furthermore, these differences between the various theories also result from different perspectives concerning the nature of sound, its ontological or metaphysical status.

3. What, then, are sounds?

On this topic, Strawson starts by saying, in a very traditional fashion, that sounds are “the proper objects of hearing” and then characterises them stating that they “of course⁵ have temporal relations to each other, and may vary in character in certain ways: in loudness, pitch and timbre.” However – as I have pointed out – he insists that “they have no intrinsic spatial characteristics” (Strawson 1959, p. 65). We can infer, from his argument in the thought experiment, that he considers sounds as objective, public entities, mind-independent particulars that can be distinguished and re-identified. But saying that sounds are the public objects of auditory perception only spares us from the conclusion that they could be subjective mental states (or properties of hearers)⁶, although it does not tell us much about their metaphysical nature. What ontological category do they belong to? They seem to be particulars, not universals. But: Are they properties? Are they powers or dispositions? Are they abstract particulars or tropes?

The recent philosophical publications on the ontology of sounds have given different answers to these questions – from the traditional and scientifically consistent ‘wave view’ to the ‘property view’ – but this is not the place to survey them all⁷. Nonetheless, there is a type of answer that is particularly sound and that stresses the main aspect of auditory experience that concerns me in this presentation: *temporality*. As we have emphasised above in our quotation of Strawson’s characterisation of sounds, it seems obvious that they, at least, have temporal relations to each other. And although it is debatable if sounds have locations or if they are intrinsically or only extrinsically spatial, almost everyone would agree that, not only they have temporal relations between each other, but sounds themselves occur in time and have durations⁸. An approximate answer to the ontological question – “what are sounds?” – one which takes temporality as an essential feature of these entities, might be, then, that: they are *events* (Casati & Dokic 1994, pp. 36–48) (O’Callaghan 2007, pp. 57–71).

5. Italics mine.

6. Actually, this is a rather traditional view about sounds that is warranted by the phenomenon of aural hallucinations.

7. For a brief review of these various positions concerning the ontological status of sounds, see (Nudds & O’Callaghan, pp. 4–8), (O’Callaghan 2007, pp. 13–28 and pp. 57–71) and (Casati & Dokic 2012).

8. Although Jonathan Cohen argues against the exceptional and distinctive temporal features of sounds that would allegedly distinguish them from other sensible qualities, namely colours, he still concedes “of course, that sounds occur in time, that they have temporal durations, and perhaps bear many other interesting relations to time” (Cohen 2010, p. 304). So, in this chapter on “Sounds and temporality” he does not deny the intrinsically temporal characteristics of time, but simply states that they are not that distinct from temporal features of colours, for instance.

4. Sounds as events

The 'event view' informs us that: either sounds are events happening to material objects that resonate (the *Located Event Theory* defended by Roberto Casati and Jérôme Dokic) or they are events that involve both the causal source and the disturbed surrounding medium (the *Relational Event Theory* defended by Casey O'Callaghan). One of the main consequences of this 'event view', in both versions, is that sounds are intrinsically temporal entities⁹, "they take time and involve change" (Nudds & O'Callaghan 2009, p. 36), they "are either instantaneous events or temporally extended processes" (Casati & Dokic 2012).¹⁰

Whether or not we accept the 'event view' of sounds, it seems consensual that sounds involve temporal features, since they occur in time, they have instantaneous or extended durations, they start and cease (and sometimes last), they qualitatively change or survive qualitative change and, to sum up, our auditory experience of sounds is significantly a temporal one. I will go further and claim that the experience of sounds shows us something about time itself, insofar as it assists us in perceiving time and in building our own temporal experience. Notwithstanding, before considering this somewhat more ambitious claim, I will analyse the ways in which auditory perception comprises time.

5. Temporal processing in auditory perception

Besides the obvious temporal relations involved in the perception of various and successive sounds, which imply the elementary experience of previous and subsequent sounds, and

9. Saying that *sounds are events* implies that they are, of course, spatio-temporal occurrences. Nonetheless, for what concerns me here, I shall only emphasise their temporal features, which singularise them from other metaphysical entities, be it properties, dispositions or abstract particulars.

10. The "wave view" of sounds also recognises that they are temporally extended occurrences and that they are somewhat persisting particulars, but, as O'Callaghan critically observes, at best "it mistakes the lifetime of a train or bundle of sound waves in an environment for the duration of a sound" and is thus unable to correctly grasp the temporal characteristics of sounds. To be clear, the propagation of sound waves is, according to the *Relational Event Theory*, a consequence of 'medium-disturbing events' which sounds, ontologically, are, and the collisions or vibrations of material objects are the respective causes – precisely the events that indeed are sounds, in the *Located Event Theory*. In this last version, sound waves propagating in a medium are the necessary condition for auditory perception of sounds but not to their existence (in the 'property view' sounds could occur in a vacuum, but also according to (Casati & Dokic 2012)).

consequently, an order of succession between them, there is also a temporal dimension in the perception of each individual sound.¹¹ Temporal processing in auditory experience is highly complex, involving temporal resolution (or acuity), which refers to the ability to detect change – gaps or modulations – in stimuli over time, but also temporal integration (or summation) – the ability of the auditory perceptual system to add information over time in order to enhance the detection and discrimination of various future stimuli (Moore 2013, pp. 169–202).

Furthermore, any of the traditional perceptual properties of sound – *pitch*, *loudness* and *timbre* – requires, in one way or another, some temporal dimension to be able to produce the psychoacoustic sensation in the perceiver. Pitch is the qualitative and subjective perception of frequency, which is a physical property of the pressure waves that occur when sounds are produced. So pitch tells the perceiver the number of cycles of motion per unit of time that the particles constituting the disturbed *medium* (air, water, etc) undergo¹². Even if this is the result of an infra-level perceptual process, it is undeniable that time has a part in the perception of pitch by the hearer of a sound. Loudness is the perceptual quality that gives the perceiver an account of the intensity or magnitude of a sound. This means that it informs the hearer about the sound energy transmitted per unit time through a unit area, but while this measure of sound intensity depends on the sound pressure exerted by the atmosphere, the subjective magnitude of the sound also depends on its frequency, waveform and duration (Truax 1999), which, in some sense, still gives time a role in loudness perception. Finally, timbre, usually known as the quality or even, metaphorically, the colour of a sound, is determined by the behaviour in time of the spectrum of a sound or its frequency content (the presence and distribution of ‘the fundamental’ frequency, partials and transients, their phase relations, their growth and decay in time) (Truax 1999). Given the rich variety of traits that influence timbre perception¹³, it helps singularising sounds and reveals itself to be very useful in the recognition of sound sources in the environment of the perceiver. The relevance

11. In fact, even the human detection of sound is dependent upon duration, since everything shorter than 40 ms will be virtually inaudible and, for durations of less than 200 ms, the sound intensity necessary for detection must increase as duration decreases (Moore 2013, p. 64).

12. I am, somehow, still keeping in mind the *Relational Event Theory* of O’Callaghan in this characterisation of pitch, even though my claim concerning the temporal condition of pitch perception is valid for other definitions, in general. For details on how he dealt with the objection that pitch seems a perceptual quality about sound waves, see (O’Callaghan 2007, pp. 76–86). For details concerning pitch perception, also see (Warren 2008, pp. 64–106).

13. After Pierre Schaffer’s *Traité des Objets Musicaux* and his theory of ‘reduced listening’, timbre as a perceptual category for the identification and description of ‘sound objects’ has been criticised, namely by Michel Chion, for its lack of homogeneity, its causalist nature and its dependence not only on spectral analysis but also on dynamical variations and context. See (Chion 2010, pp. 184–5).

of time in the perception of each of these different qualities makes it, not only an important feature, but a constitutive element in auditory experience.

6. Time perception in auditory experience

But if the perception of sounds necessarily needs time to occur, auditory experience is a very effective way to make us aware of time itself. Since, we do not own a specific sense fitted for the perception of time, it is commonly accepted that we become aware of time and experience it through the perception of other things, particularly events and changes in states of affairs, but, also in the perception of the relations of non-simultaneity, movement, variation and order among objects. Sounds are thus exceptionally fitted for the experience of time, not only because of their temporal nature, insofar as they can be conceived as events, but also due to their perceptual properties and how the perception of these qualities aesthetically and emotionally affects the perceiver. Through the perception of duration, timbre, spectral and harmonic variation and even loudness and pitch properties of sounds, the listener is affected in a particular way that is, by all means, cognitively significant¹⁴ but also aesthetically and emotionally meaningful, in a way that transforms time experience inasmuch as it tinges and singularises particular moments or periods. Just think of how our time awareness changes during the experience of music, rhythms, poetry declamation or speech recitation on radio, for instance.

Certainly, music and speech perception are particularly interesting cases of auditory experience with a perceptually distinct character of unity, integration and intelligibility, which notably suits them for temporal experience. Husserl's well-known analysis of time consciousness during the auditory experience of a melody showed us that, even though we only perceive the tone moment-by-moment, we have a capacity for retaining the continually passing moments in a way that enables us to put them all together and thus unify them in a whole melody (Husserl 1991, pp. 40–42). This is made possible because of a tripartite composition of consciousness, according to Husserl, made of '*primal impressions*' (the live, actual experiences that occupy the momentary now), '*retentions*' (a sort of 'adumbrations',

14. It informs about sound sources, distance (via interaural time and loudness levels) and other space characteristics, like amplitude, indoors or outdoors situation (via resonance, reverberation or echoes, acoustic phenomena where duration and repetition is crucial).

‘primary memories’, not quite yet ordinary memories of previous tone-phases) and ‘proten-sions’ (future-oriented counterparts of retentions), at any given moment (Dainton 2010), that make the listener aware of the time flow yet suspending him in a continuous unified auditory stream of musical tone. Rather curiously – but significantly enough – Husserl used the example of an auditory experience that does not involve the perception of music but the perception of a mundane sonic event – the approaching of a stagecoach (Husserl 1991, pp. 289 *et seq.*)¹⁵ – in order to expound how we become conscious of temporal experience, giving thus an *aperçu* on how the perception of an aural event assists us in perceiving time itself.

Notwithstanding, the most striking aspect of temporal experience through the perception of sounds is not the fact that we become aware of the passage of time between a past, a present and a future but that it assumes a concrete and meaningful phenomenological character that has little to do with an abstract chronological time. The experience of sounds – of music, speech but also any natural or urban sounds – changes the awareness of time, expanding or compressing it¹⁶, associating it with feelings, ideas and, of course, memories – in fact, the temporal experience of sounds is not just a matter of perception but of memory as well – rendering it psychologically rich and meaningful. Furthermore, the enriched and hued experience of instants, moments, events, and periods by sound contributes to our own self-awareness and identity inasmuch as it assists us in building a temporal representation – a complex of narratives, a history – of our living experience. This might be conscious but also subliminal, since aural phenomena often permeate our experience in ways that we are not particularly aware of until we make some sort of reflexive exercise upon past events or until another similar auditory experience triggers feelings, thoughts or personal memories that were accompanied by sonic events¹⁷.

15. Husserl describes it in the following fashion: “The perception of the sound in the perception’s ever new now is not a mere *having* of the sound, even of the sound in the now-phase. On the contrary, we find in each now, in addition to the actual physical content, an *adumbration*; or better: we find a unique sound-adumbration that terminates in the actually sensed sound-now. If we focus reflectively on what is presently given in the actually present now with respect to the sound of the postilion’s horn, or the rumbling of the coach, and if we reflect on it just as it is given, then we note the *trail of memory* that *extends* the now-point of the sound or of the rumbling. This reflection makes it evident that the *immanent thing* could not be given in its unity at all if the perceptual consciousness did not also encompass, along with the point of actually present sensation, the continuity of fading phases that pertain to the sensations belonging to earlier nows. The past would be nothing for the consciousness belonging to the now if it were not represented in the now; and the now would not be now – that is, for the perceiving consciousness pertaining to the moment in question – if it did not stand before me *in that consciousness as the limit of a past being*. The past *must be* represented in this now as past, and this is accomplished through the continuity of adumbrations that in one direction terminates in the sensation-point and in the other direction and in the other direction becomes blurred and indeterminate.” (Husserl 1991, p. 290)

16. In his acousmatic experiences, Pierre Schaeffer detected some distortions in the perception of sound duration, which he labeled ‘*anamorphoses temporelles*’ [temporal anamorphosis] and developed in his *Traité des Objets Musicaux* (Schaeffer 1966, pp. 216–243).

17. In a recent publication dedicated to the role of audio technology in memory processes and cultural practices,

7. Soundscapes as dynamic and diegetic environments

The notion of 'soundscape' was, as it is now well-known, introduced by Robert Murray Schafer in 1969. Schafer based this notion in an analogy with landscape and defined it roughly as "any acoustic field of study" (a musical composition, a radio program or an acoustic environment) (Schafer 1993, p. 7), which means that any sound environment with an emphasis on the way it is perceived by an individual or society (Truax 1999) may be understood as being a *soundscape*. Landscape as a word appeared itself originally in reference to a framed image of land scenery in seventeenth century Dutch and Flemish painting (*landschap*) and progressively became a rather vague and comprehensive notion of a visual panorama of a spatial environment, a unified and harmonious image (be it graphic, mental or social) that exhibits, embodies or expresses the character of a place and grasps a certain impression of wholeness and identity. A soundscape can be understood – as it certainly is sometimes – as a metaphorical variation of that notion to the auditory realm, making it an aural representation of a specific sound environment. Nevertheless, the difference here cannot be just one of modality, a mere transfer from the visual to the aural. Because of the temporal nature of sounds, if it is an image, it is necessarily a dynamical and diegetic one, which already introduces a rather important difference in relation to a landscape, traditionally a rather static and descriptive image of the environment. I do not mean to say that a landscape has to be a purely static representation or entirely devoid of temporal indices and symptoms, but that its visual character makes an emphasis on a spatial dimension that is grounded in simultaneous and situational, rather than successive or causal, relations between the various components of the landscape. A soundscape develops in time; it describes events and tells a story or rather multiple stories that occur in a given environment.

It is clear that the spatial information conveyed by sounds, the spatial content of auditory perception, enables the perceiver with cognitive tools that are apt to build a descriptive and operational map of places and situations and thus also give a stable and structural representation of the environment. Likewise, the systematic relationships between individuals and the sonic environment is what sustains a scientific enterprise like acoustic ecology and even the idea of soundscape design – the improvement or even the creation and modelling of such environment – implies a supposed or expected relative stability. Even Schafer's basic

Carolyn Birdsall focus "sound souvenirs" in relation to the traumatic events experienced by *earwitnesses* of World War II, to whom involuntary remembering and embodied memories are, still nowadays, triggered by the listening of particular sounds. See (Bijsterveld & van Dick 2009, pp. 169–181).

features of a soundscape – ‘keynote sounds’, ‘signals’ and ‘soundmarks’ – delve in this structural logic in order to provide objective tools for the representation of the aural landscape’s identity. But none of these factors necessarily turn a soundscape into an immotile image of an environment.

What distinguishes the notion of the soundscape – which “consists of events heard not objects seen” (Schafer 1993, p. 8) – is, certainly, its temporal dimension, the fact that it is made of elements that occur in time, that start and cease, either instantaneous events or temporally extended processes, that suffer constant, even if mild, variations but may also somewhat persist through change. All these features and the way they may affect the perceiver qualify the sonic environment, giving it a particular set of hued perceptual and cognitive but also aesthetic and emotional attributes.

Naturally, a soundscape is not an abstract entity, it is a complex set of spatio-temporal acoustic relations that generally combines geophonic, biophonic and antropophonic (to borrow Gage and Krause’s terminology)¹⁸ elements that an individual can experience at different times and for different durations. It can be an episodic acquaintance – a one-time or iterative experience – or an extended endurance of the environment. Whatever the case, these different experiences are accompanied by aural events with varying degrees of vividness and affection that more or less impregnate them consciously or subliminally with audile memories. These souvenirs, which may be nostalgic ‘sound romances’ (the church bells of the native village, the steam train whistle traversing homeland prairies) but also traumatic ‘sound phobias’ (wartime bombings or ambulance sirens), may emotionally connect – or disconnect – the subject of those experiences with – or from – the respective environment and, certainly, are relevant features in the interweaving of personal acoustic narratives and the building up of identity.

As a final note, I should recall that, due to the nature of sound – what it is – and the psychoacoustic phenomenology of human auditory perception, each sound tells a story. Because of its temporal essence, when we hear a sound we always become aware of something that just happened, an event in the immediate past that produced the auditory effects we are experiencing at the moment, something that resonates in our body and will leave a deeper or lighter memorable trace – depending on multiple external acoustic and contextual factors but also subjective dispositions – that will endure in ourselves and become part of our own personal history. But we should also be aware that “a sound” is somewhat a *perceptual fiction*,

18. See (Krause 2008, p. 73).

inasmuch as our system of auditory perception is constantly working¹⁹ to decompose and recompose the extremely rich and entangled acoustic phenomena we are submersed in. The fact that some constitute meaningful experiences, charged with an aesthetical and/or emotional character is, of course, unpredictable, but this is what will make them a relevant part of our own narratives and will tie the affective knots that may bind us – or not – to a given soundscape and the place that it expresses. It is, therefore, important that we do not neglect the auditory realm of our lives, since a deeper understanding of the implications of sound experience may help us create, improve or model a more convenient acoustic surrounding but also teach us skills to properly enjoy and interact with it.

19. With processes such as auditory grouping, stream segregation, sequential and spectral integration that can be very complex and detailed in the now famous *auditory scene analysis*. For a summary of these complex processes, see (Bregman 1990, chapter 8, particularly pp. 641–697).

REFERENCES

- Bijsterveld, K. & van Dick, J.** (Eds) (2009) *Sound Souvenirs – Audio Technologies, Memory and Cultural practices*, Amsterdam: Amsterdam University Press.
- Bregman, Albert S.** (1990) *Auditory Scene Analysis: The Perceptual Organization of Sound*, Cambridge, MA: MIT Press.
- Bull, M.** (2000) *Sounding Out the City. Personal Stereos and the Management of Everyday Life*, Oxford – New York: Berg.
- Casati, Roberto & Dokic, Jérôme** (1994) *La philosophie du son*, col. «Rayon Philo», Nîmes: Éditions Jacqueline Chambon.
- (2012), “Sounds”, *The Stanford Encyclopedia of Philosophy* (Winter 2012 Edition), Edward N. Zalta (ed.), URL = <<http://plato.stanford.edu/archives/win2012/entries/sounds/>>.
- Chion, Michel** (2010) *Le Son: Traité d'Acoulogie*, 2e Édition Revue et Corrigée, Col. «Cinéma/Arts Visuels», Paris: Armand Colin.
- Cohen, Jonathan** (2010) “Sounds and Temporality” in Zimmermann, Dean W. (Ed.), (2010) *Oxford Studies in Metaphysics, Volume 5*, Oxford: Oxford University Press, pp. 303–320.
- Dainton, Barry** (2010), “Temporal Consciousness”, *The Stanford Encyclopedia of Philosophy* (Spring 2014 Edition), Edward N. Zalta (ed.), URL = <<http://plato.stanford.edu/archives/spr2014/entries/consciousness-temporal/>>.
- Husserl, E.** (1991) *On the Phenomenology of the Consciousness of Internal Time (1893–1917)*. Vol 4 of Edmund Husserl: Collected Works, Ed. by Rudolf Bernet. Transl. by John Barnett Brough, Dordrecht: Kluwer Academic Publishers.

- Krause, B.** (2008) "Anatomy of the Soundscape: New Perspectives" in *Journal of the Audio Engineering Society*, Jan/Feb 2008 Vol. 56 Number 1/2, Pp. 73–80.
- Moore, C. J.** (2013) *An Introduction to the Psychology of Hearing*, 6th edition, Leiden & Boston: Brill.
- Nudds, Matthew & O'Callaghan, Casey** (Eds) (2009) *Sounds and Perception – New Philosophical Essays*, Oxford: Oxford University Press.
- O'Callaghan, Casey** (2007) *Sounds – A Philosophical Theory*, New York: Oxford University Press.
- (2014), "Auditory Perception", *The Stanford Encyclopedia of Philosophy* (Summer 2014 Edition), Edward N. Zalta (ed.), forthcoming URL = <<http://plato.stanford.edu/archives/sum2014/entries/perception-auditory/>>.
- Schaeffer, Pierre** (1966) *Traité des Objets Musicaux – Essais Interdisciplinaires*, Paris : Éditions du Seuil.
- Schafer, R. Murray** (1969) *The New Soundscape – A Handbook for the Modern Music Teacher*, Scarborough, Ontario: Berandol Limited Music.
- (1993) *The Soundscape: Our Environment and The Tuning of The World*, Rochester, VT: Destiny Books.
- Strawson, Peter Frederick** (1959) *Individuals: An Essay in Descriptive Metaphysics*, University Paperbacks, London: Methuen.
- Truax, Barry** (ed) (1999) *Handbook of Acoustic Ecology*, Second edition, Cambridge Street Publishing, available online at <<http://www.sfu.ca/sonic-studio/handbook/index.html>>.
- Warren, R. M.** (2008) *Auditory Perception: An Analysis and Synthesis*, 3rd Edition, Cambridge: Cambridge University Press.

The Sounds of Driving – Making Sense of Self, Others and Place

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Abstract

Consider driving a car without sound, no engine noise, no music or voices, no honking of horns, no whoosh of passing traffic or splash of tyres on wet tarmac. Without sound, much of the meaning and texture of driving becomes lost. In this paper we suggest that a careful attention to sound, not just music, can give insights into how affect moves between and through human and non-human bodies. We argue that the affective and emotional experiences and relations that arise through car driving practices are significant to how people understand themselves, others and place and is part of the reason people continue to drive their cars given we know the environmental impact they have.

“The Police as Amplifiers”: Noise, the State, and Policing the Crisis

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Abstract

This paper argues for the methodological and theoretical use of sound in studies of policing, through an examination of police radio dispatches detailing the police eviction of an Occupy Movement encampment in Oakland, California in the United States in 2011. The paper mobilizes Stuart Hall, et al.'s concept of the “police as amplifiers,” as well as aspects of Control Theory, to theorize that listening to and analyzing the sound of the police (via police dispatches and other sonic archives) might serve to “amplify” otherwise silenced “disturbances” in urban space, and allow for a consideration of how social, economic, and political crises may be managed (or heard) differently on local and global scales.

Keywords: noise, police, amplifiers, state, Occupy Movement

“...the central apparatuses of social control in the state: the police and the courts.”

Stuart Hall, et al.¹

“...this order by noise is not born without crisis.”

Jacques Attali²

1. Noise, Control, and Amplifiers

The history of noise is a history of control. Control Theory, a concept originally emerging from the fields of engineering and mathematics (and now used in Psychology, Sociology, and Criminology, among other fields) theorizes about the design and maintenance of stable and predictable systems. Audio technologies, such as amplifiers, were invented to control, manage, and reduce noise, and informed early theories of control. Today, the policing of noise is evidenced in noise ordinances, crowd control, and sound-proofing technologies in prisons and detention centers globally. The control of noise is, in many ways, the control of society. Theorist Stuart Bennett, wrote in his history of control engineering, that the goal of amplifiers specifically was to increase the power of a signal, while reducing “the noise and disturbance in the system”.³ Another control theorist, James R. Leigh observed, “...to achieve successful control we must have a defined objective and be able to predict adequately, over some sufficient time scale, all the outcomes of all the actions that are open to us”⁴. System control is a concern of audio engineers, as well as local police. It is within this “control intersection” that this research resides. I seek to apply Stuart Hall, et al’s, assessment of the “police as amplifiers,”⁵ to listen to and analyze the role of police in increasing, while controlling, disturbances in social, political, and economic systems.

1. Stuart Hall, Chas Critcher, Tony Jefferson, John N. Clarke, Brian Roberts. *Policing the Crisis: Mugging, the State and Law and Order* (New York: Palgrave Macmillan, 1978) 30.

2. Jacques Attali. *Noise: The Political Economy of Music*. (Manchester: Manchester University Press, 1985), 31.

3. Stuart Bennet. *A History of Control Engineering, 1930-1955* (London: The Institution of Electrical Engineers, 1993), 97.

4. James R. Leigh. *Control Theory* (London: The Institution of Electrical Engineers, 2004), 4.

5. Stuart Hall, Chas Critcher, Tony Jefferson, John N. Clarke, Brian Roberts. *Policing the Crisis: Mugging, the State and Law and Order* (New York: Palgrave Macmillan, 1978), 38.

One way to access an understanding of the “police as amplifiers” is through studying the sounds of the police; in the case of this research, through listening to police dispatches. Sound is a crucial missing link in the study of policing, particularly given the silence and inaccessibility surrounding internal police communications. Making these sounds public does much to offer transparency and accountability in regards to criminal justice agencies around the world. Taking the notion of the police as amplifiers literally here, I am interested in applying the materiality and theory of amplification as a way to think through how power works in and around policing and practices of criminal justice. Indeed, amplification itself is about power, energy, and the focusing of power toward a particular (sonic) end.

Stuart Hall, et al., in the book *Policing the Crisis* (1978), a study of anti-mugging policing in the U.K., argued that policing both structured and amplified particular crimes with their overt attention to them. Hall, et al. noted that over-policing of particular behaviors can provoke a criminal response from the general public, thus producing a self-fulfilling prophecy and cycle of crime that confirms police suspicious of criminal activity among particular populations. As a participant in the Occupy Movement in 2011 and other forms of organized social protest that have been heavily policed, I am interested in understanding Hall, et al.’s argument of the “police as amplifiers” in the context of mass protest policing and arrest. How might the sound of protest policing help one understand the nature of the crises being policed, or perhaps the crises being produced by policing itself?

2. Occupy Noise

This study of police dispatches engaging Occupy protests, links practices of everyday, local policing to mass global policing. The worldwide Occupy Movement and the corresponding global police response offers insight into dynamics of capture and escape on a worldwide scale, and also amplifies sonic dimensions of systems of global capitalism and incarceration. Police dispatches of the eviction of a large Occupy encampment at City Hall in Oakland, California in the United States in 2011, for example, offer a window into contemporary realities and possible futures of mass policing and mass protest. The rarity of these kinds of recordings being made public speaks to the importance of studying sound in general, and these recordings in particular, in the context of global police accountability and transparency. The police dispatches of the eviction of Occupy Oakland are the only sonic documents

of an Occupy eviction made public by a police department that this researcher could locate, making these dispatches a crucial site for studying sound, policing, and global protest in the contemporary moment.

Jacques Attali wrote, “change is inscribed in noise faster than it transforms society.”⁶ Attali observed that noise may even function as a herald for society, predicting and sometimes predicating the future. Listening to dispatches of the police-led eviction of Occupy Oakland offers a sonic exploration of possible futures in regards to global capture and/or escape. The Occupy Movement, an unprecedented global interrogation of wealth distribution, which coalesced in over 700 confirmed simultaneous linked protests in over 80 countries signals one possible future. Another future is represented by the coordinated police response to Occupy, successfully evicting multiple encampments in the U.S. through coordinated federal, regional, and local action.⁷

The sonic juxtaposition of attempts to capture protestors by Oakland police, and attempts by Oakland protestors to escape, heard here, offer a sonic text through which to study the nuances of managing, protesting, and policing the global political economic crisis. Attali reminds us that noise (in all forms) is a source of power, and as such, power has always listened to it with fascination.⁸ He wrote: “eavesdropping, censorship, recording, and surveillance are weapons of power. The technology of listening in on, ordering, transmitting, and recording noise is at the heart of this apparatus.”⁹ What, then, is the power and the potential to eavesdrop on the eavesdroppers, to record the recorders, to surveill the surveillers? How might turning the power of listening on the state shift power from the state to everyday people?

3. The Sound of the Police

The criminalization of non-violent protest in the United States has a long history, and exists as the backdrop to the Occupy Oakland eviction of October 25, 2011, as well as the evictions of other non-violent Occupy encampments globally preceding and following the Occupy

6. Jacques Attali. *Noise: The Political Economy of Music*. (Manchester: Manchester University Press, 1978), 31.

7. Naomi Wolf, “The shocking truth about the crackdown on Occupy,” *The Guardian*, November 25, 2011.

8. Jacques Attali. *Noise: The Political Economy of Music*. (Manchester: Manchester University Press, 1985), 32.

9. *Ibid.*

Oakland eviction. The scholarly concerns of Stuart Hall, et al., are “not the individual abuses of police power by this or that policeman on this or that occasion, but effects which stem from the organisational structure and social role of the police force itself.”¹⁰ Analyzing the “police as amplifiers” allows one to consider the control system of criminal justice beyond the actions of individual officers. Attention to the process of amplification as control clarifies the role of police in U.S. and global society, and broadens an understanding of how, in the words of Hall et al., police both “structure” and “amplify” behavior which the state deems criminal.

What role do police agencies and the criminal justice system play in structuring and amplifying local and global crises? One place to begin answering this question is within police dispatch sound recordings and related documentation. Sonic clues located therein indicate where and how social “crises” are articulated (and at times produced) by police, as well as the process of policing those crises.

The “After Action Report” (2012) by the Oakland Police Department (OPD) summarized lessons from the October 25, 2011 eviction of Occupy Oakland and offered police justifications for the use of recording technologies in policing. Under “INTELLIGENCE” the following information is stated: “The mission of the Intelligence Section was to gather information, regarding the Occupy Oakland group, of use to commanders planning the eventual removal of the camp. Intelligence gathering began shortly after the camp was established and continued up to the morning of the operation, when the role turned to surveillance of the operation.”¹¹ This report indicated that surveillance was applied by the OPD with the particular goal of removal of Occupy Oakland. With this goal, the control system for Occupy Oakland was set in place, and a course of action was implemented by the OPD toward the eviction of Occupy. Occupy was deemed to be a disturbance in the system.

Noteworthy here is Stuart Hall et al.’s quoting of Jock Young’s work that identified an approach to policing “whereby the behavior of a stigmatized or deviant group comes progressively to fit the stereotype of it which the control agencies already hold... ‘translation of fantasy into reality.’”¹² In the OPD’s surveillance of Occupy Oakland, the police surmised a criminal threat in the protest and determined only one possible outcome – the eviction of Occupy. With surveillance and tactical operations mobilized by the OPD, information was collected toward fulfilling the goals of arrest and eviction. In this way, following Hall’s the-

10. Stuart Hall, Chas Critcher, Tony Jefferson, John N. Clarke, Brian Roberts. *Policing the Crisis: Mugging, the State and Law and Order* (New York: Palgrave Macmillan, 1978), 43.

11. Oakland Police Department, “After Action Report: Analysis of Operation BF01-2011-000. October 25, 2011” (Oakland: Oakland Police Department, 2012), 6.

12. Stuart Hall, Chas Critcher, Tony Jefferson, John N. Clarke, Brian Roberts. *Policing the Crisis: Mugging, the State and Law and Order* (New York: Palgrave Macmillan, 1978), 42.

oretical line, the OPD assisted in amplifying “the crisis” of Occupy in their very process of policing it. The police made Occupy a social crisis by identifying it as such, and mobilizing police personnel and resources in the form of a crisis response.

The sounds of this can be heard through the amplifier of the police dispatch, in the lead up to the physical eviction of Occupy Oakland protestors: “Unlawful assembly being read now, they have 5 minutes from now,” identified one Sargent on the dispatch in the early morning hours of October 25, 2011. I recall here control theorist, James R. Leigh: “...to achieve successful control we must have a defined objective and be able to predict adequately, over some sufficient time scale, all the outcomes of all the actions that are open to us.”¹³ The classification of Occupy Oakland’s assembly as “unlawful,” and setting a timetable of “5 minutes”¹⁴ until the eviction, allowed the Oakland Police Department to implement an immediate system of control in regards to the Occupy encampment. The police then proceeded to amplify their response: through bullhorns, police mobilization, arrests, and barricades of the Oakland City Hall park.

Absent from the justifications of eviction of Occupy by the OPD in the “After-Action Report” were the political aspects of the protest and larger Occupy Movement. Occupy’s questioning of city and police authority and resources, and critique of wealth inequality, were set aside, ostensibly, for OPD concerns over “fire hazards, sanitation, food storage, unsafe structures built into the Plaza, noise.”¹⁵ This framing and approach to the policing of Occupy Oakland was replicated in the evictions of other Occupy encampments globally in the following weeks. Minor legal infractions, such as fire hazards, sanitation, and food storage, were suddenly immediate and top city concerns, justifying the mobilization of entire police forces as a response, and in the case of Occupy Oakland, police forces from several surrounding cities assisting in the eviction. The police focus on property, as a proxy for a focus on people, ironically supported the Occupy Movement’s critique of systems of governance and U.S. institutions prioritizing property and profit over people. The repeated sonic references in the OPD dispatches to police surrounding, retaking, and barricading “city hall” are not without symbolic meaning in the context of “occupation.” Here one can hear the sonic manifestation of the state privatizing what was formerly public space, government, and resources; the sounds of reoccupation / recolonization in the form of sirens, static, and marching orders from the Oakland Police Department.

13. James R. Leigh. 2004. *Control Theory* (London: The Institution of Electrical Engineers, pp. 4.

14. Oakland Police Department. “COMM Disk 1” (Oakland, CA: Occupy Oakland Public Records, 2012).

15. Oakland Police Department, “After Action Report: Analysis of Operation BF01-2011-000. October 25, 2011” (Oakland: Oakland Police Department, 2012), 2.

Heard on one portion of dispatch that chronicled the minutes before and after the physical eviction of Occupy, one voice periodically gives updates about the protestors. “For the record” is the introductory phrase given each time, with updates anticipating resistance from the protestors: “for the record, the crowd is saying ‘Man the barricades’; “for the record, the crowd starting chanting [censored]”; “for the record, we’ve seen more shields come out”; “for the record, they are trying to make plans to do something.”¹⁶ This phrasing suggests a hyper-consciousness by the speaker that the police dispatch may exist as a archival document of the events unfolding. The phrasing is explicit and precise in its delivery, and stands out from the variety of other police chatter coordinating the eviction. This is the embodied voice of the surveillance state, one that is aware of and intentional with its purpose and process. The majority of the voices on the dispatch, however, are the rank-and-file officers: noisy, disorganized, questioning, requiring order (“where should we line up?”; “can someone turn lights on?”; “captain, should we make arrests of these people?”) This is the sound of the state in crisis. Sergeants order the rank-and-file in complacent, even tones, commanding officers to “line up!” “hold the line!” “keep pushing!” “yes, everyone is subject to arrest.”¹⁷

Through this attempted system of control, this amplifier, one hears other noises and disturbances, in the form of the Occupy protestors resisting with drums and chants. The words are intelligible, but a rhythm of drum beats can be heard as an occasional soundtrack to the police convergence on City Hall.¹⁸ At times, the sounds of the protest are indecipherable from the dispatch static (it is all noise), and exemplifies the collective sonic and political disturbances in the police amplification system. Control theorist, Stuart Bennett, reminds us that the history of systems engineering in the United States is a history of “struggling to get control systems working in the presence of noise and non-linearities.”¹⁹ The OPD dispatch chronicles the sound of a control system working to get noise, and the people that emit noise (both protestors and officers), under control.

The system of control enacted by the OPD was wide-ranging. In terms of forms of surveillance of Occupy Oakland, the OPD had identified as “successes,” the following: “electronic intelligence...gathered via Internet; Human intelligence... gathered via surveillance and interaction with group participants; Real time surveillance... to alert law enforcement participants that the operation had been compromised and that occupiers were barricading the plaza; Surveillance during the camp removal served to assist commanders with direct-

16. Oakland Police Department. “COMM Disk 2” (Oakland, CA: Occupy Oakland Public Records, 2012).

17. Oakland Police Department. “COMM Disk 2” (Oakland, CA: Occupy Oakland Public Records, 2012).

18. Ibid.

19. Stuart Bennett. *A History of Control Engineering, 1930-1955*. (London: The Institution of Electrical Engineers, 1993), 120.

ing resources”.²⁰ These various forms of surveillance coalesced in the OPD dispatch record on Occupy Oakland, which constituted almost 12 hours of police activity on the day of the eviction. The initial eviction of Occupy Oakland and some 300 protestors around 5 a.m. on the morning of October 25, 2011, amplified a response from city residents. Over 1000 residents converged on downtown Oakland in the hours following the eviction and engaged in an 8-hour clash with the OPD.²¹

Three days later on October 28, 2011, protestors returned to “re-Occupy” Oakland’s City Hall with about 25 tents. Oakland Mayor Jean Quan responded with the statement, “We have decided to have a minimal police presence at the plaza for the short term and build a community effort to improve communications and dialogue with the demonstrators.”²² Amplifiers, designed to manage feedback, as well, is exhibited here in the Mayor’s actions. Stuart Bennett wrote of the history of amplification, “ the lack of knowledge and understanding of the effect of feedback in systems resulted in... a greater interest in the problems of control.”²³ Mayor Quan, in managing feedback from Occupy protestors to the eviction of the original Occupy encampment, retooled the city’s approach to control. Applying a “delay” to the sound and sight of police at Occupy, Quan administered the system of control via silence: an intermission of almost two weeks, before the OPD would return for a final and permanent eviction of Occupy Oakland.

The noise of Occupy Oakland, however, was not reduced in the interim. A “General Strike” of about 7000 people, according to city estimates at the time, followed a week after the initial eviction. It shut down the Port of Oakland, the fifth largest port in the United States, on November 3, 2011.²⁴ Success was heard from an Occupy bullhorn at the port that evening: “The port has been shut down. Let’s head back to the plaza,” the original location of Occupy Oakland at City Hall. ²⁵

Mayor Quan would order the removal of Occupy Oakland a second and final time on November 14, 2011. Amplifying Occupy yet again with this police action, a second shutdown of the Port of Oakland by Occupy protestors occurred on December 12, 2011. The eviction of Occupy Oakland, and evictions of other Occupy Movement encampments globally between

20. Oakland Police Department, “After Action Report: Analysis of Operation BF01-2011-000. October 25, 2011” (Oakland: Oakland Police Department, 2012), 6.

21. Kristin J. Bender, Scott Johnson, Sean Maher, Cecily Burt, and Angela Woodall, “Occupy Oakland: Clashes last into night after pre-dawn raid on encampment,” *Oakland Tribune*, October 25, 2011.

22. David Morgan, “Oakland protesters re-‘Occupy’ plaza,” *Associated Press / CBS News*, October 28, 2011.

23. Stuart Bennett. *A History of Control Engineering, 1930-1955* (London: The Institution of Electrical Engineers, 1993), vii.

24. Oakland Tribune, “Occupy Oakland Live Blog Nov. 2, 2011,” *Oakland Tribune*, November 2, 2011.

25. Associated Press, “Occupy Oakland shuts down port,” *CBS News*, November 3, 2011.

2011 and 2012, reduced the original energy of Occupy, but did not silence it. The voices and sounds of the Occupy Movement, and other global protests since, have echoed into popular culture and media, and remain as ringing reminders of the power and possibility of listening to noise.

REFERENCES

- Associated Press**, "Occupy Oakland shuts down port," *CBS News*, November 3, 2011.
- Alexander, Michelle**. *The New Jim Crow: Mass Incarceration in the Age of Colorblindness*. New York: The New Press, 2013.
- Attali, Jacques**. *Noise: The Political Economy of Music*, Manchester: Manchester University Press, 1985.
- Bender, Kristin J., Scott Johnson, Sean Maher, Cecily Burt, and Angela Woodall**, "Occupy Oakland: Clashes last into night after pre-dawn raid on encampment," *Oakland Tribune*, October 25, 2011.
- Bennett, Stuart**. *A History of Control Engineering, 1930-1955*, London: The Institution of Electrical Engineers, 1993.
- Leigh, James R**. *Control Theory*, London: The Institution of Electrical Engineers, 2004.
- Hall, Stuart, Chas Critcher, Tony Jefferson, John N. Clarke, Brian Roberts**. *Policing the Crisis: Mugging, the State and Law and Order*. New York: Palgrave Macmillan, 1978.
- Holland, Gale**. "The air horn heard around Skid Row." *Los Angeles Times*, April 6, 2014.
- Oakland Police Department**. "After Action Report: Analysis of Operation BF01-2011-000-October 25, 2011." Oakland, CA: Police Department, February 20, 2012.
- . "COMM Disk 1," Oakland, CA: Occupy Oakland Public Records, 2012.
- . "COMM Disk 2," Oakland, CA: Occupy Oakland Public Records, 2012.
- Oliveres-Giles, Nathan**, "Cracking down on gunshots." *Los Angeles Times*, December 30, 2008.
- Stempel, Jonathan**, "Top court will not revisit Illinois eavesdropping law," *Reuters*, November 26, 2012.

Noise in Politics (a part of “Partitions” Research): Zone-laws, Neighbors, Gentrifications, and Noise Com- plaints – Thoughts on Conflicts in Spatial Perceptions

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Abstract

When one detects that the aural partition is clearly ‘not matching’ with the visual/physical partition, situations such as ‘noise complaints’ may occur. One would assume that a certain physical area portioned visually, is being secured as one’s own private space. However, such private space does not guarantee synchronicity with the ‘aural space’ boundaries.

Neighbors’ voices leaking through the walls, loud rock music blasting from passing cars through the windows, and even birds chirping in the morning heard in the bed through closed windows during cold seasons, are results of being in various acoustic arenas at the same time. None are matching with the dimensions or the size of the visually decoded private space. When you hear sounds from beyond the visual boundary, people describe them as hearing sounds from ‘outside’. In fact, you are ‘inside’ the overlapping acoustic arenas. If you build a soundproofed wall, add another layer of windowpane, or blast even louder music to drown everything else out, it is an attempt to ‘divide’ the acoustic arena –to match with the visually represented boundaries. As individual’s hearing varies in relation with the environment, and widely depends on personal preferences; defining ‘noise’ should not and will never be a simple business.

However, when it comes to the term, ‘noise pollution,’ the matter becomes political. The tolerance level of sounds ‘leaked from outside of visual boundary,’ shifts and changes. In an over-populated urban area, it closely synchronized with (and is occasionally driven by) economy and politics.

Gentrification, analyzed from the angle of aural aspects, would cast a new ‘pattern movement’ in our landscape. As a case study, the author examines the case of New York City from mid-1990’s “Giuliani era” via Broomberg through the current.

Kikuo Saito and the Children of Nishijin: The Soundscape of a Weaving District and Sound Education in an Elementary School in 1960s Kyoto

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Abstract

Kikuo Saito, an elementary school teacher at a school in the Nishijin area of Kyoto, self-published some original research in the 1960s on soundscapes and the use of sound in education. The Nishijin area is well known for its association with its local industry of traditional silk textiles, so it was filled with the noise of the many workshops' looms. Saito's report provided information about the sonic environment that pervaded the lives of his pupils, including the spatial distribution of sound levels. Saito developed original use of the noise environment in his teaching, encouraging his class to compose essays and poems around those factory noises, which he compiled into publications. Thus, Saito provided excellent and rare evidence regarding the past soundscape in Nishijin from both physical and cognitive viewpoints. Moreover, his practices as a teacher could be regarded as a pioneering case of sound education.

Keywords: Nishijin textile industry, past soundscape, sound education, writings by pupils

1. Introduction

In the 1960s, an elementary school teacher named Kikuo Saito (1929–2000) found that the pupils in his school, located within the Nishijin area of Kyoto, Japan, were subjected to sustained high levels of noise, both in the classroom and in their everyday lives at home.

The Nishijin area is quite well known in Japan for its traditional textile industry. The area used to be filled with loud weaving noises made by the power looms of the many small factories, especially in the 1960s and 70s. Thus, the Nishijin residents were living their everyday lives within the soundscape of weaving noises (Minoura 2006, 2007).

Saito sought to use these experiences of noise within his teaching, and in doing so, he developed an interesting and useful body of original writings on his educational practices and his research on soundscapes. The book he compiled included two significant implications in relation to the soundscape studies.

First, he provided detailed information of a case of the past soundscape including sound levels and people's responses. Second, he left his original ideas of education in his texts focusing on his use of factory noise as a medium for his pupils' education. Thus, he can be regarded as an unknown pioneer in soundscape research and sound education.

This paper introduces the soundscape in Nishijin in the 1960s as it is presented in the materials researched, taught, and compiled in Kikuo Saito's book. This case provides a sample of the residents' experiences living with the factory noises resulting from the local textile industry. Furthermore, the paper discusses a methodology with regard to soundscape case studies and sound education.

2. The Industry and the District Studied

2.1. Nishijin Textile Industry

The production of textiles in the Nishijin area has a long history, with origins dating back to the eighth century. A remarkable development of the textile industry in Nishijin occurred in the seventeenth century, and from that time onwards, it was the most important centre for Japanese textiles. During the modernization period, which started in the late nineteenth century, the area played a role as one of the industrial centres of Kyoto. After a temporary

decline in production due to the controlled economy during World War II, Nishijin boomed again during the post-war period of economic growth. In the late 1970s, however, textile manufacturers started moving their production to other places where they could make use of cheaper labour. In addition to this, the textile industry itself began to decline from the 1980s onwards. As a result, although the Nishijin textile industry is still one of the important industries in Kyoto, the current scale of production inside the Nishijin area is greatly reduced from how it was in the 1960s and 70s, when weaving noises could be heard everywhere.

The Nishijin textile industry has been largely centred on the production of silk fabrics that are mainly used for Japanese traditional costumes, kimonos, and obis (the Japanese sash used for the kimono). They also produce textiles for other uses, such as neckties or interior decoration. The weavers in Nishijin use power looms as well as hand looms, and since the latter half of the 1960s, power looms have made up around 80% of the looms in the area.

The textile industry in Nishijin consists mainly of small businesses, and there have been numerous small weaving workshops mingled in with residences. Typically, the workshops in the area are situated either within or adjacent to the traditional wooden houses of the residents, and in each of these workshops there would be one or more power looms in operation.

The textile industry has for a long time been a symbol and source of identity for the people living in Nishijin. This was due in part to the economic importance of the industry to the area, and the dependence that the people had on the industry for their livelihoods. It was also, however, a proudly emotional attachment to the long historic association between Nishijin and textiles, and in particular the high quality of production associated with Nishijin textiles.

2.2. Nishijin Area and Kashiwano District

Although the name of Nishijin has been widely used to call the area, the actual geographic area is not clear, because the name is not formal but conventional. Taniguchi et al. (1993) defined the areas of “Old Nishijin” and “Large Nishijin,” as shown in Figure 1. “Old Nishijin” meant the area where the industry had been historically conducted, and “Large Nishijin” was where the industry was densely located. The area of Large Nishijin stretches over the Kami-gyo and Kita Wards of Kyoto City.

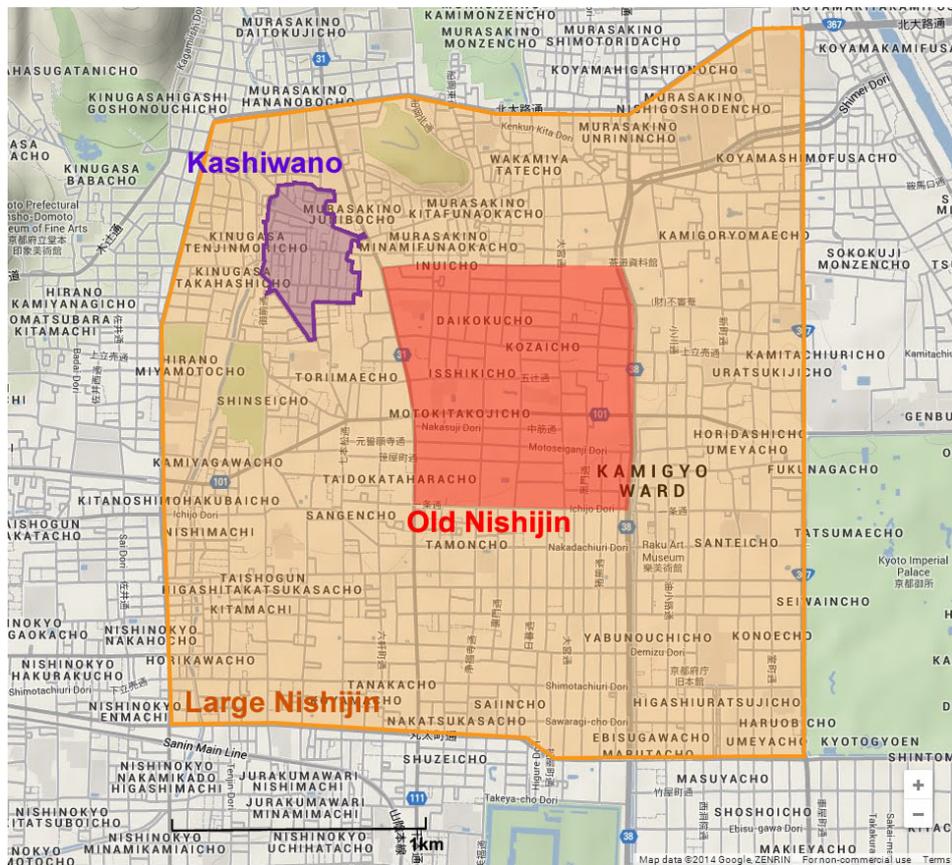


Figure 1. Locations of Old and Large Nishijin and Kashiwano District.

Kashiwano is a formal district that lies in the Kita Ward of Kyoto City. It is situated on the north-western part of Large Nishijin, as shown in Figure 1. It is also a school district for the Kashiwano Elementary School. The district had developed in the earlier half of the twentieth century as a new place for workshops and weavers' residences. Most of the weavers had started their own businesses in the area after learning their skills as employed weavers nearby. Many of them conducted subcontracted work that was provided from larger companies.

During the 1960s, Kashiwano was one of the most densely populated districts in Kyoto City. According to the 1965 Population Census of Japan, the population of the district was 6,914, living in an area of 0.166km², which means that the density was over 40,000 residents/km². In the 1966 Establishment and Enterprise Census of Japan, there were 613 manufacturers in the district, most of which were connected with the textile industry. In recent years, the number of residents and manufactures has significantly declined: in 2010, there were 3,347 residents, and only 83 manufacturers in 2009.

3. Saito's Profile and His Education

Kikuo Saito was born on 21 August 1929 in Kyoto. He began his career as a school teacher in 1953 just after graduating from university. Except for his first two years in a junior high school, he was consistently engaged in primary education until his retirement in 1990. He passed away on 15 January 2000.¹ In 1995, Saito self-published a book titled *Ookina Ki no Shita no Kodomotachi* (Children beneath big trees) after he had retired from teaching (Saito 1995). The book was a collection of writings in relation to his activities as a school teacher mainly in the three elementary schools, including articles on education, poems, and essays written by the pupils. He was especially interested in using writing in his educational practice, so he often made his pupils write essays and poems. He was active in research, and he was a member of a research community for elementary school teachers.

Saito worked at Kashiwano Elementary School between 1963 and 1971 (when he was between 33 and 41 years old), and at the end of this time he compiled a book titled *Nishijin no Ko* (Children in Nishijin), which included his writings in relation to his teaching experiences at the Kashiwano school (Saito 1971). The book was 175 pages; the first half of it consisted of the pupils' work, and in the second half, he included his research reports, as shown in Table 1.

In the book, the chapters *Nishijin no Uta* (#2), *Nishijin no Uta 2* (#6), and *Nishijin no Ko to Hata no Oto* (#12) detail Saito's interests in and research on the sonic environment of Kashiwano in Nishijin, which at that time was full of the noises of weaving. It is these chapters that are of most interest from the point of view of soundscape, and which we will discuss in particular in this paper.

1. Based on Saito (1995) and an interview with Hiroko Saito, Saito's wife, and Tomoko Saito, Saito's daughter (2009/5/24).

Table 1. The Contents of the book *Nishijin no Ko* (Saito 1971)

No.	Title	Year	Number of Pages	Explanation
	Preface		1	
1	Tale: <i>Nishijin no Uta</i> (Poetry of Nihijin)	1970	11	A story illustrating the lives of the children in Nishijin, quoting from the pupil's poems.
2	Collection of Writings <i>Nishijin no Uta</i> (Poetry of Nishijin)	1964	9	A collection of writings of the fourth grade pupils of his first class at Kashiwano school.
3	Collection of Writings <i>Tenjin san</i> (Kitano Temmangu Shrine)	1964	9	A collection of writings of the fifth grade pupils of his class, including poems focusing on Kitano Temmangu Shrine.
4	Radio Programme Scenario <i>Ennichi to Kyoto no Kodomo</i> (A festival of Children in Kyoto)	1964	9	On air on 28 December 1964, produced by NHK Kyoto station.
5	Collection of Writings <i>Kinkakuji</i>	1965	5	A collection of the pupils' poems focusing on Kinkakuji Temple, which is close to the school.
6	Collection of Poems <i>Nishijin no Uta 2</i> (Poetry of Nihijin)	1965	16	A collection of writings by the fifth grade pupils of his class.
7	Radio Drama <i>Nishijin no Uta to Kodomo</i> (Poetry and Children in Nishijin)	1965	6	On air on 23 May 1965, produced by NHK Kyoto station.
8	Songs "Ojizo-san" and two others	1966	3	A composer made a melody for his pupils' poems.
9	Essays <i>Watashi no Okasan</i> (My Mother) and one other	1969	6	Two comparatively long essays by his pupils.
10	<i>Nishijin no chiiki oyobi sangyo no gaikan</i> (Outline of Nishijin area and industry) by Yasoya Matsumura.	1966	8	Reprint of a paper from "Study on understandings of modern children" (Bulletin of Kyoto City Institute for Educational Research, 129, 1966)
11	<i>Honko Jido no Kogai Seikatsu</i> (Life outside the school of the pupils)	1964	21	A report on the lives of the pupils in relation to pocket money, places to go, contents of play, etc.
12	<i>Nishijin no Ko to Hata no Oto</i> (Children in Nishijin and the Sounds of the Looms)	1966	24	A research report consisting of measurements of noise levels and experiments on the effects of noise on learning.
13	<i>Nishijin no Ko to Terebi</i> (Children in Nishijin and Televisions)	1967	24	A research report about pupils' experiences of watching TV.
14	<i>Tsuchihyo no Mondaiten</i> (Problems in a grade report)	1969	22	A research report about grading.
	Postface		1	

Table 2. Contents of Nishijin no Ko to Hata no Oto (1966)

I Introduction
II Measurements of noise levels in Nishijin <ol style="list-style-type: none">1. Classrooms in Kashiwano school2. Children's rooms in their residences3. On the streets in Kashiwano district4. Summary of the results
III Children in Nishijin and sounds of looms <ol style="list-style-type: none">1. Sounds of looms and fraction calculation (calculation, efficiency)2. Sounds of looms and Uchida-Kraepelin test (efficiency, personality)3. Sounds of looms and memory (memory)4. Sounds of looms and test on annoyance of noise (sense)5. Summary of results
IV Countermeasure against sounds of looms and guidance to pupils
V Conclusion

4. Saito's Research on the Sounds of the Looms and Their Effects on Children

The article Nishijin no Ko to Hata no Oto (Children in Nishijin and Sounds of Looms) was written in 1965 to report the results of his research on the relationship between the local industrial noise and children's learning. He submitted this report to a competition for educational research by elementary school teachers of the Kyoto City Board of Education, and it was awarded for one of the ten best papers in 1966 (Kyoto City Board of Education et al. 1966). The contents were the results of measurements of noise levels in classrooms, residences, and on streets, along with his experiments on the effects of noise on learning, as shown in Table 2.

In the introduction to the report, Saito described his motivation for the research as follows:

With the children of Kashiwano school, who always live within the sounds of the looms from morning till night, I came to feel that those intense sounds of looms have affected their problems in learning, life, physical development, etc.

So I started to research whether Kashiwano children can study and live their lives well with that loud noise.²

Further, he wrote, “This research would contribute to happier lives of the children, not only in Kashiwano but also in the whole of Nishijin (weaving districts)” and “Expanding to the noise made by traffic, construction, and other industries, this is one of problems for most children in the present day.”

In the school context, he measured the noise levels in 13 classrooms with the windows open in two conditions: with and without pupils inside. He determined accepted values with medians calculated from 50 measurements with intervals of five seconds using Rion’s Sound Level Meter NA-02.

In the context of pupils’ homes, he measured sound levels in the pupils’ rooms and in the rooms for weaving, in 11 residences that had operating looms. The average levels were 89 dB in the weaving rooms, 61 dB in the children’s rooms with the doors and windows closed, and 69 dB with the doors open.

In the Kashiwano district, he measured sound levels at 305 public points, with intervals of 25 steps. He read the level meter needle and wrote down the approximated values in 5 dB units. Figure 1 is a copy of the map showing the sound level measurements. He also plotted the locations of the houses from which the sounds of looms could be heard with dots on the map. Table 3 shows the distribution of the sound levels. From his data, the most frequent value was 65 dB and the average was 64 dB.

He conducted an experiment on the effect of noise on the pupil’s efficiency at engaging in tasks. The subjects were exposed to recorded sounds of looms with three different conditions; 50, 70, and 90 dB, and they were requested to do several kinds of tasks. From this experiment, Saito reached the four following conclusions:

1. no effect was observed on efficiency in simple study tasks, such as computational problems;
2. no effect was observed in short-term memorizing tasks;
3. however, he found some effects on personality caused by the heavy noises; and
4. levels of antipathy increased as the noise levels increased.

Based on the results of his measurements and experiments, his paper discussed methods of teaching, and he suggested useful ways to assign homework and to improve the study environment at home. On the other hand, he wrote, “Turn the bad of the loud noises of looms

2. This quote, and all subsequent quotes, is translated from the original Japanese by the author.

to something good.” He pointed out that certain educational practices, especially those focused on writing, that made the loom sounds into a learning feature could be beneficial for the pupils, particularly as they emphasized and made use of a point of distinction related to the area. He suggested the possibility that pupils could be encouraged to think about the local industry and its sounds in a range of subjects, such as science, social science, arts and crafts, and so forth.

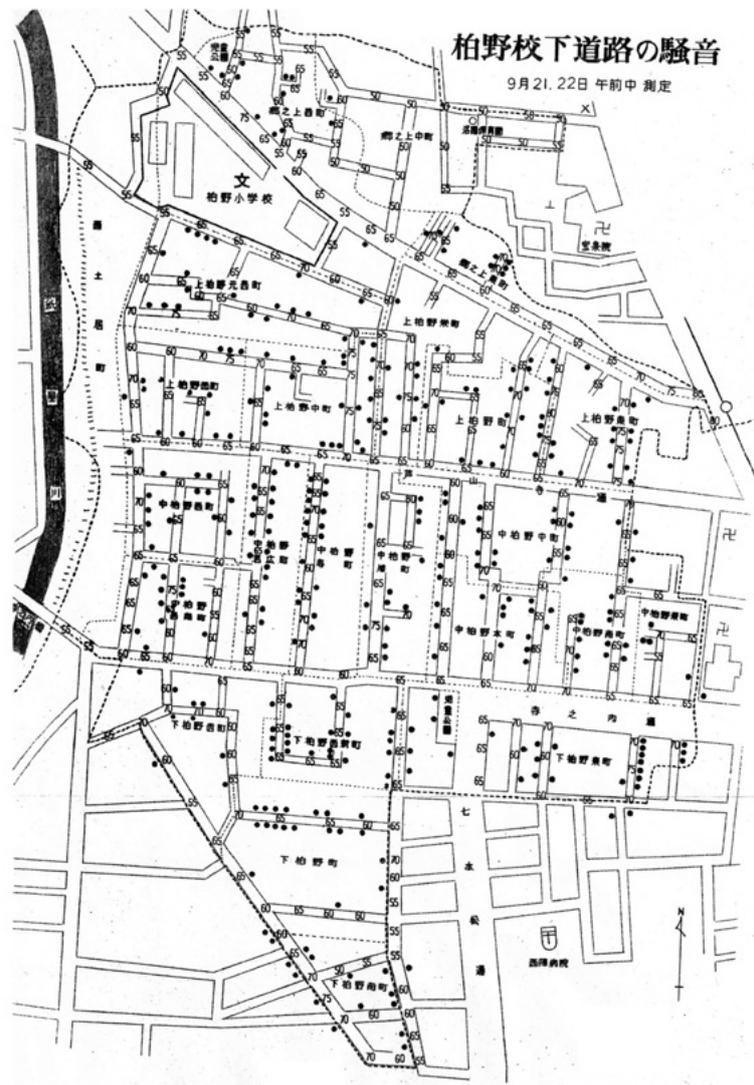


Figure 2. Measurements of sound levels and locations of the weaving noises (September 1965) in Nishijin no Ko to Hata no Oto (1966). The numerical values show sound levels (in dB), and the dots show the locations of the residential houses from which weaving noises were audible.

Table 3. Measurements of sound levels in Kashiwano district (September 1965) in *Nishijin no Ko to Hata no Oto* (1966)

dB	50	55	60	65	70	75	80	Total	64
Count	16	40	61	124	41	19	4	305	Mean

5. The Soundscape Depicted in the Pupils' Writings

5.1. Observation of the Sounds of Looms

Saito put together two compilations of the poems and essays written by the pupils in his classes focusing on sounds of looms. The collection *Nishijin no Uta (Poetry of Nishijin)* in 1964 consisted of the writings made by pupils in the fourth grade (ages 9-10), and the following year (1965) he compiled *Nishijin no Uta 2* with writings of fifth graders (ages 10-11). Saito submitted the collection *Nishijin no Uta* for the *Nihon Sakubun no Kai* (Japanese Association of Writing Education) to a competition for classroom collections of writings, and the volume won a prize.

In the first half of *Nishijin no Uta*, the fourth grade pupils wrote descriptions of how they heard the sounds of the looms. Saito wrote in the preamble to this volume of how he had instructed the pupils to listen to the sounds carefully, as follows.

I woke up to the sounds of the looms, like *Chon Gachon Chon Gachon*, in the morning after I had night duty for the first time.

In the bed, I came up with the idea that you pupils in Kashiwano School are so closely connected to the sounds of the looms. If you write poems about your life, there should be the sounds of the looms in your words.

But when I asked you, “what are sounds of the looms like?” you said *Gacchan Gacchan* or *Doshin Doshin*.

You hear the sound of the looms day after day – and you described the sound just like that – I felt a little sad about it.

[...]

Today, I'd like you to listen very carefully to the sounds of the looms when you go back home. Please write down the sounds exactly as you hear them. Saying it like that, I got the pupils to write the following sounds.

Following this instruction, the pupils wrote the onomatopoeic phrases shown in Table 4. Compared to hand looms, the onomatopoeias for the power looms were quite simple in their descriptions of mechanical sounds.

Table 4. Pupils' descriptions of weaving sounds in *Nishijin no Uta* (1964)

Sounds of hand looms	Sounds of power looms
Sūshadon Sūshadon Kikku Kikku	Tsuruttan Tsuruttan Tsuruttan Tsuruttan
Bacchan Gacha Gacha Tsuru Tsuru Gacchan	Gudassha Gudassha Gudassha Gudassha
Kikkon Surasura Kikkon Surasura	Shakka Shakka Shakka Shakka
Bacchin Kassha Bacchin Kassha	Chantanka Chantanka Chantanka Chantanka
Basha Ku Ku Ku Ku Kachin Basha	Kyurudon Kyurudon Kyurudon Kyurudon
Httan Kyurukyuru Happattan	Chogachanko Chogachanko Chogachanko
Batton Batton Koro Koro Batton	Patatan Patatan Patatan Patatan
	Chachon Chachon Chachon Chachon

In addition to description by means of onomatopoeia, Saito gave them another instruction: “What do you come up with by hearing sounds of looms? You probably sometimes feel like the looms speak to you. What do they say?” In response, the pupils wrote as shown in Table 5.

In the first part of the latter compilation (*Nishijin no Uta* 2), the fifth-grade pupils used words to describe what they saw and experienced in two different situations related to the looms: first, during the times when the looms were operating, and second, when the looms were stopped. These descriptions by the pupils are shown in Tables 6 and 7. These descriptions convey some part of the local soundscape at that time. Moreover, they illustrate how Saito would give his pupils instructions to carefully observe their situations at home and in their neighbourhood.

Table 5. Content that pupils imagined the weaving sounds said to them, in *Nishijin no Uta* (1964)

Wake up soon, or you'll be late for school
Have you washed your face? Eaten some bread?
Take care not to forget anything. Are you prepared?
Don't forget your homework often
Try to write neatly in your notebooks
Your test score was bad, you'll be scolded
Try to eat all of your school lunch
Don't waste your money
You'll lose your snack to your younger brother if you are slow to eat
Don't go to play too far away, play with your sister
Make sure to study
Run an errand without complaining
Don't bring your friends home often
Don't quarrel with your brother, or the elder will be scolded
Did you finish your homework? Don't be always watching TV
Did you sharpen your pencils and prepare for tomorrow?
Have you prepared for tomorrow?
How did you play today? Don't do anything dangerous
You'll catch a cold if you do such things
Don't stay out late
Don't stay up late, go to bed early

Table 6. Description of the times when the looms were operating, in *Nishijin no Uta 2* (1965)

The market is empty	Only a mouth moves
Mice don't run	Hard to hear the telephone
The TV doesn't speak	
Turn the TV louder	A laughing face becomes serious
Voices become louder	Many kids are on the road
Have to call time and time again	Have to call for mom many times
A front door is almost coming off	A cutting board and knife drop together
A spider web shakes	A normal talk seems a quarrel
Pattern papers dance	Talks become shorter

Table 7. Description of the times when the looms were stopped, in *Nishijin no Uta 2* (1965)

The far church bells are heard	Feels like the earth is stopping
Finally start studying	Can hear footsteps
A baby cries	Have a noise in my ear
Voices of an easygoing comedy came up	The cat comes home
Weavers sitting in the sun are seen	Don't have to yell
<i>Kotatsu*</i> is full of people (*Japanese heating table)	Quiet like the blackout
The market is crowded	Suddenly feel hungry
The TV seem louder	Feel relaxed
Yarn waste, screwed like cotton candy, is thrown away	Automobiles are heard
Feel scary	Mice run
Feel awkward	

5.2. Poems

These two collections both included poems that had been composed by the pupils. In these poems, the pupils lively expressed their feelings about the weaving sounds. *Nishijin no Uta* included nineteen pupils' poems, twelve of which depicted the pupils' lives alongside the production of Nishijin textiles. *Nishijin no Uta 2* included fifteen poems, and all of them were related to their lives with the industry.

Seven of these poems are reproduced, in translation, in the Appendix of the present paper, and all of these have been selected from the viewpoint of how they contribute to our understanding of the soundscape. The poems often included the onomatopoeias and the words shown in Tables 4 to 7. This suggests Saito led the pupils to compose these poems in a process of steps, moving from the onomatopoeic words to the experiences, and then to the poems.

6. Discussion

6.1. The Soundscape Depicted through Saito's Practices

As introduced above, Saito's research and the pupils' writings depicted the soundscape of the Kashiwano district in 1960s from multiple sides. Thus, the book is valuable as an important historical record of the local soundscape.

According to Saito's measurements, weaving noises were distributed throughout almost the entire district, and in many places the noise levels were 65 dB or above. This indicates that the residents lived their everyday lives with the sounds of these remarkable noises, particularly considering that the current noise regulation in this area for during the daytime is no more than 65 dB.

Saito's book also provided information about the times when they heard the noises. Some poems mentioned the starting and ending times of weaving. For example, Poem (5) mentioned that weaving noises made him wake up, and Poem (7) illustrated that the noises could be heard from when it was dark in the morning until late at night. Poem (6) concerns a woman who wove from seven in the morning to nine at night. Through these illustrations, it is clear that the residents were used to hearing the weaving noises from the early morning until late at night.

Other than the physical situation, the pupils' writings painted a rich picture of the ways in which the residents heard and listened to the noises. What was particularly prominent was that the pupils described the weaving sounds like a personality. The expressions shown in Table 5 suggested that many of the pupils felt that the weaving sounds could be like family members. Poems such as Poem (2) and Poem (6) also described the weaving sounds as sounds made by a specific person, not as an anonymous industrial noise.

Another feature of the pupils' attitudes was to regard the weaving noises as normal and usual. When they were asked to describe the situation of when the looms were stopped, they used language such as "scary," "awkward," and "like the earth stopping." These descriptions suggest that they regarded the weaving noise as usual, and in contrast, the soundscape without the weaving noise was unusual for them. The commonplaceness was also found in the onomatopoeias of the weaving noise that appeared in the poems. For example, the onomatopoeia "takatta" was used in Poem (1) repeatedly, like background music. It clearly showed that there were always continuous weaving sounds in the pupils' lives, and they considered it normal.

While industrial noises are usually described negatively, only a few of the descriptions showed displeasure with the weaving sounds, using such words as "annoying" or "noisy." However, this does not necessarily indicate that the pupils did not feel annoyed by the noise; it could instead be interpreted as a result of Saito's coaching on how to express what they heard. He encouraged them to avoid easy and stereotypical expressions like 'noisy'. Instead, he tried to make them develop their own original words by carefully listening to the sounds.

6.2. Saito's Practice as a Pioneering Case of Sound Education

Saito's practice can be regarded as a kind of sound education, even though he did not intend it. He was four years older than R. Murray Schafer, who was born in 1933. Schafer taught at a music summer school in 1965 and later wrote a series of booklets based on his experiences in music education (Schafer 2012: 91). Thus, it is quite a coincidence that Saito did his practice in Nishijin during almost the same period as Schafer developed his educational theory.

Saito's practice can be regarded as an attempt to develop a form of sound education in the field of literary education, with a particular focus upon writing, while Schafer's education was aimed mainly at music education. It is very interesting that Saito established a process for pupils of carefully listening to sounds before expressing them in writing. In *Nishijin no Uta*, for example, he instructed them to first listen carefully and then express in writing what they felt the sounds were like; this was an initial step before the composition a poem. As a result, the pupils' words shown in Table 4 were descriptive and realistic, and avoided the use of stereotypical expressions. Also in *Nishijin no Uta 2*, he led them to describe their experiences of the different times when the looms were operating and when they were stopped. It is coincidental, and quite interesting, that these methods are similar to some of Schafer's exercises. Thus, Saito's work should be regarded as significant pioneering work in sound education.

Saito's motivation was to develop the pupils' ability to study. He was concerned that their sonic environment might be bad for their studies. On the basis of what we can see from the publications of his pupils' writings, his attempts were successful to some extent. This suggests that the use of sound in education could be incorporated into an integrated programme for the development of pupils' general abilities.

7. Conclusions

This paper examined the soundscape of the past in Nishijin, Kyoto, focusing on the research and education conducted by Kikuo Saito, who worked for Kashiwano Elementary School in Kyoto from 1963 to 1971. Saito's research depicted the sonic environment of Kashiwano district, using measurements of sound levels and a mapping of the location of the weaving sounds throughout the area. Saito's work has shown clearly that the sonic environment of Kashiwano at that time was filled with loud weaving sounds. The pupils' writings represented

their attitudes to the weaving sounds in their everyday lives. For them, the weaving sounds were something personal or commonplace.

Thus, Saito's work provides us with excellent and rare evidence regarding the past soundscape in Nishijin from both physical and cognitive viewpoints. This would suggest the utility of local documents in the field of education or others in studying local soundscapes. Moreover, his practices can be regarded as a pioneering case of sound education. His attempts are still good sources for people who are interested in sound education.

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REFERENCES

- Kyoto City** Board of Education; Kyoto Association of Elementary School Principals. Kyoto-shi Shougakkou Kyoiku Kenkyu Ronbunshu (Research Papers on Elementary School Education of Kyoto). Kyoto: Kyoto City Board of Education, 1966. (in Japanese)
- Minoura, Kazuya.** Soundscape as a commons: How do we share sound environment? The West Meets the East in Acoustic Ecology, edited by Tadahiko Imada, Kozo Hiramatsu, and Keiko Torigoe, 357-362, Japanese Association for Sound Ecology and Hirosaki University International Music Centre, 2006.
- Minoura, Kazuya.** Social norms concerning local soundscape: A case of an area of the textile industry in Japan. Proc. inter-noise, 2007.
- Saito, Kikuo.** Ookina Ki no Shita no Kodomotachi (Children under a Big Tree). Private publishing, 1995. (in Japanese)
- Saito, Kikuo.** Nishijin no Ko (Children in Nishijin). Private publishing, 1971. (in Japanese)
- Schafer, R. Murray.** My Life on Earth and Elsewhere. Erin: The Porcupine's Quill, 2012.
- Taniguchi, Hiroshi,** ed. Henyosuru Nishijin no Kurashi to Machi (Changing Life and Town of Nishijin). Kyoto: Horitsu Bunka Sha, 1993. (in Japanese)

APPENDIX

Selected poems composed by the pupils.

Poems 1-4 are from *Nishijin no Uta* (1964) and 5-7 from *Nishijin no Uta 2* (1965). They were originally written in Japanese.

(1) They Help Me Only at Night

(Ban shika oshiete kurenai)

Takatta Takatta Takatta Takatta

“Mom, help me with my homework”

Takatta Takatta Takatta Takatta

“Ask Dad”

Takatta Takatta Takatta Takatta

“Ask Mom”

Takatta Takatta Takatta Takatta

“Hey Mom, please help me”

Takatta Takatta Takatta Takatta

“I’ll help you at night”

Takatta Takatta Takatta Takatta

“At night I have an abacus lesson

And go for a bath. Help now”

Takatta Takatta Takatta Takatta

“No”

Takatta Takatta Takatta Takatta

“They forget me

Weaving annoys children

When I grow up,

I will never be a weaver”

Takatta Takatta Takatta Takatta

(2) Sounds of the Looms

(Hata no oto)

Mom,

Kacha Kacha Kacha

Aunt,

Chao Chao Chao

Uncle,

Otsun Otsun Otsun

All are nice sounds

Without the sounds of looms,

I always feel awkward

(3) Mom’s Morning

(Okasan no asa)

Cooking rice,

Burning briquette,

Mom weaves by a loom

Gutassha Gutassha Gutassha

Zu Zu Zu Zu Zuu

“Mom, money”

“Mom, tissues and a handkerchief”

“Mom, I don’t have a scarf”

“So put this scarf on”

Gutassha Gutassha Gutassha

Gutassha Gutassha Gutassha

Gutassha Gutassha Gutassha

(4) He Can't Hear Me

(Kikoenai)

Dad!

Dad!

Dad!

Finally after calling three times

He looked at me

Trying to be given money

Noisy loom is disturbing

(5) Alarm Clock of Loom

(Hata no mezamashidokei)

Pogakku Pogakku. Get up Get up

It's half past seven!

Just shortly after

Saying good night

Pogakku Pogakku. Get up Get up

It is this early

To hear sounds

I'll get under the blanket

Pogakku Pogakku. Get up Get up

(7) Trains in Nishijin

(Nishijin no kisha)

Po-oh!

Chaggin Chaggin Chaggin

Chaggin Chaggin Chaggin

When it is still dark

The first train in Nishijin

Starts to run

Trains of hundreds of cars

Run all together

The trains in Nishijin

Load a lot of textiles

Like rainbows, the Milky Way, or lava

Under the Eiffel Tower in Paris

Or in the smog in London

Chaggin Chaggin Chaggin

Chaggin Chaggin Chaggin

They go on running

Until late at night

Such as the sounds of far church bells reach

(6) A Greedy Lady

(Gametsui obasan)

From seven in the morning

Till nine at night she weaves

Though others have finished

Gachon Gachon Gachon

"Mom, why not finish?"

"It's not nine yet"

Is that lady

Going to weave

Until nine o'clock sharp?

She's trying to earn even a little

What a greedy lady!

Sonority and Ambiance: Analysis of the Generative Aspects of Identity in a Booth of the Pernambuco Beach

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Abstract

The purpose of this essay is to explore the possible relationship between sound elements that make up the ambiance, the identity of a Brazilian beach and the identification of an urban tribe that attend the place. The study is focused on a tent as an ambiance that stands out in a natural environment. Its symbolic and emotional aspects can be compared to what Thibaud calls medium, i.e., the air, sound, light, smell, all elements of the environment that enable the perception. Through in loco observations of the existing dynamics between the ambiance and the people and analyzes based in the literature review, we seek to understand whether and how one of these aspects, the various sounds present in the studied area and its surroundings, interrelate with others that contribute to the permanence and duration of the tribe that attends the place and contribute to form the identity of the beach.

Keywords: Ambiance, Urban Tribe, Consumer

1. Introduction

This study is part of a project of dissertation in progress. Its aim is to investigate the symbolic aspects that form an environment in an urban beach in Brazil and their influence on the identification of an urban tribe.

Although it is focused in the field of services marketing and consumer behavior, it was necessary to expand the research and use constructs from other fields of knowledge to form something deeper and more substantial. Regarding the atmosphere of the store, the concept of ambience coming from urbanism was more appropriate to the study, because the tent investigated takes place outside of an enclosed retail shopping environment and is located in a natural surrounding, the beach. Sociological anthropological concepts, as the urban tribe for example, were also aggregated to identify consumers who attend the place.

The venue was a tent that differs from the others and has a steady profile of clients. In this article is also addressed the question of how this ambience is a factor of identification not only of lifestyles and urban tribe, but also the city of Recife itself. Initially a literature review was done to support the research, the methodological procedures were explained and then an analysis of data collected was made by the literature reviewed.

2. Literature Review

2.1. Identity of Tourist Destination

The identity consists on the relationship between subjects and the world. For Berger and Luckman (2002), the identity of an individual (consumer) is defined as his or her location in the world and can only be subjectively appropriated with this world in which they live. To convey this concept to a tourist destination, another construct arises, the image.

Image involves subjective knowledge about the place. A image is formed from the point of view of the consumer, since he's the one who receives, interprets and forms the image, which makes it something special and unique. Their perceptions vary according to personal tastes and feelings, opinions of friends and relatives, the media stimuli and previous experiences. For this reason, images formed on a place are difficult to control. (Grönroos 2009; Gandara 2008; Ekinici 2003).

Unlike image, identity, therefore, has an internal focus is the 'self-image', that means the way the location or destination want to be seen (Pike 2008). Ekinici (2003) states that to hold a well-defined identity is the key to identifying how to emphasize what a site has unique against their competitors. Thus, a closeness between what you want to pass to the consumer and what he actually sees is the ideal strategy.

The beaches of Brazil, especially in the northeast, have their own formatting environments and consumer media that constitute their identity and are consistent with your image. In urban beaches of Recife, state of Pernambuco, it's common to find tents scattered on the sand offering food and drinks, and services to cater to different types of consumers. Besides these tents, there are itinerant sellers that complement these services through an informal trade that provided from toys for children to gastronomic items.

To stand out from the competition even according to local identity, tents seek to elaborate the components of their service environment, combining their physical traits to the natural environment in order to offer experiences to their customers.

2.2. Urban Tribe

Sociality is something that is defined by the movement of the growing mass and the development of micro-groups that Meffesoli (1987) calls "tribes". The author also discusses the notion of "aesthetic paradigm" to describe the experience or feeling these people have in common. To Thibaud (verbal information) "aesthetics here becomes a real dimension of urban governance once it comes to knowing how we could establish something in common and live in a shared world."

This "living together" exists through the multiplicity of shared identities and groups that favors the emergence of a strong common sense, within which they form a collective subject that seeks to differentiate itself from others by identifying and belonging to a particular aggregation. Meffesoli (1987) calls this process neotribalism, corroborating with Moutinho (2008), according to whom the standards sought within the tribes is an attempt by individuals to differentiate themselves from other groups .

Cova and Cova (2001, 13) propose the tribal clover to illustrate the components on which the urban tribes rely on:

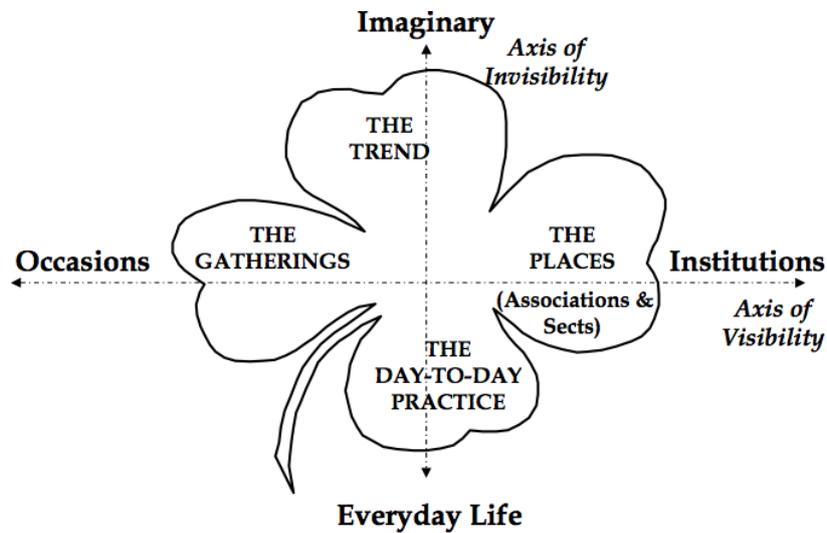


Figure 1. The Tribal Clover.

According to this model, there are some factors that contribute to the identification of a tribe among them:

the physical evidence of the tribes are represented on the horizontal line and refer to the moments in which tribe members gather for their rituals (occasions), and physical or virtual (institutions) where members gather spaces. The vertical axis represents the temporal evidence, which are more abstract clues that explain that the tribes can be identified through the activities of its members practice regularly and by sharing their experiences, or by trends or fads related to your lifestyle that characterize the existence of the tribe. (Moura e Silva and Halpern 2013, 4)

In establishing the identity of an individual there is an “internalization” of the outside world in the subject and “externalization” of his interior, through its action in the social world (Hall 2005). But this connection is not only relative to each other or to everyday experiences, but is in harmony with a space that is “certainly the repository of a sociality that can no longer be neglected” (Maffesoli 1987, 174).

The existence of an urban tribe is directly linked to its place, in line with their lifestyles, appearance and modes of consumption. Thus, the next section brings the concepts concerning the environment in which they establish these consumer tribes.

2.3. The setting of a Natural Area

Within the marketing literature, the metaphor of the atmosphere is used for the establishment of service environments and gain a more operational approach, associating the creation of a retail environment through the use of color, lighting, sound and features in order to stimulate sensory and emotional responses of consumers affecting their behavior (Kotler 1973; Januzzi and Pacagnan 2009; Kovacs et al 2005).

In the field of services, Bitner (1992) has called servicescape the impact the physical environment has on employees and customers of an organization and their experience with the skills to produce specific emotional effects on buyers, increasing the chances of buying.

Besides the colors, textures, lighting, etc., the occasion, the company, the atmosphere, the food, service and ambience were also some of the constituent variables of the service environment highlighted by Lashley, Morrison and Randall (2005) in their study about what would be an unforgettable meal. The celebration with friends strengthens the bonds of sociability allowing the formation of interactive networks, establishing common experiences and shared memories that constitute the social group memory and the basis of union among its members (Januzzi and Pacagnan 2009). These variables call attention because they form a linking value between consumers, and a factor of connection with the environment.

Whereas these dimensions are part of sensorial marketing applied to retail atmosphere, it is necessary to extend its reach to the built environment outside these places, in natural environments to understand the interactions between its elements and consumer behavior. A recurring phenomenon in the economic, cultural dynamics and spatial history of cities is the ambience of urban spaces. To Thibaud (2010), talking about ambience of urban spaces means understanding how the transformations of the nowadays city embody and propagate in everyday life.

The sensitive sensory realm can claim their relevance in this respect because it is presented as an expression of the most immediate and obvious modifications of the transformations of the environment creating what Thibaud calls ambience (ambience of urban spaces) and to Malard (1993, 4) is “a set of qualities that make a place a sacred area is the ambience of that domain”, being revealed in the process of ownership in a process of humanization of space and giving it human nature according to their needs and desires. It is this interplay between user/space “why people and groups find - or not - their identity in the many places in which they live” (Malard 1993, 4). It is precisely the ambience of an environment that makes it responsive and allows this communication process.

According to Milliot (2013), analyzing the ambience is only possible in terms of impressions and sensations. What once seemed logical and often composed a background, like the

air, the sound, the smell, the heat, the light, is becoming one of the key issues of urban transformations. “In summary, urban planning is not limited to the built forms and the built areas, but also to sensitive environments and climatic envelopes” (Thibaud 2012, 31).

This author discusses the notion of medium, which can be understood as the air, sound, light, smell, in other words all elements of the environment that enable perception, which refer to particular affective tones that allow to speak of a “sounding appeasement” or of an “unbearable lightness”. Besides these aspects that make up the medium and the physical elements of a built environment, we can consider that an ambience is what gives life to an environment to give it an emotional value. “Setting a space implies not only control the physical parameters of a built environment, but to provide the territory of a certain character, a certain emotional and existential value” (Thibaud 2012, 32).

Baudrillard considers two types of structure of a site: the structure of the arrangements, which reveals organizational, hierarchy and power; and structure of the ambience that reveals aspects of so-called “lifestyle”.

According to the author’s thought as a system of signs, the ambience of the environment is an object of consumption, at least as it relates to their demonstration aspects of lifestyle, supporting the idea that the environments frequented by are consumers according to their preferences and their identification with other people and lifestyles (Cova 1997; Cooper, Mccloughlin and Keating 2005; Ramalho and Ayrosa 2009).

The appropriation of elements of a natural medium for the formation of a service space can be understood as an ambience of a site, and as such provides this place sensory and affective tones that allow the identification of a lifestyle shared by people seeking experiences and common goals, reaching what Meffesoli (1987) called urban tribes.

3. Methodology

Participant observation is a technique by which the researcher participates in the community or culture being investigated, but maintains an analytical or observational position to be able to describe and interpret patterns, relationships, understandings and meanings attributed by the study subjects (Tacchi et al 2003).

Godoi and Balsini believe that participant observation has a “representative capacity to the interpretative paradigm superior to the case study” (2006, 97) when considering the

characteristic of immersion of the researcher in the context investigated, inherent in qualitative research.

Denzin (1989) defines participant observation as a research strategy that combines at the same time, document analysis, interviews with participants, participation and direct observation and introspection from the researcher. Spradley (1980, 34) distinguishes three phases of participant observation:

1. Descriptive note: at the beginning, to give some guidance to the researcher on the field to be studied. Offers no specific descriptions and is used to understand the complexity of the field in general and to develop (while) research questions and lines of more concrete vision;
2. focused observation: narrow perspective for those processes and issues that are most essential to the research problem;
3. selective observation: the end of data collection, is focused on finding more evidence and examples of the types of practices and processes found in the second step.

Although divided into phases, the observation is a technique that involves direct contact with informants; is undirected and has observation of reality as the ultimate goal; and constitutes a qualitative analysis because it involves annotations to describe and understand a situation (Jaccoud and Mayer 2008, 254). Participant observation is presented as a “behavioral context from which an ethnographer uses specific techniques to collect data” (Angrosino 2009, 34).

During the period of investigation, initiated in March 2014 and expected to be completed in August of that year, the observation was made at the study site. This tent was chosen because it stands out amidst the other existing in the same environment by offering products with higher economic value, the difference in its ambiance and the people who attend.

The observation took place on different days during the opening hours of the tent from 9:30 a.m. to 16 p.m. Although not driven, some topics were chosen as initial guidelines such as, for example, the relationship between the components of the physical environment of the tent and consumers. As his colors, the arrangement of chairs and tables, sounds helped to attract customers. After their arrival, what was observed was the reasons for staying there, the aspects of service provision, the most consumed products and what is the profile of the regulars.

In the following topic are exposed some reflections on the observed data and the analysis according to the literature review.

4. Analysis

4.1. Boa Viagem Beach

Boa Viagem is the most famous urban beach in the city of Recife in Pernambuco, Brazil. Throughout its seven km long, can be found on sidewalks, standardized kiosks, bike paths, tennis courts, fitness equipment and some parks for children. Moreover, its landscape is marked by the presence of large buildings, evidence of continuing humanization. These buildings form a kind of heat island because despite offering shade during part of the day, do not allow the movement of the wind making the hot and muggy weather.

Much of the beach is formed by natural reefs, which gave the name of the city that can be seen when the tide is low. Despite having this natural barrier and be an uncontaminated sea, bathing is not recommended due to the possibility of shark attacks.

Even with the impediment from swimming, the beach is always crowded on weekends, including some people are at risk of entering the sea. The frequency of the site is due largely to the presence of tents along the stretch of sand that offer restaurant and bar services. These services are complemented by informal vendors that supply products and services ranging from simple broths (stews) of seafood to sparkling of high financial value. These service providers allow the venue remains being frequented by families, groups of friends and even those who prefer to go alone.

Within a scenario in which the products and services offered are very similar, tents seek creative ways to stand out from others and attract consumers. The tent studied here innovated in offering products of great financial value, besides resorting to a different ambiance that created an emotional tone and make the customers feel part of the local environment.

4.2. The Tent as a Factor Ambiance and Location Identification

The ambiance of urban spaces is a recurring phenomenon in the transformation of cities. Thibaud calls ambiance the expression resultant of the sensitive area and the most apparent modifications of the environment. The ambiance of a place is revealed through a humanization process, providing it with quality expressing their wants and needs and identify lifestyles. Adding the concepts of urbanism to the marketing literature, one can make an analogy to theories of store atmosphere and expand them to include the ambiance of natural environments.

On the beach of Boa Viagem, the appropriation of natural spaces is through the establishment of tents for commercial purposes. These environments are identified with the local culture that is going to the beach and sit under umbrellas to drink and eat for long hours, which sets much of the Pernambuco coast. Each installation consists of several tables and parasols, however all these elements form a unit.

The tent studied here has the same formatting of others, but stands out from the competitors by having your well prepared and standardized environment, blending the natural elements and forming an ambience. All umbrellas are of a single color (red) and contains the logo of a beer sponsor of the site as well as all the chairs. Each table has a cooler, also from the brand of the sponsor, to the side to facilitate the consumption of cool drinks. The sand is constantly wet at the site to keep the cooler atmosphere which contributes to the persistence of customers for longer time. Employees, unlike other stalls along the coast, are all uniformed and the presentation of dishes reminiscent of restaurants located outside of natural environments. Customers are invited to feel special from the moment they arrive, because instead of stepping directly on the sand, there is the option of going by foot-shaped brackets that are on the ground, simulating a red carpet. The format of these supports references the name of the tent, which shows the concern to harmonize the environment with abstract and subjective elements. All of these elements merge with the air, the sounds, the voices, the smells and the social factor to form an environment of consumption experiences.

The space between tables is small which favors listening to conversations and sounds of each other. There isn't a proper system of sound on the tent for legal reasons, but each consumer can take your speaker, their ipods, phones, etc. and listen to the music they want at the table. Mixed into these shades, listen to the noise of traffic, because the beach is very close to one of the busiest avenues of the city; the voices of vendors selling a wide variety of products, from typical food to kites and plastic pools, and a frequent phenomenon that is the sound of carts sellers of pirated dvds and cds that put loud music as a way of demonstrating product. So many colors and so many voices are found along the entire coast of Boa Viagem beach that can be considered a factor of identity of the local culture.

The harmonization of the physical components of the tent with the natural space plus its sounds and voices form a proper ambience that attracts a certain type of consumer who identifies not only with the location but also with other consumers who are there, forming what Meffesoli (1987) called neo-tribalism.

4.4. The Urban Tribe

According to the tribal clover (Cova and Cova 2001), groups that form the urban tribes need a space with which to identify, corroborating what says Malard (1993) that the ambience established from the desires and needs of people is what makes them find or not their identity where they live.

The construction of the space where is the tent investigated was favorable from the beginning to identify a more elite audience, in Classes A and B. Early in its existence, musical events were held in order to attract this type of public. With the ban by the city these events, the profile of people who frequent the place has not changed.

The urban tribe found there, equivalent to a subculture of consumption (Schouten and McAlexander 1995) is composed mostly of young adults from 20 to 40 years. Besides these people, families with children and some elderly people attend the place, but they are the exception and therefore were not considered members of the tribe in this study. The components of the tribe primarily consume beverages, including beers, caipifrutas and coconut water in large quantity. As they go in groups, the customers remain throughout the opening hours of the tent, but rarely use culinary services, they prefer to buy from the informal sellers. Despite the high financial value of the products, this tribe is loyal to the place and is always present.

Even the ease of payment through credit card has not contributed to mischaracterize the tribe attracting people from lower classes. This shows that this ambience, the way it is situated, inhibits this type of audience. A striking feature that differs goes this tent and the other the same beach is the way they dress. While in the other tents informality is prevalent, this costumes are in accordance with this ambience.

5. Conclusion

As part of the local culture, the beach tents are recurrent throughout the coast of Pernambuco and seek creative ways to stand out from competitors and win customers.

The tent in question, located in the most famous urban beach Recife, invested in its ambience and high-value products to attract high-profile consumers. Factors such as climate, the arrangement of tables, ease of use, the colors on the site, its sounds and air, and

specially the social aspects of the ambiance are some of the elements that join the natural environment and give the tone of the place.

All this began a process of adding value to both the environment and consumers who attend the place, giving status to both. Something that is common in tourism destination marketing strategies used and ambiance to differentiate. The study of these process is very important to understand the relationship between sociability and natural environment and how the comercial settings in these areas influence the behavior of consumers.

6. Limitations and Suggestions for Future Research

The fact that it was accomplished in just one beach and one tent was a limitation, but did not muddle the research, since the intention was to study this case. Climate change was also a factor that affected the research process, as in rainy days consumers don't go to the tent. This search can be reproduced in different beaches as a means of comparison to enrich the knowledge gained.

Another suggestion for future research is to apply the concepts in other natural environments that go through the process of humanization, to investigate whether the setting has the same effect on people and tribes are formed because of it. Although it was made in Brazil, it is also possible to apply to study in other countries from the perspective of cross cultural and multidisciplinary studies.

REFERENCES

ANGROSINO, M.; FLICK, U. (Coord.). *Etnografia e observação participante*. Porto Alegre: Artmed, 2009.

Bitner, Mary Jo. "Servicescapes: the impact of physical surroundings on customers and employees." *Journal of Marketing*, v. 56, 57-71, 1992.

COOPER, S.; MCLOUGHLIN, D.; KEATING, A.

"Individual and neo-tribal consumption: tales from the Simpsons of Springfield." *Journal of Consumer Behaviour*, v. 4, n. 5, p. 330- 344, 2005.

COVA, B. "Community and consumption: towards a definition of the 'linking value' of

- products or services." *European Journal of Marketing*, v. 31, n. 3/4, p. 297-316, 1997.
- COVA, B.; COVA, V.** "Tribal Marketing: the tribalisation of society and its impact on the conduct of marketing." *European Journal of Marketing*, special issue Societal Marketing, 2002.
- CUCHE, Denys.** *A noção de cultura nas ciências sociais*. 2. ed. Bauru, SP: Edusc, 2002.
- DIONÍSIO, P.; LEAL, C.; MOUTINHO, L.** "Fandom affiliation and tribal behaviour: a sports marketing application." *Qualitative Market Research*, v. 11, n. 1, p. 17-39, 2008.
- EKINCI, Y.** "From Destination Image to Destination Branding: an emerging area of research." *E-Review of Tourism Research*. v. 1, n. 2, 2003.
- GANDARA, J. M.; AZEGLIO, A.** "El estudio de la imagen de los destinos turísticos." In: Seminário da Associação Brasileira de Pesquisa e Pós-Graduação em Turismo, VII., 2010. São Paulo. Anais. São Paulo: Associação Brasileira de Pesquisa e Pós-Graduação em Turismo. 2010
- Godoi, C. K.; Balsini, C. P. V.** "Pesquisa Qualitativa nos Estudos Organizacionais Brasileiros: uma análise bibliométrica." In: Godoi, C. K.; Bandeira-de-Mello, R.; da Silva, A. B. (orgs). *Pesq. Quali. Em est. Org.: paradigmas, estratégias e métodos*. São Paulo: Saraiva, 2006.
- GRONROOS, C.** *Marketing: gerenciamento e serviços*. 3 ed. Rio de Janeiro: Elsevier, 2009.
- JANUZZI, U. A.; PACAGNAN, Mario Nei.** "Atmosfera de Loja: uma análise sobre a bordagem do conceito nas produções acadêmicas no Brasil e os modelos teóricos adotados em suas pesquisas." *Revista Eletrônica S@aber*, v. 5, p. 3, 2009.
- JACCOUD, M.; MAYER, R.** "A observação direta e a pesquisa qualitativa." In: POUPART, J. et al. *A Pesquisa qualitativa. Enfoques epistemológicos e metodológicos*. Petrópolis, RJ: Vozes, 2008.
- KOTLER, Philip.** "Atmospherics as a Marketing Tool." *Journal of Retailing*, v. 49, n.4, 1973.
- KOVACS, Michelle H., BARBOSA, Maria de L.A.** "A Atmosfera do E-Tailing, Riscos Percebidos e a Satisfação do Consumidor: A Proposição de um Esquema Teórico para E-Commerce com Base no Modelo S-O-R." XXIX Encontro ENANPAD. Rio de Janeiro-RJ; set. 2005.
- LASHLEY, Conrad, MORRISON, Alisson e RANDALL Sandie.** "Minha refeição inesquecível! A hospitalidade como experiência emocional." In: SLOAN, Donald (Org.) *Gastronomia, restaurante e comportamento do consumidor*. Barueri, São Paulo: Manole, 2005.
- MAFFESOLI, Michel.** *O tempo das tribos: o declínio do individualismo nas sociedades de massa*. Rio de Janeiro: Forense Universitária, 1987.
- MALARD, M. L.** "Os objetos do cotidiano e a ambiência." In: 2o. Encontro nacional de Conforto no Ambiente Construído., 1993, Florianópolis. Anais do 2o. Encontro nacional de Conforto no Ambiente Construído. Florianópolis: ANTAC, 1993. v. 1. p. 359-361.
- Milliot, Virgine.** "Pluralistic Ambiance and Urban Socialisation Ethnography of the public space in the Goutte d'Or neighborhood of Paris." *Ambiance (En ligne), Perception – In Situ – Ecologie Sociale*, 2013.

- PIKE, S.** "Tourism destination branding complexity." *Journal of Product and Brand Management*, n.14, v.4, 2005.
- RAMALHO, R.; AYROSA, E. A. T.** "Subcultura Tuning: a identidade estendida na personalização de automóveis." *Revista de Ciências da Administração*. v. 11, n. 24, p. 169-194, maio/ago, 2009.
- SCHOUTEN, J. W.; MCALEXANDER, J. H.** "Subcultures of Consumption: an ethnography of the new bikers." *Journal of Consumer Research*, v. 22, jun. 1995.
- SILVA, A. M.; HALPERN, E. E.** *O valor de ligação da corrida de rua na união de indivíduos em tribos contemporâneas: um estudo etnográfico*. Rio de Janeiro, ENANPAD, 2013.
- Spradley, James.** *Participant Observation*. New York: Holt, Rinehart and Winston, 1980.
- TACCHI, J.; SLATER, D.; HEARN, G.** *Ethnographic Action Research*. UNESCO, 2003.

Exploring the Liberating Potential of Youthnicities Emerging on Street-soccer Fields in Europe: The Case of the Netherlands.

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Abstract

In this poetic presentation, I&I give voice to the ways in which new urban tribes, or youthnicities, shaping in / on the game of street-soccer in different parts of the Netherlands, *unwork* themselves. Our story consists of two distinguishable but not separate tales. The first tells the lie of playing as musicking, a game in which the riddles of multiculturalism are both spoken and unspoken. The second explores the myth of the *unworking* of the academic I/eye through listening. By playing street-soccer and thus becoming as part of this youthnicity, the I/eye starts to put itself under erasure and learns to listen. By giving voice to these experiences, I&I practice the conviviality of the street in which a 'we' cannot be spoken of, but can be a praxis and an ethos.

Keywords: Street-Soccer, the Netherlands, Multiculture, Musicking, Third Ear, Urban Conviviality

This presentation is about the birth of a new urban ethnicity in Europe that *unworks* itself, and therewith offers a glimpse of how to avoid the rise of the new tribalisms on our cherished continent. It is about young men and women whose love for street-soccer, and the unforgettable events that touch/form them as street artists of that game, allows them to render the ethnic and religious identities that are the darlings of state managed multiculturalisms –Muslims versus Judeo-Christians, atheistic humanists versus religious adepts, and whites versus blacks and browns– less consequential. Being a street-soccer player is about keeping alive the dream of Martin Luther King, put to song by U2, that one day men and women on our continent will be judged and judge each other by the content of their character and the work they put into learning a skill. A meritocracy seeking planetary justice that is based upon a decent society (Margalit 1998).

What is about to be presented is above all a poetic rendition of the continuous coming into existence and simultaneous unworking of this new ethnicity. Actually a *youthnicity*, for this new ethnicity is a youth phenomenon understood as a remix of common sense ethnic descriptors and pimped cultural industry commodities which captivates those who are young of age as well as young at heart (Sansone 2003: 101). But first an introduction of the discipline that frames this presentation is in order.

If one of the most fascinating definitions of anthropology is that it is a poetic science, then this paper should be heard as an ethnographic balladry: a writing about an ethnos (one that unworks itself) where the multi-sensorial is actively hailed (Ingold 2008). Sociogenetically speaking why deny that wo/man is after all a tasting, seeing, hearing, touching, smelling, and touching being that later learnt to record happenings on clay tablets that are today computerized (for a sociogenic interpretation of the history of orality and literacy, see Ong 2012). As you in your day to day sojourn through life touch your iPod screens, keyboards, works of art and each other, I&I, the writers of this piece, wish to affect you to think about the Europe of today in a different way.

I&I will of course raise some eyebrows. Isn't that something Rasta? Yes it is. Anthropology as a poetic science borrows this rendition of human identity from the poetic politics of Rastafari philosophy (on the emancipatory potential of this philosophy of identity, see Shilliam 2013; Gilroy 2010). I&I seeks to deconstruct the hidden coercion of consensus in the pronoun 'we'. We is always a site of negotiation. I&I reminds us of the unique beings involved in every 'we'. I&I is also however about foregrounding that every I is a becoming; is multiple; is many. I is an I&I in singular as well as multiple forms.

Yet as is tradition in ethnographic accounts, and every good suspense novel, and of course every street-soccer match, for this is the main topic of this presentation, we will play

the game of coming into consciousness of this youthnicity and its liberating potential in contemporary Europe. Please join us in this lie. We do so in two ways. We begin with one of the I&Is, Francio Guadeloupe, recounting his seductions during his encounters with street-soccer players in the Dutch cities of Amsterdam and Helmond. These seductions awaken him from the imprisonment of the dominant sensorial economy of Europe where the visual, the eye, the “what you see is what you get, is what is real”, is the order of the day. This is followed by Jordi Halfman’s *soundful* reconstruction of the way balling leading to youthnicities can bring about street conviviality unworking the academic visual I/eye who creates so-called ethnic, class, and generational divides. You, the listener/reader of this piece can then write in your mind or on your extended computers the next paragraph of this presentation, there with helping us to unwork whatever biases may have crept into what you have heard/read.

1. A sweet lie

It cannot be accidental that whilst experiencing this street-soccer match on the Louis de Visserplein in the city of Amsterdam, organized by Imagine IC¹, a Dutch organization that records and exhibits super diverse cultural heritage in the making, I hear the voice of Lauryn Hill saying “everyday people, they lie to God too. So what makes you think that they won’t lie to you?” Is this a case of an invitation to embrace an emerging imaginary of Europe by working through the seductive untruth of lies? Lies are words. But they are also more. Lies, as is known in all mystical traditions, signal the continuous dance of all that is alive. As such they are a defiance of Thought otherwise known as God, Reality, Truth, etc, created by language (James 1902). Lies alert one to what I have elsewhere termed *non-thought that both founds and demolishes thought* (Guadeloupe 2006). The human condition seems to be marked by the infinite rehearsal of positing useful partialities as unconditional even when all involved intuit that such cannot be.

But then again lies are sweet. I am witness to this. I like what I am experiencing on the Louis de Visserplein, and simply due to my compliance, I too am making it true; in other

1. The game on the Louis de Visserplein was part of the Pannas and Akkas project (2012–2014) in which contemporary heritage of street-soccer was documented, discussed and exhibited. The project was initiated by Imagine IC and realized in partnership with a large network that included soccer players, artists, academic researchers and people from the neighborhood.

words, endorsing the words being uttered by the street-soccer players with a seal of approval (Rorty 1990). The guy with the ball between his feet, his curls dangling as the sunlight makes his brown skin radiate the sublime beauty of the Sahara desert, is bragging and boasting. He is a premature incarnation of Muhammad Ali, and like that righteous brother that proclaimed himself to be the world's greatest, his feet are floating like a butterfly while his words sting his opponent like a bee. I like that comparison. I decide to call him Ali in my mind. My young Cassius Clay believes the lie. His opponent, a close cropped muscular dude, with a darker tint, is calling his bluff. Like Joe Frazier, he too believes that he is greater than this so-called world's greatest - on this cement pitch. Yes, I will call him Frazier.

Frazier knows the game; he is a seasoned street-soccer player, so he realizes that Ali's mouth should not distract him from observing his foot work. He can do every trick that Ali can do, and in his mind he can do it better. But what he cannot do, or perhaps forgets to do today, like the legendary Frazier forgot to do in his third match with Ali, is dance. Actually 'to music', as it is termed by ethnomusicologists. Now 'to music is to take part in any capacity, in a musical performance, whether by performing, by listening, by rehearsing or practicing, by providing material for performance (what is called composing), or by dancing' (Small 1998). Frazier forgets that the movement of his opponent is not solely dictated by habituated skills, but more so by reacting to and causing the surrounding sounds to react to his dance with the ball. It's a looking that is multi-sensorial; the dance of the senses.

Ali is dancing, Frazier is sporting. And street-soccer is a dance turned into a sport, and sport turned into a dance. A duel, is a dance. The music that is coming out of the speakers is that new urban anthem, Wine and Kotch of CharlyBlak and J Capri. Ali's footwork seems to adapt to that of the dance hall tune, but it also seems to let itself be influenced by the sounds coming out of the mouths of the people cheering on and the advices of other street-soccer players on the field. And, amazingly, the crackling of the meat that is being barbequed. All these sounds conversely seem to me to somehow adapt themselves to Ali's footwork. Surely a pre-recording, a CD, cannot adapt itself to this dancer, or a piece of raw meat grill faster because of Ali's foot work, but it is a lie I like to believe. Moreover it is a lie that corroborates my intuition that because Ali was leading the dance, he seduced Frazier into going left when he should have gone right. And, knock out, he goes blind, Ali passes him.

Later on when I ask Frazier who goes on to play a magnificent second game, about the incident, he simply says that Ali had *geluk*, that he was lucky, and simply leaves it at that. His answer unworks my lie and reminds me of those words of Tracy Chapman that we are always and only telling stories. I like my lie and I like his answer for it leads me to recognize

the constant emergence and dissolution, the unworking of the youthnicity in the social phenomenon of street-soccer.

2. Youthnicity as an alternative form of being in common?

That day on the Louis de Visserplein, the guy preparing the barbeque, Khalid, is someone who in the eyes of those too mesmerized by mass media would be considered, a devout Muslim and Moroccan. Khalid's long beard and shaven head bringing to mind Mohammed Bouyeri, the murderer of the controversial Dutch artist Theo van Gogh, would have added so called fact to their fiction. Today to me he could easily have styled himself on Rick Ross, for he has the *moves* and is a *playa* (an urban dandy) as they say in street lingo. He knows the handshakes, he knows *straattaal* (urban variant of Dutch spiced with Moroccan, Surinamese, Turkish, English, and Antillean words and modes of conjugating), he knows how to flirt, he knows his street-soccer, and he knows how to handle forced ripe youngsters in puberty. Khalid has got game (verbal, social, and sport-wise). The youngsters respect him. He does lots of work with them advising them to stay in school and respect their elders. A quick conversation reveals that he, like many other street-soccer players, grew up in working class neighborhoods in the urban centers of the Netherlands, where to adapt Eric B & Rakim's classic phrase, "it ain't so much where you're from in terms of ethnicity that matters most, but where you're at in terms of soccer skills" was the ethic that *playas* lived by. In these neighborhoods the children of newcomers and those descending from men and women whose grandparents had already populated these lands, threatened by the ever-present xenophobia, socialized each other into a new ethnicity. A youthnicity where street-soccer became part and remains a part of a world of cultural expressions ranging from Hip Hop, break dancing, graffiti, and Reggae, kick boxing, Antillean carnival in Rotterdam, and today the Dino show, and Nintendo FiFa, that feeds an emerging imaginary potentially valid for everyone (Glissant 1997). A democratizing humanism respectful of *humanities*, of I&Is, that does not stifle individuality (Ibid; see also Gilroy 2010; 2004). Khalid has embraced this imaginary and the Netherlands that brought him into contact with it, without renouncing his Moroccan roots or Islam.

So too has Edje, a fully tattooed dude that reminds me of Tyga. I guess he is called Edje, little Ed, because he is short and has that eternal boyish look. Even in his thirties. What he lacks in stature he makes up for on the field. Edje is a street legend. Young kids flock to

him. He's got skills and is respected the world over. He travels extensively giving clinics in street-soccer and even owns his own company. What a ball, being in the right place, making use of windows of opportunity, and good old-fashioned economic common sense can do!

Edje grew up in Amsterdam Zuidoost, the so-called chocolate city of Amsterdam where newcomers of Afro-Surinamese and West African extraction dominate. There according to the new urban myth that has emerged as state funded agencies have discovered street-soccer, what counts is playing the game with style. Not so in Amsterdam West, where for Moroccan Dutch what counts is winning. They cannot lose face. It takes little effort to demolish that myth. It is the latest transposition of the ideology of Near Eastern men being driven by honor and Afro-American males as ineffective. It need not detain us here, we will let others spill ink on the various historical transformations of racist myths that remind us that old colonial ideas die hard. Edje is a living deconstruction of this racist myth, and the idea of partitioning urban neighborhoods in ethnic terms, as he is the pink skinned son of oldcomers.

He learnt that winning and style are both important from Afro-Surinamese that taught him the game. Today the street-soccer team he heads consists of equally colorful figures such as 'IssyHitman' Hamdaoui, Orville 'Orry' Stoc, and Lenny Macnack. Each and every one of them is the outcome of the duel of cultures and individuals on Dutch soil, whereby cultural expressions from all over the world were active ingredients; creolization in the making.

Edje smiles when I bring up the myth of partitioning styles of street-soccer in the Netherlands according to the categories of state managed multiculturalism. "It is true and it isn't true" he says. "It's like me being a white boy, but also a Public Enemy fan and a boy from the Bijlmer".²

His words remind me of my encounters with Michael and Hassan in Helmond³. They are friends for life who in their spare time induct young boys in that city in the art of street-soccer. Both Mike and Hassan are proud of their Surinamese and Moroccan heritage, but the bond of being street-soccer players from Helmond binds them in a way that no hailing of being Surinamese or Moroccan can interrupt. They grew up together in the working class neighborhood of the Eeuwsels⁴. There on the asphalt and the cement and the grass, they socialized each other. Made each other strong while being called all kinds of names and were told multiple times that they did not belong in the Netherlands; in Europe. It never however for them became a white versus black thing, a newcomer versus oldcomer struggle, as they had friends and foes that defied those divides. Together with other boys whose parents

2. The Bijlmer is another name for Amsterdam Zuidoost.

3. Helmond is a city in the South of the Netherlands.

4. The Eeuwsels is a neighborhood in Helmond.

migrated from Maluku, Turkey, the Dutch Caribbean isles, and trailer park old comers, they became a force to be reckoned with. They would travel to Amsterdam and Rotterdam to battle with their peers. Their ethnic belonging was recognized, they claimed allegiance with the Surinamese and Moroccan boys they would meet, the racist myths of honor and style were pragmatically endorsed, but at the end of the day, they realized where they lived and with whom they balled.

Edje, like Michael and Hassan, like Khalid, brings me into full awareness that everyone in the Netherlands can speak and speaks the dominant discourse – the Dutch categories of state managed multiculturalism – but they also speak and live demotic discourses; categories of their own making born of creolization; youthnicities being the one that is the focus of this presentation (see Baumann 1998, who makes this point in his casestudy on Southhall, London). These youthnicities aren't static and must unwork themselves as no one can escape the dominant ethnic speak.

But is this all? Youthnicity as simply a moment of freedom from state managed multiculturalisms? Jordi Halfman, who has joined me in writing this presentation, and has done more extensive fieldwork on street-soccer, reminds me of heterotopian possibilities. It is time that the other I in this I& I speaks/writes.

3. Another I that is (not) I/eye

This is the other I, who like Francio Guadeloupe did research into the conviviality lived by those we associate with the street and street-soccer. I learned the basics from Edje and Leny after which I went out onto the street. As I entered the game, I was a rookie, a newcomer unable to talk the talk or move appropriately. I needed to spent time, to play, in order to become attuned to the ball; to its ways of relating and to the myths of conviviality that erupt when we start to play.

The tale I will tell here today is my story of becoming street-able and the story of the meaning this word street-ability has attained as I learned to play. It is a response to the voices of the street, in which I recount the unmaking of a particular 'I'. It is the story of becoming skilled, as another 'I' in the multiple construction of I&I. This myth begins with the observing anthropologist, the distancing and distant I/eye, the visually amputated I/eye walking the earth.

Anthropology's newest romantic, Tim Ingold (2011, 2007), echoing Merleau-Ponty (1970) with a difference, would probably describe that I/eye as a visual becoming, as an I/eye who is used to look and thereby distances herself from the world. This I/eye walking the streets of Amsterdam encounters young children. They are five small boys, running and shouting at one another, as they kick the ball around. They all have different shades of dark hair and matching almond skin. They wear rugged jeans, old sneakers, and the thick jackets with fur lined hoodies that are commonly worn by people who have migrated here from Morocco. Is what I/eye see a trace of them being partially Dutch and partially Moroccan? (As in Peters en de Haan 2011, Van der Pijl et al 2009).

The myth-fact of cultural differences enters my mind. The myth of state managed multiculturalism shapes our togetherness as primarily divided in different cultures with particular features, living next to but separate from one another. I hear this myth and should know better. Clearly these words of Ingold (2003: 387) echo in my ear “[c]ulture, as a body of context-independent, traditionally transmitted knowledge, encoded in words or other symbolic media, can exist nowhere except in the mind of the anthropological observer. It is derived by abstraction from observed behavior.” Odd abstraction I am performing here. I have only to recollect a little bit to know that these clothing styles are typical for youngsters of all so-called ethnic types. And to remember that appearances tend to trick the most well-trained I/eye.

Nevertheless I/eye have the ability to know and not to know. And as I/eye recollect I/eye can still proceed with the stereotype. This term ‘stereotype’ derives from that odd machine invented in the 18th century that produced seemingly identical images. Dead images. Abstracted images. The observing I/eye today does that same operation. Could it be that the observing I/eye, too has become a stereotype? Montaigne long ago argued that the person who stereotypes shows to the world his or her self-alienation forgetting that to be human is to be movement (quoted in Fumaroli 1997). S/he is therefore unable to appreciate Baudrillard’s provocation that ‘I’ is an Other (2007; 2005).

4. A stereotypical street image

The five youngsters I observed playing with a ball, the youngsters that made me recollect the stereotype, were showing particular skills on the day that I recollect most vibrantly. Because

of the enduring winter cold, the municipality of Amsterdam had turned the soccer square on the KarelDoormanplein into an ice-ring. The boys thus needed to play otherwise; sliding instead of running, spreading their arms slightly, pulling in their heads. The game is altered by the weather-world and new arrivals who are attracted to the square.

As I step onto the converted soccer field, careful not to fall, I smile at a cheerful, pink skinned woman. She is in her mid-thirties and she is here with her young son, who is walking and talking but can't be much older than two. The mother is wearing white ice skates that remind me of the many cold hours I spent gliding when I was younger. She tells me: "Ik dacht, ik ga hier even oefenen want ik heb al zo lang niet meer op schaatsen gestaan. Hier is er tenminste niet zoveel publiek!" ["I thought I should practice a little bit here. I have not been on skates for such a long time. At least there aren't so many people watching me here."] She makes a pirouette and giggles "het gaat best goed he!?" ["I'm doing pretty well right?!"] While mom skates, her son is looking at the boys on the square. He seems to be interested in the ball only and even though his mom tries to encourage him to put on the skates, he refuses. The little boy reminds me of Edje, little Ed, the street legend, who played the ball no matter the expectations or circumstances. I will name the smaller echo of the legend after him; little Edje.

As little Edje voices his will to play with the ball, his mom refuses to give up on him ice-skating: "Kijk, mama is aan het schaatsen. Ik heb voor jou ook schaatsen mee. Wil je het niet proberen?" ["Look, mommy is ice-skating. I have brought skates for you as well, don't you want to try?"] Little Edje ignores his mom however and runs towards the boys who are playing with the ball. But the young boy is unfamiliar with the icy underground and does not yet know how to run and play on it. He slips. The boys who were playing leave their game for a moment and come over to help him up. As little Edje returns to his feet, he reaches for the ball, ready to play again.

Mom has made up her mind though. If little Edje won't try ice-skating, he will have to leave the ice. While Edje's face turns to thunder his mother helps him off the field and into the snow between the street-soccer field and the community centre. A gentleman in his twenties walks from the community centre towards the boy and kicks a ball at him: "Kijk, de bal, schop maar!" ["Look, the ball, kick it!"] Little Edje cheers up and plays, but the older man is soon distracted by his cell phone and forgets the ball. Little Edje's attention thus quickly returns to the boys on the ice. He ignores his mother, gets onto the ice and calls out the boys again: "naarmij schieten!" ["Kick to me!"] He laughs and plays and, even though it seems unlikely for his age and inconsistent with the expectation I/eye gathered from his looks, he becomes part of the game of street-soccer.

Little Edje does not fit the stereotype that the I/eye had created. Little Edje seems to be the vice versa of Shani Davis. This atypical ice-skating hero has the looks and guts of Francio Guadeloupe's Frazier. When Davis won the kings number (speed skating 1500 meters) as the first Afro-American he became a legend. Like Shani Davis, little Edje troubles the stereotypical expectations.

My 'one trick mind' (Harris in Camboni 2004: 25) explains what I/eye see, based upon expectations informed by the stories that touch/inform us from the government, media and (pseudo) academia. The stereotype that I/eye produce of the game on the square fits smoothly with the often depicted image of the street. The presence of migrant children playing ball, their older brothers racing their scooters, and their mothers wearing headscarves is as expected (for me). Just like the presence of little Edje, and myself, might be a surprise (for me, but of course I attribute this 'for me' as for them. This is the magical work of self-alienation, where I can read the mind of others without having to ask them!).

The lady on ice-skates, little Edje and I/eye myself look less street-able than the (assumingly) migrant kids and (assumingly) Muslim women around here. 'Assumingly'. What a wonderful word and reminder. Just like the 'for me'. Both insertions allude to the I/eye that begins to doubt; that puts itself under erasure as it is challenged by what Harris has called 'the stranger in ourselves' (in Camboni 2004: 14)). This stranger, this other I in I&I recognizes the partiality of identities. The stranger's voice, partially rational cognition partially intuition, touches me in the sense that I/eye as I/eye re-read my notebook and return to different squares, realize that in *some* instances I/eye did hear traces of the stereotypes. But in many instances I/eye did not.

5. Becoming street-able

As I spend time on the street and reflected on the notes in my diary I am becoming street-able. The stranger's voice speaking through me invites me to investigate the word as it might be a gem among debris. Street-ability recalls Gilroy's anti-anti-essentialism (in Scannell 2009). This position is one that claims that you can become something by doing it. So in doing essentiality, never a given that some people have and others don't, this essentiality emerges. The term 'street-able' works in a similar fashion. One has to learn street-ability. Visual markers of ethnicity do not automatically translate into having street-ability and credibility.

What is considered street-able is dependent on the players involved and the game that evolves. It is reworked in each story in and about the game. On the ice square, Little Edje by no means looked street-able. He did however hear the call of the ball. Little Edje was learning the ways of the ball by playing with bigger and smaller Edjes, Orries and Alis. Players who themselves are all in different stages of growth. Just like me. We were becoming skilled.

As I played the game, it was changing me. My relation to the ball, to other players, the sounds around the field, the grandmother on her balcony, all were changing my becoming. And as those places changed, through weather conditions, angry neighbors, newcomers, the bystanders and the clever ideas of the municipality, I adapted. But the places we played at, were also becoming street-able because of our activity there. Mohammed, another street-soccer player in league with Edje and Orry tells me about a good street-soccer square:

It has to do with the ambiance, not much with the square itself. It can be a square of ten by ten meters, but if we all decide to go there, then that is the street-soccer square. Everyone will know; this one is popular. Some other squares are really beautiful, but no one wants to go there.

The proper street-soccer square is not some existing place, but becomes street-able, because of peoples' movement. This relation between player, play and place is echoed in Edjes words:

It didn't matter if all the tiles were crooked, you know, players would break their neck, but that was where we wanted to play. You were in between the high flats and the people were watching us from their balconies the whole night. It felt as if you were in your own stadium.

Have these boys read Tim Ingold's work on lines and movement? (2007; 2011) They sound as an echo of his ideas. Ingold claims that in movement we inscribe place by practice. Space thus becomes a specific place because of people's activities there. The lines we inscribe while moving are both part of the creation of place and of our own becoming. Our lines meet and cross but never merge. This does not mean we cannot connect. I&I exist as individually experiencing and connected social beings, living with many others in 'an on-going polyphonic composition of multiple lines in counterpoint' (Ingold 2011: 325).

In an ungraspable entanglement the space shapes the different lines of becoming as the game makes and unmakes the players and play. This casts doubt upon the common ac-

ademic tendency to *order*. This order needs a division between the world and the one who can oversee and thereby creates order out of that world. But as a player I become inside the game. The question thus becomes how I can relate both *within* and *apart from* the world.

6. My common myth

The way I make sense of the relation between myself and the world depends on the way I tune in. Making sense, in academia however implies that thought mediates the relation. My one trick mind disentangles. It thinks order, names, labels and hierarchy. This particular modus operandi seems shaped by an inherited history of science. This modern and realist inheritance is one in which I continuously *look for order*.

This inheritance is not just a story I hear, but, as Foucault reminded us, it is also the order that constructs the way I am able to think (1966, 2003). It is the myth of scientific wo/man who replaced the Christian believer. This Christian wo/man believed in things s/he could not see and listened to a God that remained invisible. Since the acclaimed death of religion and the rise of scientism, we now claim that what we see is what we believe. From engaged listeners and speakers, we turned into silent scanners of written words (Schmidt 2005). This birth of scientism went along with the rise of literacy enabling the clever minds that started to understand and describe the world, to put those clever thoughts on paper and share them with an ever increasing crowd (Ong 2012).

These clever minds were dependent on the body and the senses, but they were also disconnected from their bodies. The knowledge of the mind, as a separate entity, could thus gain a particular status. The skills learned through training and repetition, non-sharable in words on paper, diminished in importance. The educated man of science thus created a place for himself apart from the general folk. And also apart from nature. The academic positioned himself as the onlooker; the one who can oversee and master the world. S/he is able to study other human beings, beings who thus become objects and part of the world of nature.

The clever academics subdivide the world of human beings, mammals and flowers, towards the smallest atoms and infinitely smaller, all in the name of finding the ultimate Truth. Others however started to doubt the ways in which these realists framed the relation between the world and the human being. These clever minds, in an idealist or Kantian tradition,

introduced another framework in order to open up the world in new ways. Their framework construes reality as dependent upon the mind of the human being that observes it. Outside of the idealist's own sense making, nothing can be known. The world thus only exists as it is experienced by a human being.

Both idealism and realism tell a myth of the construction of 'I' and the way I can relate to a world that is separate from me. They both align with the Western paradigm that shapes the mind, the sensual body and the world around us, as separate things. All forms are separate, whole and processed. Moreover, they look for truth and tell processed stories of which the mythical nature is denied. These grand theories trick me into believing that there is an *explanation*, that there is a way to *understand* the world. It makes me believe that the better I look, sense or think, the closer I come to the real Truth. This is what Baudrillard (2012) has called the 'perfect crime'. It is the fatal strategy that I&I, based upon the voices of the street-soccer players, wish to undo.

7. Listening as embracing

To inhabit the multiplicity of cultural borders, historical temporalities and hybrid identities calls for a state of knowledge, an ethics of intellect, an aperture in politics, able to acknowledge more than itself. . . . In the dispersal of a single History, whose omniscient word legislates the world, I begin to hear composite voices crossing and disturbing the path and patterns of the once seemingly ineluctable onrush of "progress". In the movement from concentrated sight to dispersed sound, from the "neutral" gaze to the interference of hearing, from the discriminating eye to the incidental ear, I abandon a fixed (ad)vantage for a mobile and exposed politics of listening—for a "truth" that is always becoming. (Ian Chambers, quoted in Khochhar Lindgren 2006: 426)

As the world of ball draws me in and makes me player, that player increasingly unworks the anthropological I/eye whose mind so easily plays the trick of the visually based separation. Like Ian Chambers in the words above, I wish to opt for a politics of listening. Our shared language sounds the strength of the visual. We *see*, *reflect* upon or *picture* something. In a (still panoramic) description Ong has recounted a history of the visual that has

triumphed over the listening human (Ong 2012, see also Corbin in Schmidt 2005). According to Ong, this change has altered the way we engage with the world nowadays. However, as Chambers reminds me, dispersed stories can challenge this single History.

The reign of the eye is both there and not there when I become player. Players listen. The sounds of sneakers on gravel, the ball bouncing off metal wire, the cheers of the audience, these are essential aspects of the streets. These sounds however cannot so easily be shared and interpreted by a crowd. These sounds, (like words, but we tend to forget this) have multiple meanings. As I become sensible for sounds, I recognise again their tremendous qualities.

As I start to listen to the world, the experienced reality is different. Sound is always related to a particular clash, to a vibration created in movement which is only here for an instance. Sound is only movement which creates sound, which is infinite relation. For its becoming sound is always depended upon the way it relates to everything around it, troubling the distinction between the one who listens and the one who is listened to, between the world and 'I' within it. Its untraceable movement in dispersed directions troubles linearity and related assumptions of progress – some of the principal guidelines for a realistic approach. Sound is entanglement and when we start to listen to the outer world, the lies we hear mingle with the voice of the stranger within.

These combined voices trouble listening as common sense listening. Listening within the world cannot be the other of looking. In likeness of the work of Kochhar-Lindgren (2006), who studied listening bodies in deaf theatre, the street-able listener recognises its inclusive and overflowing capacities. It transforms the body into a sensorial extension, occupying a space that Kochhar-Lindgren called the third ear (ibid.). Listening in this sense draws in the entire body, resembling listening-as-embracing, an ethics that philosopher Martin Buber professed (1967, 1988, 2002). For Buber listening is a way of relating to another that dissolves all distinction between subject and object. This embracing is thus not a knowing about the other. All that can be known of one another is everything.

Listening thus becomes a metaphor for a way of being in the world that I was guided into by listening with my ears. It must be the prerequisite for what Francio Guadeloupe before has called musicking. This listening constructs me and the lifeworld around me in ways that do not last and that cannot be *understood* in any way.

But I do try! I do aim at writing the world that I hear, the world that touches me. To write a new framework that is not realist or idealist, and thus not aims at writing a grand theory of truth. In order to be faithful to the voices that touch me on the street, I choose to write partial voices of becoming, drawing on Henry David Thoreau's game of poetic realism that plays with two distinguishable but entangled dimensions of being human (in Tauber 2009).

In this redescription, I am unprocessed experience, without beginning or end, without form, without boundaries. Just like the ball is movement and sound all in one. And at moments, I start processing and take on a form that is *also* me. This form erupts when unprocessed experience, noise among noise, meets and collides. In that collision it is still unknown and uncommon. But after, when processing of the eruptions starts an 'I' is born. The wild, unprocessed experience, the noise and silence that are not either of these things, thus speaks to all else that is neither silent nor noise. And conform its own (non)rules, out of that, I become. And I try to make sense, giving voice to yet another lie.

My 'being human' is thus 'being unprocessed experience' that in non-form shapes in multiple relations, including the relation to the 'I' that was/is form. The 'I' that I was thus speaks also to the 'I' that I become, but is not the 'I' that I become. I continuously change into other. This 'other' that the unknown of the unprocessed entanglement is (not), demands a response, and as the response is shaped, I take on something of that other. Being/becoming human in this tale thus implies continuous responding to and giving voice to what cannot be given voice to. It implies becoming other.

In this rediscovery of I as other that echoes Thoreau's making of the self-positing-I (ibid.), there is thus the unprocessed and there is 'me', and together these interrelated processes make up my becomingness. This implies that there is thus no permanent distinction between the silence-which-is-noise-as-silence, the erupting 'I' and everything else. It implies that what 'is', is whole. Only when the flow of 'what is' is interrupted and processed, it becomes me, 'Jordi Halfman'. I then move, make choices, love and regret based upon an experience of this body as my body. I have an investment in this particular bodily form, which is Jordi Halfman. It is 'me'.

In this poetic rendition of 'me' in the world, I am thus like sound, materialising and moving away continuously. I as sound escape reality as I am, becoming anew through 'other' in related movement, just like sound.

8. Our common lie?

As they play ball, Edje and little Edje, like Hassan and Khalid, give voice to different tales of the street. They speak the stereotypical lies of state managed multiculturalism and the sweeter ones that unwork this myth. Becoming as part of this youthnicity that unworks itself,

I/eye also become aware of, and challenged the assumptions and sensorial tendencies related to common-sense tribalism and the fatal strategy (of both realism and idealism) in which we aim to construct an all-compassing Truth.

Every I who contributed to this presentation, shapes their unique 'I' through each spoken word, each description of their own becoming in the world: their origin. 'I' is constructed out of the telling of yet another lie. Like the story of scientific wo/man and the exploration of the senses, I&I construct new myths. Sweet ones. Heroic, scary, sad and shared ones. My storytelling, based upon listening, distinguishes me from you, from Edje, Hassan and from the ball. The story I tell voices my singularity as it express my unique origin in this world.

Each story thus gives voice to the birth of another I. But our stories are also fundamentally social. They are shared, listened to, and take on particular features from our brothers' and sisters' stories. When we are no longer heard and responded to, we loose our humanity. I believe our stories resemble a ball. Anyone who has been around a ball, whether on a square or on a field, knows how the ball draws one in, asks us to respond. Do you know how hard it is to resist the temptation to give that ball a kick? No matter where you have arrived from or where you will travel to, no matter what particular lie you (un)work, when you play, you respond and become part of our shared humanity. This is the same for our stories: when we respond to oneanother, we become as part of our shared humanity.

Each I thus listens and responds. I&I respond to each other and invite you as reader, listener, to do the same, thus recognising our shared response-ability. By responding we live together and share a game, and we become part of something resembling a 'we'. A 'we'? Did we not claim.... Yes I&I did. And now I speak of 'we'.

The youthnicity that emerges and unworks itself on the street lives a conviviality of 'we', of togetherness. This 'we' however differs from any 'we' of globalisation in which we all become alike. Nor does this 'we' present any fragment of society from which anyone could mystically claim a stable identity, be it ethnic, national or religious. This 'we' echoes what Jean Luc Nancy (2000) called 'being-singular-plural'. This 'we' is based upon a practice that dis-identifies itself from anything that could represent itself as subject (ibid: 71).

This 'we' is not represented in this lie that is the origin of an I. This 'we' however, is the fundament of my practice and ethos. It echoes the conviviality of the street and is expressed in our communication with one another: by our listening and responding, by the handshakes on the side of the square, the shouts across the field, the kicking back of the ball. By the sharing of a story. All this communication expresses our being-in-common as a mutual response-ability for one another. Therefore I&I invite you to respond, giving voice to your sweetest lies that expresses our shared humanity.

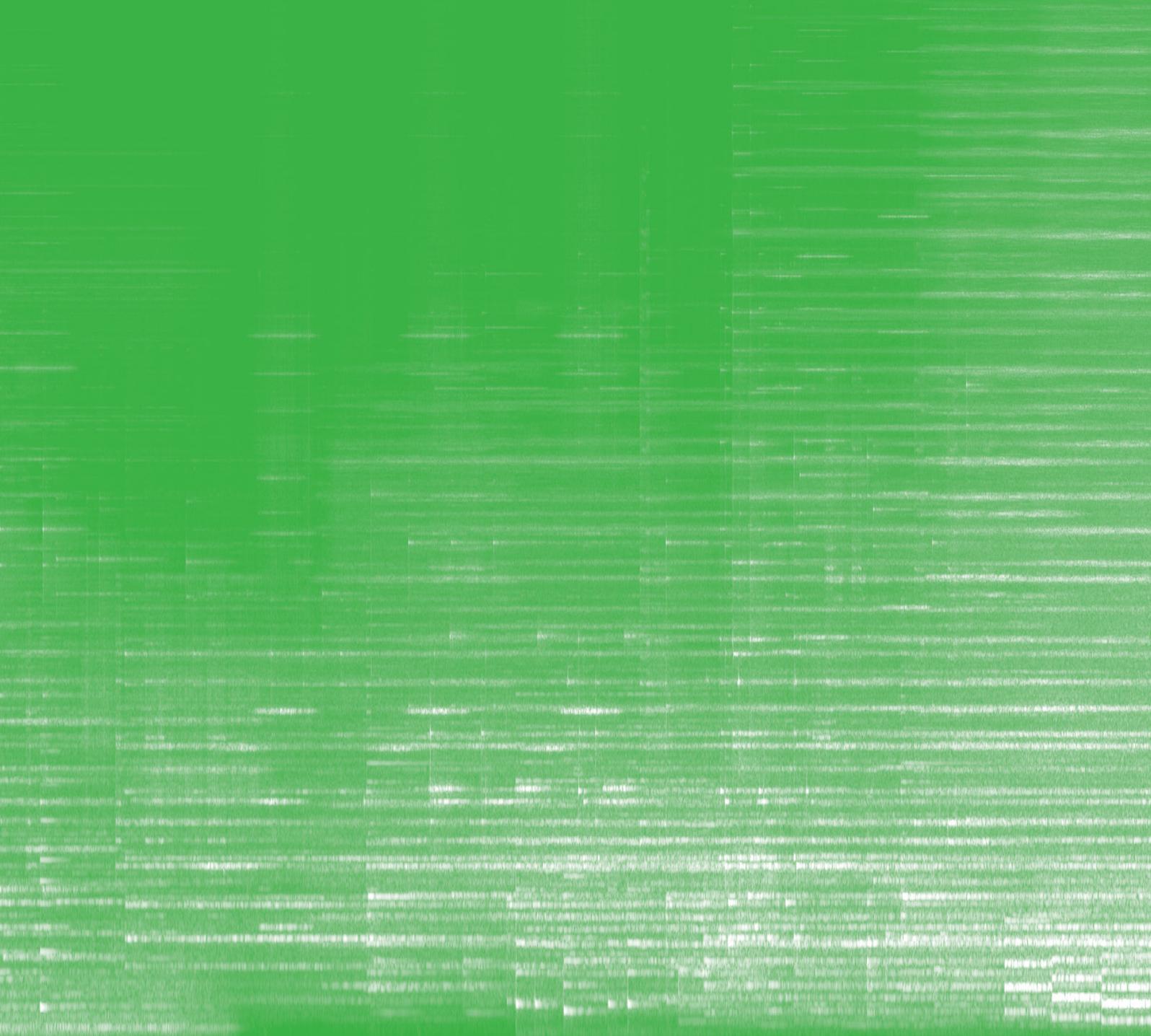
REFERENCES

- Baudrillard, J.** 2007 *Forget Foucault*. Cambridge: Semiotext(e) Foreign Agents.
- . 2005 *The Intelligence of Evil or the Lucidity Pact*. New York: Berg.
- Baumann, G.** 1998 *Contesting Culture: Discourses of Identity in Multi-Ethnic London*. Cambridge: Cambridge University Press.
- Buber, M.** 2002 *The Martin Buber Reader: Essential Writings* (ed. Biemann). New York: Palgrave Macmillan.
- . 1998 *Ik en Jij*. Utrecht: Bijleveld.
- . 1967 *On the Psychologizing of the World*. *Philosophy Today* 11(4): 227–232.
- Camboni, M.** 2004 “Resisting fearful Symmetry: Wilson Harriss’s Bridges of Language”. In *Resisting Alterities: Wilson Harris and Other Avatars of Otherness*. (Ed. by M. Fazzini) Amsterdam: Rodopi.
- Foucault, M.** 2003 “Society Must be Defended”. *Lectures at the Collège de France 1975–1976*. New York: Picador.
- . 1966 [2004] *The Order of Things: An Archaeology of the Human Sciences*. London: Routledge.
- Fumaroli, M.** 1997 “I is an Other”: Delusions of Identity. *Diogenes* 45: 111–122.
- Guadeloupe, F.** 2006 “What the Tamarind Tree Whispers: notes on a pedagogy of tragedy”. *St.Martin studies* Vol.1.101–104.
- Gilroy, P.** 2010 *Darker than Blue: On the moral economies of Black Atlantic Culture*. Harvard University Press.
- . 2004 *After Empire: Multiculture or Postcolonial Melancholia*, London: Routledge.
- Glissant, E.** 1997 *Poetics of Relation*. Michigan: University of Michigan Press.
- Ingold, T.** 2011 *Being Alive: Essays on movement, knowledge and description*. New York: Routledge.
- . 2007 *Lines: A brief history*. Oxon: Routledge.
- . 2003 *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*. London: Routledge.
- James, W.** 1902 *The Varieties of Religious Experience: A Study In Human Nature—Lecture 19. Other Characteristics*.
- Kochhar-Lindgren, K.** 2006 “Hearing Differences across Theatres: Experimental, Disability, and Deaf Performance”. *Theatre Journal* 58(3): 417–436.
- Margalit, A.** 1998 *The Decent Society*. Harvard University Press.
- Merleau-Ponty, M.** 1970 *Themes from the Lectures at the Collège de France, 1952–1960* (trans. by John O’Neill) Evanston: Northwestern University Press.
- Nancy, J.** 2000 *Being Singular Plural*. Stanford: Stanford University Press.
- Ong, W.** 2012 [1982] *Orality and Literacy: The Technologizing of the Word*. New York: Routledge.
- Peters, K., and H. de Haan** 2011 “Everyday Spaces of Inter-Ethnic Interaction: The Meaning of Urban Public Spaces in the Netherlands”. *Leisure/Loisir* 35(2): 169–190.

- Pijl, Y. van der, et al.** 2009 *Antropologische Vergezichten: Mondialisering, Migratie en Multiculturaliteit*. Amsterdam: Aksant.
- Rorty, R.** 1990 *Objectivity, Relativism and Truth: Philosophical Papers I*. Cambridge: Cambridge University Press.
- Scannell, J.** 2009 "Music and the 'Any-space-Whatever': Translating Existential Chaos into Artistic Composition". *Transforming Cultures Ejournal* 4(1): 199–211.
- Schmidt, L.** 2005 "Hearing Loss". In *The Auditory Culture Reader*. (Ed. by Bull and Black). Oxford: Berg.
- Small, C.** 1998 *Musicking: The Meanings of Performing and Listening*. Hanover: University Press of New England.
- Tauber, I.** 2001 *Henry David Thoreau and the Moral Agency of Knowing*. Berkeley: University of California Press.
- Vertovec, S.** 2007 "Super-diversity and its Implications". *Ethnic and Racial Studies* 30(6): 1024–1054.

Stream 3

Sound art as public art



KEYNOTE

Over/Here

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Abstract

Sound supports a dynamic relationality between self and surrounding, imparting generative instances of contact and belonging, along with interruption and negotiation. From echoes passing across a given space to vibrations underfoot, disturbances from the neighbor to recollections of disappeared voices, this intense relationality can be appreciated as exceeding the sightlines of the spatial imagination, and the limits of the single body, to support alternative notions of shared space – of meeting the other.

I'm interested to chart out an acoustics of sharing by focusing on overhearing – experiences of hearing more than should be heard. This will lead to reflections on multiplicity and urban experience, and how listening may operate to support a sociality of not only intimacy and mutuality, but also affective intensity and disagreement. At stake is a concern for how overhearing may foster means for contending with the dynamics of global life today.



Keynote link: <http://livestre.am/4UjAl>. Photography: Diana Almeida & Joana Ferreira.

My interest is to think through sound as a type of knowledge pathway – a practice of thinking – from which different understandings of social life, bodily identities, and spatial relations for instance may materialize. Or at least be imagined. As part of this project I’m keen to write as a listening subject, as a body caught within the dynamics of acoustic space, and that tries to write its way out, or deeper in: in other words, to take seriously what happens if we place sound at the center of our critical and creative thinking, not to mention as a way of being amongst others.

In doing so, I’ve come to recognize how sound is deeply connected to experiences of not only intimate sharing, social bonding, and reassurance, but also disruption, interruption, and threat: how easily these two acoustic territories brush against each other... which to my listening, comes to suggest that experiences of sound are precisely opportunities for vulnerability: of the body, of the senses, as well as of our social boundaries.

For today, I’d like to extend such thinking, such vulnerability, by focusing on noise and the other: noise as the production of the social, that is, a generative experience by which we may share space. Noise, in this regard, need not be thought of in terms of volume, nor as having any particular sonic quality. Rather, I emphasize noise as the beginning of confrontation, negotiation, and the appearance of the unwanted; noise, as Michel Serres suggests, as the “rending” of any system or order that actually promotes new social and bodily configurations.¹

I want to locate noise then as the initiation of a social encounter: bodies meeting and on the threshold of possible community. In this regard, noise may be heard or defined as a sound which *over-steps* particular limits, that which is *out of place*, and as forming the *basis* for an art of listening. Such a perspective finds resonance with Russolo’s original “art of noises” in which he calls for a broader appreciation for those surges of urban sound. That is, an ear for the “continuous, very strange and marvelous hubbub of the crowd.”²

To develop this further I want to bring into consideration a particular memory, of attending a concert in Los Angeles in 1998 – an event that, while arising out of a personal situation, has come to suggest a greater set of ideas; an event that also continues to haunt my listening imagination: I go back to it again and again, extracting from it a continual flow of reflections as well as motivating force. I’m interested to dwell on this concert experience so as to situate noise as an event of listening deeply linked to place as well as social experience, that is, connected to those always already beside me and whose presence conditions, inter-

1. Michel Serres, *Genesis*. Ann Arbor: The University of Michigan Press, 1997.

2. Luigi Russolo, *Art of Noises*. New York: Pendragon Press, 1986, 45.

feres with, and shapes my own. What I may call: You, They or Them, and which may become Us, though never fully.

To map this further, I also bring forward what I call three coordinates of *listening to noise*:

1. Acoustics multiplied
2. The supplement
3. Difference-making

I imagine these as coordinates within the field of sound by which to open a view onto noise: to explore the particular forms and spatial vocabularies noise may be heard to produce, extending an understanding of sound toward the intensities of urban life. If noise can be thought of as the production of the social, of an acoustic space, what forms of inhabitation does it make possible? And by extension, is it possible to understand interference or disruption as the beginning of a new public, one much more visceral than discursive? And dare I say: a unique production of togetherness?

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Los Angeles, 1998: I'm at a club with a group of friends. We've gone out to see a band, and the place is packed. I'm standing a bit to the back, sandwiched between friends and strangers, drink in hand and the band in front, not too far, but not exactly close: it's a small club, and everyone is listening, focused, interested. All, except a few – to my right, about 6 or 7 meters away, a few guys are standing, drinking beers and talking, laughing, having a good time and rather oblivious to the situation – that is, that they are breaking the mood, disrupting the scene, causing a ruckus.

Suddenly you might say, I am caught between two perspectives, two performances, two forms of listening: in front of me, the band, the object of attention, the thing I am here to witness, and to the right, a group of talkers, conversing somewhere between quiet and loud, but still, loud enough to unsettle my main focus, my main perspective.

The situation continues for some time: other people start to yell at the group who are talking, the group even starts to yell back, and maybe, I'm not sure, even the band starts to get annoyed. In this moment though, something changes, for myself: I begin to realize that what is happening is extremely provocative, and extremely suggestive – in this moment, I begin to realize what it means to listen. That sound is never an isolated event, that there are always sounds to the side of another sound, and which we constantly over-hear. Listening, in other words, is a process of confronting the expressive movements occurring around us, and which act to broaden one's attention, especially by force.

While this experience of disruption was not necessarily new to me, nor does it stand out within the patterns of rock club behavior – still, at this instant, it brought forward a sudden recognition: I became aware that my own annoyance was precisely an opportunity. That if listening is to deepen one’s experience of the world, then noise provides a dynamic manifestation of such depth, an active education of sound’s more forceful *knowledge structure*. Of knowing, and of being known; not as composition or resonance, but as association and rupture – of being thrown into the presence of others. In this sense, over-hearing points the way for a consideration of not so much what is in front, but rather next to; or what is beyond me – that is, a sensitivity for the crowd.

It is my interest to embrace this moment of disturbance, this noise, this over-here, and understand it as a special kind of acoustic, and something to add to how we perceive and comprehend sounds around us. I would venture to say, that the “over-here”, these guys over-here, is the horizon of every sound. It’s the promise that every sound makes: to say – “here, I am over-here”.

I want to then use this notion of “over-hearing”, of sounds that appear *over-here*, that moment of interruption or rupture, as a fundamental theory of the sound arts, as well as to suggest an appreciation for noise as a productive and generative event. Over-hearing should be understood as an expanded listening, one that specifically displaces place with an agitation: where what is in front is contrasted with what is beyond; over-hearing, as I will suggest, as a listening to *more than*, especially to what or who I do not know.

Moving along, I’ll begin by drawing out my three coordinates of listening, which are equally three forms of spatial thinking, of *dis-placing*, *over-hearing* and *eaves-dropping*.

1. Acoustics multiplied

The first would be that *sound multiplies perspectives*. In other words, there is always a sound outside the frame of a particular listening, which often interferes with or occurs to the side, to become immediately part of the experience. I would emphasize that, in general terms, sound delivers *the outside*, to displace or unsettle the demarcations we put upon listening; it fundamentally and continuously redraws the lines separating in from out, as well as distance and proximity, by delivering a palpable overlap and intersection, an acoustics of multiplicity.

For example: the talking occurring at the club, the thing that is to the side of the band, can be heard, in its moment of disruption, to create a second acoustical space, in the room. It radically introduces another perspective onto the scene of listening – it forces me into this other situation. In this regard, what may appear to the side, is often also inside. It is in while being out, to force into view, through a type of friction, a spatial addition, or subtraction: we can never be sure. It is a procedure of continual animation.

Here I want to grab hold of and amplify a quote by Barry Truax and his formulation of acoustic communication. He writes: “the sound wave arriving at the ear is the analogue of the current state of the physical environment, because as the wave travels, it is changed by each interaction with the environment.”³

In short, this sound here ---- has already changed by the time it reaches the back wall. Such a perspective must be heard to locate us within a condition of sonic and geographic intensity, turning every sound into a forceful and animating event, and every environment into a volatile and dynamic situation. If sound alters along its course, pulling and resounding the environment as it goes, it registers, while also delivering, a continual agitation onto that environment; refracting and reverberating, vibrating and echoing, pulling my attention this way and that way, connecting beyond what we often focus on – what may be underfoot, overhead, far away or suddenly so close. This for me is precisely what makes sound such an important material and platform – that it generates a situation of multiplicity.

2. The supplement

Continuing with this map of noise, my second coordinate would be that *noise challenges my sense of what I am listening for*. In other words, what I am expecting, what I am waiting for, is constantly supplemented by something else – by that sound there, and then, another there.

We can understand the supplement as something that adds onto something else; it is not a substitute, but rather the supplement introduces a critical addition. A sort of appendix that in adding onto an “original” object or action or phenomenon, enacts a type of rupture, emptying out the seemingly stable presence of what we imagine as being complete, whole, or immutable. In this regard, the supplementing force of noise brings into question the sta-

3. Barry Truax, *Acoustic Communication*. Norwood, NJ: Ablex Publishing, 1994, 15.

bility of an event and the expectation of fulfilled listening by introducing a *more than* onto the scene. Yet in doing so it also *pries open* the original, to undo the appearance of a stable meaningful reference. The supplement, in other words, makes the original available for sampling, for appropriation, for critique and comment.⁴

To return to the club, the talking happening over-here interfered with what I was expecting, with what I was waiting for – that is, the band; but in doing so, it also started to supplement the band, to make an appendix onto my listening, and in that moment, the full presence of the band, as the point of my attention, was undone: it's like being in a cinema during an intensely serious moment in a film, and someone in the audience starts laughing – this laughter, this noise, completely disrupts the scene, but it also begins something else: it says, every expectation, every hoping for, is also prone to surprise. This I find an extremely vital element to sound and listening: that the process of supplementing – *of that sound over there, and then suddenly there* – creates the possibility for another narrative, an opening precisely for what we did not expect and which might find its way in. This might be thought of as an echo to what Paul Carter calls “the erotic ambiguity of sound”: for Carter, this ambiguity is precisely the exceeding of representation – a positive, productive ambiguity found within sound that generates what we might think of as “extra-expressivities”: something that slips through, or overflows from an instant of representation: a body that might emerge from the crowd, to voice another view.⁵

3. Difference-making

Finally, my last coordinate would be, that noise introduces “the other” onto the scene. It brings the one that is over there to here, in front of me. This elaborates the idea of the supplement and the multiplying of perspectives, to suggest that noise, as the *over-here of the here*, delivers a confrontation with the unexpected. And if we have to give a name to this unexpected, to the supplement, I would propose we call it the stranger: the stranger in a

4. For more on “the supplement” see Jacques Derrida, *Of Grammatology*. Baltimore: The John Hopkins University Press, 1998, 141–164.

5. Paul Carter, “Ambiguous Traces, Mishearing, and Auditory Space.” In *Hearing Cultures: Essays on Sound, Listening and Modernity*, ed. Veit Erlmann. Oxford: Berg, 2004: 43–63.

sense gives a body to the over-here, a shape to the supplement, that also suggests a social situation, a negotiation as well as a meeting. I must attend to this figure here.

If noise multiplies perspectives, as a spatial acoustic, if it supplements what I am expecting, enabling or forcing other narratives, it does so by explicitly introducing something, or someone, I do not yet know. It is to bring to my attention something I was not waiting for – in other words, it is to introduce a difference.

I take this difference then as something which broadens my horizon: the multiplying of perspectives, the supplementing of representation, forces me to meet the one that is separate from me, but it does so by collapsing distance: this difference that is over-here, forces its way inside, that is, inside myself. It suddenly comes directly into me. As Steven Connor reminds: “The self defined in terms of hearing rather than sight is a self imaged not as a point, but as a membrane; not as a picture, but as a channel through which voices, noises, and musics travel.”⁶ In this regard, the intensities of noise *others my horizon, it others my body*. Upon this map of noise then, the self defined in terms of hearing might be a self always already extra, an extra to itself, and one confronted by those that demand attention.

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The acoustic experiences and productions that I’m attempting to narrate here opens out onto what what I would term *radical sharing* – the making of a generative, messy space brought into play by the disjointedness of interruption, and where the singular body is disrupted by those around. Such disruption, as I’m keen to pose, reconfigures conventional understandings of the inside, or what is of my body, and an outside, what is of the crowd. The force of sound may act as a type of education precisely of this new configuration, as the unstable property of relationships and an economy of the in-between: a series of exchanges that are always passing across subjects and objects, between species and things.

I’d like to elaborate this thought by drawing on the work of cultural and urban historian Richard Sennett, and in particular his work *The Uses of Disorder* from 1970. In this work, Sennett makes a claim for “disorder” as a productive tool for nurturing social life, particularly within cities. As he states: “What is needed is to create cities where people are forced to confront each other so as to reconstitute public power [...]. The city must then be conceived as

6. Steven Connor, “Sound and Self”. In *Hearing History: A Reader*. Athens: University of Georgia Press, 2004, 57.

a social order of parts without a coherent, controllable whole form. [...] Rather, the creation of city spaces should be for varied, changeable use.”⁷

What I take from Sennett is an extremely provocative inversion: while urban planners and social organizers may draw upon concepts of harmony, togetherness, of cohesion or consensus, as means for establishing community, as in the legacy of suburban development in the United States, Sennett in contrast sees disorder and discord as productive for spaces of sharing, or simply, of being together. By agitating the lines that keep one type of demographic together, or that demarcate certain social territories, disorder allows for opportunities to experience precisely what or who is in contrast to myself. Such productive agitations are used to foster a spatial form composed by multiplicity. Place-making, in this way, can be enriched precisely through experiences of displacement.

I take all this actually as the very condition of listening in general. Might we appreciate the irksome interventions of noise as a discordant opportunity? One that might give way to new social encounters? Following Sennett, is not the irritating force of noise at times delivering explicitly what we might not understand, thereby affording contact with strangeness, which might actually allow me to hear the unthinkable?

I would suggest that to listen is to always already over-hear: it is to live within multiple perspectives, to experience noise, and to deal with strangers, even the stranger of oneself whose voice may suddenly overtake us. In this sense, I would propose that noise be thought of neither in terms of the private nor the public, not as this body here nor us there, but the production of what may still surprise us: the associations and unexpected solidarities found in acoustic disruption.

7. Richard Sennett, *The Uses of Disorder: Personal Identity and City Life*. New York: Vintage Books, 1970, 141.

Borrowing Sound

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Abstract

This research aims to explore “borrowed” sound in Tokyo, taking cue from the well-known practice of “borrowing views” in traditional Chinese and Japanese landscape design. How does a specific arrangement of spatial volumes, sound sources and urban conditions combine in order to filter sound in a particular way? These observed relationships are illustrated as a “sound field,” defined as a composition of sound sources in relationship to specific urban conditions and arrangement of spatial volumes which operate as an instrument. This investigation focuses on sound fields within the context of an specific program: the street cafe. This is an optimal site for observation because it allows for an extended stay in an area exposed to urban conditions. Embedded in high density areas, Tokyo’s street cafés often occupy interstitial spaces—chairs fill in gaps between buildings, alcoves tuck into volumes adjacent to multiline, bustling commercial centers and seating clusters negotiate available space with air conditioner units and sidewalk slithers. Each cafe is classified in terms of its spatial type and street condition and documented with a drawing and field recordings. With a better understanding of how sound can be carried into a field, by exploring how these everyday, undesignated interactions between sound sources, spatial volumes, and urban conditions operate, we can begin to explore new possibilities for “borrowing sound” in cities.

Keywords: architecture, urbanism, acoustics

1. Introduction

The aim of this research is to explore how sound is “borrowed” in Tokyo, taking cue from the well-known practice of “borrowing views” in traditional Chinese and Japanese landscape design. By using the term “borrow,” I’m specifically interested in appropriation tactics. How does a specific arrangement of spatial volumes, sound sources and urban conditions combine in order to filter sound in a particular way? This research focuses on “sound fields,” defined as a composition of sound sources in relationship to a specific urban conditions and arrangement of spatial volumes which operate as an instrument, a body from which these sounds resonate.

The spatial form of a valley, which implies a particular acoustic experience, has been linked to sound throughout Tokyo since the designation of “listening valleys” described since Edo (1603 to 1868). Each listening valley is identified as an optimal site for listening to a specific sound, such as the chirping of warblers, cuckoos, wild geese or insects.

Today, urbanization processes constantly rearrange “listening valleys.” Warbler valley, located near present-day Uguisudani (warbler) Station was initially redesigned during the Genroku Period (1688-1704), when the head priest of Tokyo’s Kaneiji temple imported a flock of warblers from Kyoto: “The chirps of these birds (from Kyoto) are indeed beautiful, and they do not have the provincial accent of the local uguisu.” [1] Today, the chirping of warblers not only heralds spring’s arrival, but also morning rush hour commutes on a year-round basis—Japan Railways has electrified the distinctive chirp and broadcasts it daily at Uguisudani Station between 8-10 a.m. The warblers themselves, who continue to populate several listening zones today, shift the frequency of their calls in order to avoid the mask produced by Japan Railways. Noise does not imply suppression. Tokyo warblers, Kyoto warblers and electronic warblers compete with one another for airtime, and this dialogue is generative: new sounds, behaviors and, consequently, new atmospheres are produced.

Beyond listening valleys, Tokyo presents a fascinating case in how traditional sound paths can be squeezed, stretched out or rerouted. In Ginza, a detour was required in order to reroute the sound of worshippers’ claps to a shrine that was relocated to the top of a 9-story private building. As a compromise, the owner constructed a miniature shrine on the ground floor and connected a gutter-like apparatus from the Haiden (outer worship area) up to the rooftop, transporting the sound of claps to the Hondon (main shrine). Rather than being drowned out by ringtones and megaphone-wielding shopkeepers on the sidewalk, claps

ascend toward the receiver. Such “constructions of customizations” run rampant in Tokyo’s dense agglomeration. [2]

In both the case of this Ginza shrine and “warbler valley,” the site is fixed. The sound source still exists (warblers and claps). But the arrangement of these sounds across the spatial field and their accompaniment is radically altered. Ultimately, the valley still resounds with warblers (real and electronic) and a gutter-like apparatus harnesses the worshipers’ claps—infrastructure is used a tool for “borrowing” sound in a complex urban environment. Although these augmentations may seem trivial, they reflect a larger underlying structure of Tokyo’s spatial practice.

2. The street cafe as a sound field

This research focuses on sound fields within the context of an specific program: the street cafe. This is an optimal site for observation because it allows for an extended stay in an area exposed to urban conditions. Embedded in high density areas, Tokyo’s street cafes often occupy interstitial spaces—chairs fill in gaps between buildings, alcoves tuck into volumes adjacent to multiline, bustling commercial centers and seating clusters negotiate available space with air conditioner units and sidewalk slithers. For this research, over 60 cafes were analyzed from Daikanyama, Jiyugaoka, Nakameguro, Omotesando, Shibuya and Shimokitazawa. The observation in each cafe was limited to April-July of 2013 during weekday afternoons between 1-5pm, an oftentimes lull period in between lunch and rush hour.

Each cafe is classified in terms of its spatial type and street condition. The latter has three categories: alley, 2-lane, and 3-lane or larger. Spatial types include: cafefront, setback, raised, cave, alcove, plastic-wrap, canyon, gap and courtyard.

2.1. Cave

The cave is defined as deep, a semi-enclosed space in which the cafe set back from the street and surrounded by at least five sides. It’s characterized by a excessive reverberation, which can afford cafe-goers acoustic privacy.

Waterfall Cafe

Water spills across a retaining wall wedged in between a construction site and a hotel on a bustling shopping street. The cafe is sunken two stories below street level and completely surrounded by brickwork. Above the retaining wall, tarps billow from the neighboring construction site with a pale blue color that matches the obscured sky. The hammering of construction workers on the scaffolding can be seen, but only audible as a distant rumble, masked by the waterfall, which consists of a constant low frequency drone coupled by high frequency splatters of droplets hitting brickwork.

Ventilation Cafe

Stretching back from the 5-lane, tree-lined Omotesando, this cafe spills out of a corridor that leads to a wedding chapel. A string of ventilation units punctuates this passage and blasts air beneath a concave roof. A drone and excessive reverberation make conversations across tables largely unintelligible and the sound of individual cars seem to blend from inside the passage. This space also serves as a procession for wedding parties and, on these occasions, bells are handed out to the cafe's customers, transforming it into a giant instrument that signals the departures of newlyweds. On other days, rolling carts filled with wedding garments resound throughout.

A/C Wallpaper Cafe

Tucked behind restaurants, below an apartment complex, and adjacent to a flower shop, this cafe sits on an 8-foot-square wooden pedestal lined with a picket fence. Aside from the occasional revving motorcycle and bike bell, the roar of vehicles on the street beyond blend into a single drone together supplemented by a generous supply of ventilation units that resound in this partially enclosed courtyard. This monotonous drone is interrupted by the chirping of birds that bounce off a concrete overhang, below which is a lure: bundles of flowers on display.

2.2. ALCOVE

The alcove is defined as a narrow insert deep enough to fit, at most, two chairs. The close proximity of these walls to the occupant produces early reflections, which can enable crisp communication.

Amplification Cafe

This cafe is positioned directly between the street and a full-height concave window. Whenever anyone inside of this small alcove speaks, it's amplified by this curved surface and projected outwards toward everyone sitting inside of that space, despite the steady stream of traffic outside.

Pachinko Cafe

This cafe is divided up by a column supports. Each unit holds four people. Conversations are crisp and audible given the early reflections of the alcove. Except when sliding doors open across the street. That action triggers a sound leak: the rattling of metal balls inside this pachinko (gambling) parlor dominate and the alcove's acoustic effects and effectively erased, if only for a few seconds each time.

Island Cafe

This cafe is an island, severed from its parent by a pair of escalators leading to the underground metro. Opposite, a crossover and parked delivery truck partially veils an intersection. The intersection orchestrates alternating sounds of revving engines and pedestrian footsteps, and the screeches of trains from Shibuya Station can also be heard on an intermittent basis. Potted flowers on the table vibrate from the encircling traffic flows. Cicadas buzz on a lonely tree decorating the curb. During my observations, cafe customers were still audible, as they spoke at higher volumes, competing with all other sound sources.

2.3. Cafefront

Cafefront describes a cafe that's placed directly in front of the parent cafe and either adjacent to, or on top of, the street. If abutting an open facade, these cafes can have an interior atmosphere.

Utility Pole Muzak Cafe

Nestled in a 3-foot-wide alley, a string of chairs with tables placed alongside fits exactly in between the cafefront and a white traffic strip, accommodating a path for cyclists, motor-bikes and pedestrians. Also sharing this space is a utility pole outfitted with the ward-wide speaker system that broadcasts muzak from 9am until 5pm. The cafe's sliding glass doors remain open and this cozy gap creates an intimate environment: everything can be heard above the quiet broadcast: chairs pushed on the asphalt, conversations, footsteps, birds perched on wires, clinking cups and saucers, and ongoing construction sounds from a house on the same street.

Parking Lot Attendant Cafe

Two multistory parking garages with metallic facades sandwich this cafe in a canyon. Garage entrances are staffed with two parking attendants each that yell announcements for each outgoing and incoming vehicle. The cafe's facade is sealed shut, but the facade is outfitted with a speaker that amplifies music. Footsteps and conversations from the nearby shopping street Harajuku are audible, as well as a variety of musics spilling out of different storefronts.

2.4. Courtyard

Courtyard define a cafe situated in the central, open-roofed area of a building with a direct connection to the street. The spaciousness can also produce excessive reverberation.

Rumbling Motorcycles Cafe

This cafe sits opposite from a motorcycle lot and adjacent to a car lot. A two-story metal wall blocks the view of the latter and is covered with vegetation that serves as a nesting site for birds. The sounds of people talking, an indoor fountain gurgling, birds nesting on the metal obstruction and music dominate. That is, except when revving motorcycles pulls out of the lot, which resonates with a deep rumble on the metal cladding.

Underground Fountain Cafe

Seating is arranged at the back of a U-shaped building which frames a central staircase leading to an Italian restaurant. Hidden from view but amplified by the atrium is an underground water fountain. Sandwiched directly in between the cafe and the street, the fountain, together with the sound of rustling leaves from the trees squeezed inside the courtyard, almost mask the traffic beyond. Still, screeching cars at the intersection beyond interrupt every now and then. The echo of footsteps pronounces the entrance of every visitor into the courtyard.

3. Conclusion

All of these observations of “sound fields” describe interactions between unrelated activities and, therefore, can be perceived as chaotic. In architecture discourse, Japanese architect and mathematician Kazuo Shinohara (1925–2006) coined the phrase “beauty in chaos.”^[3]

During Japan's modernization, he argued that extreme visual juxtapositions, such as a section of New York City's Fifth Avenue counterposing a traditional Shinto shrine "would create conditions for each to bring out the best in the other." [4] These observations illustrate that similarly striking instances of "beauty in chaos" can be heard from the vantage point of street cafes. With a better understanding of how sound can be carried into a field, by exploring how these everyday, undesigned interactions between sound sources, spatial volumes, and urban conditions operate, we can begin to explore new possibilities for "borrowing sound" in cities.

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REFERENCES

- [1] **Koseki, Mari.** "Warbler Recalls Area's Innocent Days." *Japan Times Online*. December 31, 2000. Accessed November 15, 2013. japantimes.co.jp/text/nn20001231b4.html.
- [2] **Atelier Bow-Wow and Tsukamoto Laboratory.** *Pet Architecture Guide Book*. Ed. Kyoichi Shinada. Tokyo: World Photo, 2001.
- [3] **Kazuo Shinohara,** *Kazuo Shinohara-Houses* 58/59 (Barcelona: 2G, 2011).
- [4] ——. *Street with Human Shadows* (Kitakyushu: CCA, 2006).

Using a Complex Sound World for a Participative Dismantling and Redefinition of The Collective Appropriation of Industrial Landscapes

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Abstract

How can the complex soundworld of electronic musicians inspire the development of a new vocabulary and tools for describing and exploring the post-industrial transformation of urban sound environments? Two artistic projects, 'Parckdesign 2014' and 'Het Geluid van Hasselt en Genk', allowed us to test the transformation of two areas physically and socially defined by their industrial past. The avant-garde output and experimental collaborations of independent electronic record labels provides the conceptual and methodological basis for a participative dismantling and redefinition of the collective appropriation of acoustic territories of former industrial zones in the centrally located canal zones of two urban areas.

Keywords: Post Industrial Transformation, Experimental Electronic music, Sonic Experience, Acoustic Territories

1. Introduction

While making sound and space with beats, tones, and chords, UK experimental electronic musicians like Actress and Copeland interpret the physical and social conditions of their city into new sonic territories. Both musicians are inspired by early Detroit techno. They use similar conceptual and methodological techniques to evoke unknown urban spatialities in which listeners are allowed to roam. The sonic perception and its ability to invoke astonishment and wonder within music or visual media, is used by Jean-François Augoyard and Henri Torgue for an auditory analysis of urban environments. After an introduction to the composition of sonic spatiality in Detroit techno and UK Avant Garde Electronic Music and the sonic ecology of Augoyard and Torgue, I explain how these insights contribute to the development of a method to explore 'sonic' post-industrial transition of two urban Belgian canal zones.

2. Techno Spatiality

2.1. Early Detroit Techno

At the end of the eighties the Detroit techno group Cybotron, formed by Richard Davies and Juan Atkins, made the single 'Techno City'. The song was intended to reflect the post-industrial transformation of their city by using new sound technology. To interpret the dying auto-industry Cybotron used subliminal funk pulsing amidst their crisp-and-dry programmed beats to reflect the shift in atmosphere in Detroit (Reynolds, S. 1998). With their work Davies and Atkins showed the world how musicians, by using new sound technologies, can create new 'sonic' spatialities in which listeners can detach themselves from the physical city. According to Derrick May, techno pioneers were not looking for the soul or identity of the Detroit, but rather for a distinct flavor as an auditory response to the people's blindness for the changing city. In 'Mediapolis' De Jong and Schuilenburg (2006) explain how a lack of sensory input can be complemented by a mental apparatus or mental assumptions, executing computations following musical rules.

Techniques like sound collage and sampling provide a basis for subtly designed semi-acoustic environments or soundscapes with particular spatial effects. Following De Jong and

Schuilenburg (2006) sonic spatiality is not abstract nor neutral. The two authors define it as space for social relations in which specific stories, symbols and knowledge are shared, a spatiality which is different than the spatialities which appear to people in the physical city. Concepts such as distance or opposite are less relevant in the sonic spatiality. Surrounded by a 360 degree sound sphere, the listener always stands in the middle of a sonic spatiality. The center is not a static but a dynamic place. Everything moves and resonates through the simultaneity of different sounds. Pulses, tones, tapping noise, melodies and beats form a periphery which keeps the listener in its grip. Sound opens doors and passes through walls to make people move. The acoustic space of a sonic spatiality therefore has no rigid but soft boundaries. It is an ongoing becoming, or intensity where only extremes seem to be playing.

2.2. London-based Electronic Music

Early Detroit techno continues to inspire electronic musicians in search for new sonic territories. The music has a major influence on London-based electronic musicians like Darren J. Cunningham, best known under the pseudonym Actress and Inga Copeland, formerly half of the duo Hype Williams with Dean Blunt.

The music of Derrick May, Juan Atkins, Carl Craig, Kevin Saunderson, Terrence Dixon and Theo Parrish forms a benchmark for Cunningham's music. In a review for Pitchfork Magazine Andrew Gaerig (2014) described Cunningham's most recent album 'Ghettoville' (2014; Werkdiscs / Ninja Tune) as a scorched hard drive, a dour drone record that takes his fascinations – Detroit techno, Chicago ghetto house, rap – and repeatedly kicks them in the ribs. On 'Ghettoville' Cunningham suggests crosscutting tensions and overlapping, narratives, just like the city itself. Sounds of the city from his walks, both real and imagined, form the backbone of this album. He doesn't seem to experience the city as 'inner' or 'outer' but rather as a continuum. "Ghettoville is me walking around East London, trying to get my own moment of peace and being in a mood basically," Cunningham tells in an interview with Derek Walmsley (2014) for the Wire magazine, "In a mood of all sort of emotions that needed to be controlled." He refers to his experiences when smoking too much drugs, being disconnected from the world and looking for structure and cues by walking through the city, to get his thoughts bent into some kind of shape. "The only thing that is keeping you moving, are your surroundings," he explains to Walmsley (2014). "Walking in London from one end of a street to another can be a journey between completely different modes of existence with poverty hidden behind curtains."

Cunningham composes his music by sketching stuff, drawing different images, and writing different stuff. Field recordings are used either very or relatively recognizable and even

almost in an abstract way. On 'Ghettoville' he tried to eliminate structure in his compositions, or the idea of how structure should play a part in music. Unlike other experimental electronic dance music, Cunningham is not shifting rhythms rather he is fiddling between the beats. In a review for Dazed Magazine Mark Fisher (2014) describes the album as a dark journey to a dystopian capital. 'Ghettoville' can be interpreted as a lecture. It refuses to commune with anything but itself, including the broken and disadvantaged world it purports to represent. "We live in a brittle, addicted world, and this is what a brittle, addicted world sounds like," Cunningham explains in an interview with Larry Fitzmaurice (2014).

Recently Cunningham contributed to the debut of singer/producer Inga Copeland. On 'Because I'm Worth It' (2014; Self-released), Copeland addresses the heartbreak and urban ennui against a backdrop of forward, phantasmic dub and electronic production by herself and Cunningham. On 'Because I'm Worth it' she explores the theme of urban life, both lyrically and through electronic music. According to Beth Tolmach (2014) her choice of stark, mechanical electronics make the listener imagine the skeletal frames seen in exposed skyscrapers. This coldness is sometimes counterbalanced by a pop sensibility. Copeland chooses for monotony in the rhythms and repetition via numbing loops. In a review for Dummy Magazine Tolmach (2014) compares the work of Copeland with Detroit Techno. On 'Because I'm worth it' Copeland is taking bits and pieces, mixing machine-made grooves with her soft and imperfect vocals to build a bigger picture.

2.3. Conclusion Techno Spatiality

The complex sound worlds of the musicians discussed above illustrate how the city is imaginable and conceivable through electronic compositions. Their music deals with alienation, immobility and movement. It holds truths about ethnicity, gender and socio-economic identity. Their compositions touch on how they see themselves mirrored or alienated musically and aesthetically as well as economically, socially and politically in the actualities of city life.

The process of breaking up and rebuilding auditory entities is a core feature of this urban electronic music. The strategy is based on simple, sometimes even familiar sounds whose perceived units get undermined by ambiguous stream formation, both sequentially and spectrally. The musicians make use of instrumental sounds like sinusoids, noise and additive synthesis, usually without loudness contours other than sharp on and offsets. Cunningham and Copeland use sounds from daily life contiguous with their imagination. Abstract musical sounds are woven into the realistic fabric, creating distances and depths of field. Complexity is often created as musical textures. The London-based musicians use representational symbols like the for Detroit techno typical chord progressions or rhythmical patterns. Distortion

becomes a subject in itself. They are experimenting with rhythm, with steady or skipping beats. By creating discontinuity or distortion they play with the perception of opposites, with time, place and psychology. It's like they're taking hold of time, generating permanence or deviation through an exploration of the dynamics of rhythm.

To create their sounds and effects the Detroit pioneers used sequencers, samplers, and synths. Cunningham and Copeland combine working in a studio with field recording. Equipment is used rather in an anarchistic way. Distortion, hiss and crosstalk are fundamental elements in the music and settings for equalizers and compressors never shied away from excess. Techno music is well known for the creative use of step sequencers. In contrast to playing a sequence on the keyboard, using a step sequencer demands a much more analytical approach and usually results in a non-gestural successions of notes. Differences between parameter settings of individual steps are typically developed while the device is running in a loop. Frequency is a fundamental parameter in techno music. It is important for segregation. Segregation does not only take place within the boundaries of one sequence but also in combination with other sounds of the piece. Other parameters like brightness, articulation and accentuation are also subject of variation, and they allow subtly change in a sequence's perception, also in relation to other parts of the piece.

The electronic music has the power to unsettle aesthetic boundaries and to pull listeners in unknown auditory territories. Without the necessity to see the city, the music of these avant garde artists evokes real and imaginative urban spaces. Via the use of topographic references this effect is reinforced. In between the sounds and rhythms of their music another urban experience is woven. Contours of the city are no longer marked by physical walls or boundaries. They show not so much the landscape as the position of the listener within it. Their music offers the listener an imprint of the movement of one's body through an imaginative landscape, like a trace of an inhabited possibility, rather than a reportage of an assumed actuality.

3. Sonic Effects

Comprehending the sonic spatiality as another urban spatiality, the movements and spatiality generated by musicians like Copeland and Cunningham are interpret as creative, transgressive, or simply representative traces of urban design and everyday urban experience.

For defining and analysing the interaction between the physical sound environment, the sound milieu of a social-cultural community, and the 'internal soundscape' of every individual, the concept 'sonic effect' will be used. Contrasting earlier sonic models of analysis, such as R. Murray Schafer's soundscape or Pierre Schaeffer's *objets sonores*, which dealt respectively with large sound environments and very small sonic utterances, sonic effects describe a set of experiential features (Augoyard & Torgue, 2005). Rather than defining things in a closed way, the concept opens the field to a new class of phenomena by giving some indication of their nature and their status. It characterizes the modal or instrumental dimensions of sound. Augoyard and Torgue immerse the sonic event in an ecology of vibrational effects, out of which, the subject and object appear. They write that 'the sonic effect', sometimes measurable and generally linked to the physical characteristics of a specific context, was not reducible either objectively or subjectively. The result is the revision of the notion of the sonic city 'as instrument' as merely possessing 'passive acoustic properties,' replacing it instead with a 'sonic instrumentarium of urban environments'— an idea of playing the city via its design, and thereby modulating its vibrational effects. 'Sonic Experience' provides a glossary of effects, including resonance, echo, rumble, and reverberation, analyzed in terms of their relevance across the scales from acoustic physics, socio-psycho-physiology to aesthetic, architectural, and urban design. Augoyard and Torgue's theory explains how musical terminology can be used for describing and analyzing individual and collective everyday experience of sound in an urban environment.

4. Methodology & Techniques

The music and compositional practices of avant garde electronic musicians like Cunningham and Copeland together with the theory of Augoyard and Torgue inspired a methodology and techniques for a participative dismantling and redefinition of industrial areas in transformation.

Field recording is used as a primary method for exploring everyday listening experiences and producing a plurality of future sonic fields. It is interpreted as a participative practice of social and cultural interaction combining both the immersive experience of the place or route investigated with the reflexive and artistic possibilities of amplified listening. Sonic exploration is conceived as an integrative process that can bring together distinct cultural sonic experiences. This reasoning is based on two assumptions as acknowledged by Augoyard

and Torgue (2005). The first assumption sustaining the methodology is generic: perceptive organization is fundamentally the same in everyday and specialized listening. The second assumption is anagogic: the unification of sound phenomena must happen through a rediscovery of the pre-categorical approach to listening. Augoyard and Torgue (2005) argued that listening to sonic effects and developing the capacity to identify them are part of a rehabilitation of general auditory sensitivity.

By introducing the terminology, principles and sonic elements of the discussed electronic music, a specific way of interpreting and reworking the sound environment of the area is suggested. Techno spatiality is presented as an information circuit collecting and amplifying the future potential of a place. The search for a Detroit drum attack is used as a method to softening up, forcing listeners to open themselves to the message they can be a time ahead of this present time, like if they're in a situation hearing someone speak in a language they don't understand, or they're in surroundings they've never seen before. It's about taking away the location, making the listener helpless, letting in the disorientation of a possible future.

During a sonic walk along different locations in the observed area people are invited to participate in a sonic exploration of the area. The imagination of participants is triggered by an explanation of the spatiality produced in urban electronic music and a presentation of the future plans for the larger area. A printed sonic map and a recording device are used to allow the exploration of different sonic experiences in a low-tech, open and flexible manner. Participants are asked to work with their sonic experience, to respond to it and to understand it as an imprint of the landscape. Rhythms existing in the mind of people living in the area are questioned in relation to the relationships they have with technology today and in the future. Participants are asked to transfer their reflections into movements and subsequently to a recording device.

In a following meeting participants are asked to define a future sonic environment by editing and arranging their field recordings into a composition for the place they have been exploring before. Actions such as cutting out, moving pieces and leaving offer the ease and flexibility to reconstruct tracks for the different locations recorded earlier. The reworking of the recording material usually comes along with a closer listening, a discovery of hidden sonic qualities and a further unrolling of the possibilities of a place. In the search for a balance between the physicality of the landscape and technological innovation the use of digital sounds and effects is proposed. Digital innovation allows the participants to push beyond the boundaries of the recorded material. Because of the use of sounds from field recordings the rhythm construction process is an open ended form of experimentation where the loop

is used as a tool rather than a rule. A creative use of space in the composition is encouraged but every resulting spatiality should be somehow tuned into the natural and urban conditions of the area. The resulting compositions are not expected to be easy listening. A composition that allows a tentatively appropriation of the sonic space is encouraged. The resulting compositions are presented as illustrations of a possible development of the observed area.

5. Research Projects

5.1. Artistic Projects

Through participation in two artistic projects, 'Parckdesign 2014' and 'Het Geluid van Hasselt en Genk', I conducted research on an artistic method for a participatory analysis and reconstruction of the sound environments in urban areas which are physically and socially marked by their industrial past. For the development of a method and tools, I focused both on users and designers of the future landscape.

Atelier de Stad (June – October 2014)

'Atelier de Stad' is a project initiated by the Belgian television channel, Canvas where creative talent was sought to work on five city projects in Flanders. 'Het Geluid van Hasselt en Genk' was also part of the bigger art project 'De Unie Hasselt – Genk', a project that is related to the regional development around the Albert Canal. Together with five other young sound artists I worked on the identity of the two cities and the similarities between the two. I used the Regional Implementation Plan for the delimitation of the Regional Urban Area Hasselt – Genk as a starting point for the development of a tool allowing a collective analysis and redefinition of existing and future urban sound environments in the area. Through collaboration with other artists a multidisciplinary approach was encouraged. In September '14 the artistic research ended with a sound expo at C-Mine Cultural Centre and a mass performance of the cable bridge, a symbolic place between the two major cities in Limburg. The results of my research were included in the expo of this project.

Parck Design (May – September 2014)

The aim of Parck Design initiated by the Brussels Environment is to reflect on ways to invent new public spaces in the city. The first three editions of Parckdesign in 2006, 2007 and 2008

questioned the approach of design through urban furniture in the city's parks and gardens. Parckdesign 2012 named GARDEN was dedicated to installations by international and Belgian artists in the wastelands of the Anderlecht canal area. Parckdesign 2014, curated by the office Alive Architecture privileges design as process of engagement with local and regional actors to co-produce and maintain the PARCKFARM, a temporary use as a first chapter of the park Tour & Taxis that was considered as a test. At the end of summer the project PARCKFARM is developing its own dynamic beyond the temporary use of Parckdesign 2014. During the festival period, I developed a project on the sound environment of the former industrial site. I used the regional plan for the development of a Brussels green socio-recreative network as a framework for the analysis and definition of the post-industrial change of the sound environment. The festival ended with a conference at the end of september '14 where the first results of my research were presented.

5.2. Approach

Both areas are crossed by a canal and both find themselves in the midst of a post-industrial transition process. My research projects began with an exploration of the planning context and the appropriation of public space along the canal by inhabitants and visitors. For each project I selected a type of appropriation possible affected by the transformation of the area. For the project in Hasselt – Genk, I chose the car driver. In 2014 Ford closed its Genk Factory located along the Albert Canal. In Brussels I work with disadvantaged young people who hang out in the public space and the wastelands of their neighborhood. The majority of the youngsters are boys many of which are searching for a job in the car industry because of their educational background. Given the interdisciplinary context of the project, for the project in Genk I decided to work on the design a cartography of a sonic ride through the landscape, a tool that can be used for the exploration of techno spatiality in the area. In Brussels I focused on the dialogue and the use of technology in situ, at locations where disadvantaged youth often meet.

5.3. Results

For the project in Hasselt – Genk I drew a route along existing and future roads in the canal area. By driving and walking through the landscape together with sound designers and inhabitants I explored the sonic instrumentarium of the canal zone. I focused on the relationship between man and the automobile driving through the industrial landscape. Based on the results of these observations I designed a map for a sonic exploration of car driving in the area today and in the future. The printed map consists of a listing of elements of techno spatiality,

a choreography through the landscape, and a visualization of possible sonic experiences in the area. The map has been presented at the closing expo of the project. Visitors received a copy to take home.

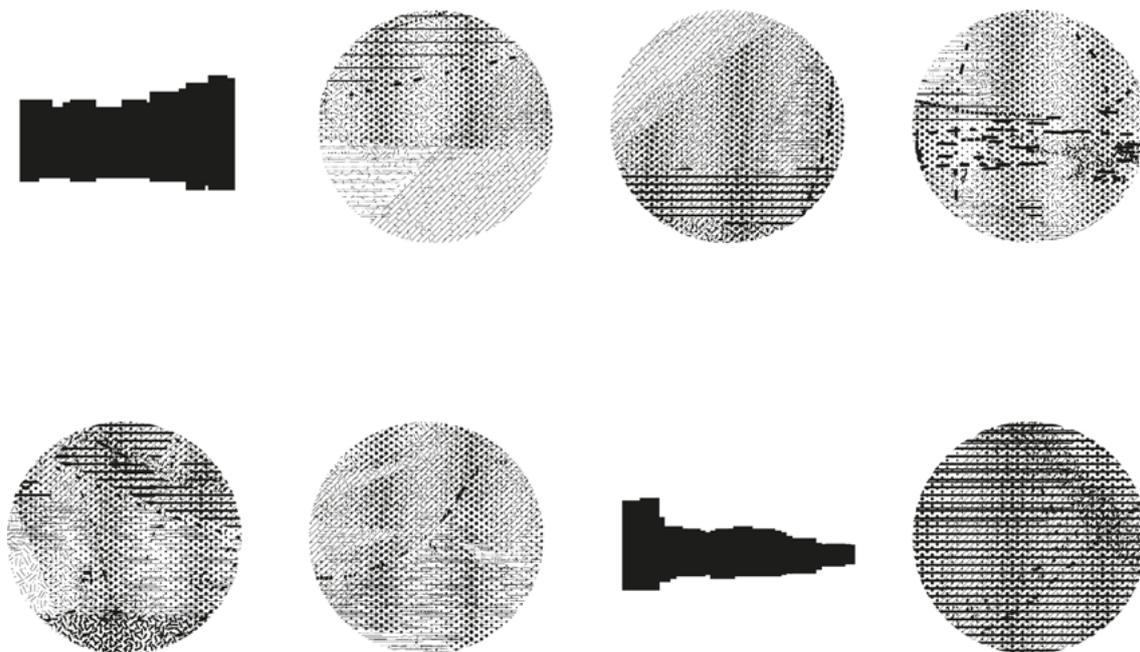


Figure 1. A visualization of Possible Sonic Experiences in Hasselt Genk.

In Brussels I worked with local youth on a collective interpretation of the sonic experience of a landscape in full transformation. The collaboration with these young people growing up in disadvantaged conditions is based on a relationship of trust that I have built over the past few years with them. A cartography of their use of public space and wastelands in the area was the starting point for a range of field recording sessions in the area. Each session consisted of an introduction to the larger project, the method of field recording, sonic spatiality and the use of recording devices. A printed version of the cartography supported the conversations about sonic experiences. During the sessions, we discussed about their relationship with the sound environment around them, the music they listen to, their use of public space, their knowledge about technology and their experience of the rapidly changing landscape. A dozen of young people took part in the field recording. The other youngsters agreed with recording close to them.

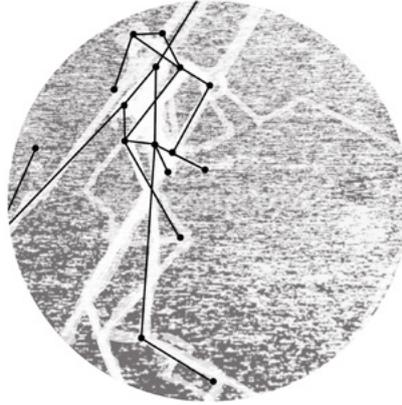


Figure 2. A cartography of the use of public space and wastelands in the area by local youth.

The young participants responded positively to the effects of amplified listening. In several sessions the enthusiasm of the participants blocked a further exploration of their listening experiences in the area. Different sonic experiences of the landscape have been recorded by walking, sitting, biking, playing and other forms of experimenting in the public space and wastelands of the area. Youngsters were able to record different spatial materials of the sound environment such as sounds from a distance, indoor acoustics, moving sounds, etc. Also various types of rhythms have been recorded. Mechanically produced rhythms have a dominant presence in the recordings. The reinterpretation and rework of the recorded material has not taken place yet. The absence of a larger project for youth participation in the festival Parckdesign necessitated the launch of an additional participation project for the youngsters I was working with. Without this larger framework for youth participation it is difficult to achieve an active involvement of these young people in a reflection on the sound environment they are living in. The next phase of the exploration of the sound environment will be organized early 2015.

6. Conclusion

Detroit Techno and UK Avant Garde Electronic Music together with the Sonic Ecology of Augoyard and Torgue is used as a conceptual and methodological basis of a participative sonic exploration of a post-industrial urban transition in two Belgian canal zones. The music of Cybotron, Copeland and Actress has been used as a reference point from which I strayed rather than as steadfast frameworks. The way they interpret an urban psychogeography into

new sonic experiences by constructing a techno spatiality is integrated in a method for a collective dismantling and redefinition of rapidly changing areas. The terminology, principles and sonic elements of their music, allowed a specific way of interpreting and reworking the sound environment. Their music fostered the exploration of spatial characteristics and technological rhythms in the sound environment. Field recording is used as primary method for a collective exploration of the sonic environments today and in the future. In the search for a balance between the physicality of the landscape and technological innovation the use of digital sounds and effects is proposed. Working with a disadvantaged population threatened by urban transformation processes required a larger approach to youth participation in the Brussels project. An interdisciplinary collaboration for the project in Genk and Hasselt allowed me to focus on the design of a printed map that has been presented and distributed as a tool for sonic exploration of actual and future sound environments. Based on the results of both projects, I conclude that urban electronic music has the potential to contribute to the development of a qualitative approach of sound in landscape design, urban design and planning. It allows us to move beyond the conventional quantitative measurements of sound through decibels.

REFERENCES

- J. François Augoyard and Henry Torgue** (dirs.), *Sonic Experience: A Guide To Everyday Sounds*. (Montreal:McGill-Queen's, 2005),216.
- Alex De Jong and Marc Schuilenburg**, *Mediapolis*. (Rotterdam: O10, 2006), 240.
- Mark Fisher**, "Unpicking the codes of Ghetto-ville," *Dazed*, february, 2014, accessed May 3, 2014, <http://www.dazeddigital.com/music/article/18667/1/the-codes-of-ghettoville>
- Larry Fitzmaurice**, "Actress," *Pitchfork Magazine*, January 22, 2014, Accessed May 3, 2014, <http://pitchfork.com/features/update/9310-actress/>.
- Andrew Gaerig**, "Actress: Ghettoville," *Pitchfork Magazine*, January 28, 2014, Accessed May 3, 2014, <http://pitchfork.com/reviews/albums/18946-actress-ghettoville/>.
- Simon Reynolds**, *Energy Flash. A Journey Through Rave Music and Dance Culture*. (London: Picador 1998), 512.
- Beth Tolmach**, "Album of the Week: Copeland - 'Because I'm Worth It,'" *Dummy*, May 19, 2014, Accessed May 30, 2014, <http://www.dummymag.com/reviews/album-of-the-week-inga-copeland-because-im-worth-it-album-review>.
- Derek Walmsley**, "Darren Cunningham's sound-world filters South London angst and atmos into abstract private dance music" *The Wire* 361 (2014):34.

Broadcasts from Empty Rooms and the Edges of Radio

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Abstract

I suggest that radio is a kind of ‘non-place’ that holds the potential for movements of presence and that opens spaces of encounter. *Broadcasts from Empty Rooms* (Grbich, with technologist Heidi Angove, 2014) utilised the potential of live Internet radio broadcast as a porous boundary between people and places. The Broadcasts were a series of night-time, live atmospheric sound streams from empty urban buildings that created situations in which unpredictable connected moments between audiences and sound ecologies were possible.

This paper considers *Broadcasts from Empty Rooms*, alongside Jason Sweeney’s *stereopublic: crowdsourcing the quiet* (ongoing) in a discussion about listening to quiet places, the unraveling boundaries between people, places and sounds, and the participatory potential of Internet broadcast radio. Art making approaches are also considered: both works employ approaches to working with sound that sit between the poles of finding and composing.

Keywords: sound art, radio, back-pack broadcasting, Internet radio, silence, site-specific, urban space, place, participation, agency, listening, performative encounter, event, making, *stereopublic*, Jason Sweeney, Sasha Grbich, Heidi Angove

1. Introduction

In the worlds of commercial and broadcast radio prolonged silence is considered an undesirable event. Most radio stations have back-up systems that detect silence and switch to pre-recorded messages in cases where quiet begins to be felt. But what happens when silence becomes the deliberate content of a live broadcast, and what becomes possible at the fleeting points of connection between people, unpredictable soundscapes and communities of quiet seekers? This paper considers quiet sound within the context of radio broadcast and broader Internet located quiet sound projects.

Writing (like art making) may be generative, affirmative and a process through which new realities are made (Massumi, 2002,18). I approach writing as an act of exploring or of feeling a way towards new knowledge. The approach taken in this paper is one of experimentation: mixing ideas and artworks in ways that may set knowledge in motion. This paper takes as its starting place two Australian sound works: Jason Sweeney's *stereopublic: crowdsourcing the quiet* (ongoing) and my own recent work, *Broadcasts from Empty Rooms* (2014). I follow the ways these works (and the urban sound ecologies they encounter) form connections with listeners through considering 'vital materialism' (Jane Bennett, 2010), quiet listening and visceral perception (Salome Voegelin, 2011), becoming (Deleuze and Guattari, 1980) and reciprocity (Miwon Kwon, 2010). I end with a discussion of 'found sound' in order to describe an approach to art making processes that utilises 'collaborative' methods that work with the agencies of people, places and sounds.

2. Broadcasts from Empty Rooms

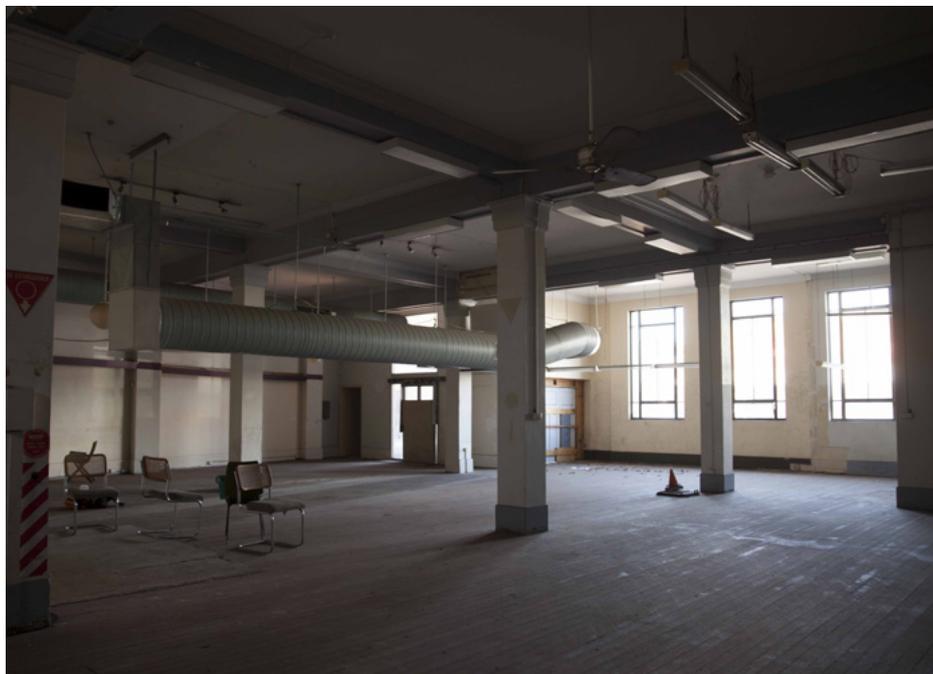


Figure 1. Broadcast location: The old Port Adelaide Post Office.

Old buildings are never silent, particularly those old buildings that are in the city, comprise the city and are themselves ecologies of life and sound. Each place generates a different and changing soundscape. Initiated as part of FELTmaps, a site-specific art project,¹ *Broadcasts from Empty Rooms* was a series of weekly live night-time atmospheric sound broadcasts (every Saturday night for a month) from different empty buildings in Port Adelaide, Australia. The project developed and utilised a small portable Internet radio transmitter.² Listeners accessed the sounds as a live Internet radio station (via a webpage or an Internet connected radio) and tuned in from their own places; the unpredictable night sounds from empty buildings intermingled with their environments resulting in unique and dispersed audience experiences.

The term ‘acoustic ecology’ describes assemblages in which sounds are inexorable from their surrounding materials, economic and political systems. *Broadcasts from Empty Rooms*

1. FELTmaps took place in Port Adelaide March 27–April 26 2014.

2. The small portable Internet radio transmitter was made from a raspberry pi, combined with professional sound equipment and powered by a golf cart battery. Technology developed by Heidi Angove (eatmorecode.com) specifically for the project.

was situated in Port Adelaide, where the silence has a pertinent political aspect. Once a busy port to the city of Adelaide, Port Adelaide served vast outback farming communities. Industrial, economic and social change came with the introduction of mechanised loading and container related shipping practices. Subsequently, a tide of people abandoned The Port, leaving decaying commercial, municipal and domestic buildings. Since that time, there have since been attempts to jump-start its economy, with demolitions and developments commenced but often not completed. The empty buildings chosen as broadcast locations were vacant (sometimes dangerous) places with uncertain futures.

3. Listening to quiet sound

In *The Aesthetics of Silence* (1969) Susan Sontag points to an aestheticism around silence. There is a power, she suggests, gained by the choice not to speak (Sontag, 1969). Within the context of modern art she also notes that silence denotes a denial of audience: through a 'chronic habit of displeasing, provoking, or frustrating its audience . . . the ideal of silence. . . has been elevated as a prime standard of seriousness in the contemporary scene.' (Sontag, 1969, 3). A similar argument has been made more recently by Grant Kester who describes the operation of contemporary art via the tactics of shock and alienation (Kester, 2004). Kester and Sontag's suggestions provide useful counterpoints for the quality of experience intended in *Broadcasts from Empty Rooms*. Although audiences listened to very quiet sound, I believe that the work sidestepped the politics of refusal to which they make reference. Human hands did not design the broadcast soundscapes, and rather than being led by an artist (who might reveal or withhold information at whim) the experience of listening to *Broadcasts from Empty Rooms* involved individual listeners making approaches toward (predominantly) kinds of non-human presence.

Broadcasts from Empty Rooms forms part of practice-led postgraduate visual arts research at the University of South Australia. As such, listener responses were sought and recorded from the postgraduate cohort; their voices demonstrate the diversity of experiences generated.

I am reminded of being in the womb. At first I thought of just being submerged in the water but later it seemed that there was more to it. It was not about feel-

ing safe though. Definitely more like being very vulnerable, hidden but on the brink of being exposed all the time.³

The artwork existed in the encounters between people and places and between listeners and sounds. The relative agencies and effects of people, things and places become rhizomatic. As an artist, my direct control ended with switching on the radio stream at the commencement of each broadcast. In most situations, the buildings were completely inaccessible at night and I assumed the role of listener throughout events. The withdrawal of my 'artist's hand' was a deliberate tactic enacted to facilitate unpredictable performances of places.

Radio might be understood as a kind of 'non-place' or 'non-site' as it is dispersed to the homes, cars, back sheds, lounge rooms and the headphones of its listeners. It has the duality of being a place both physical (vibrational) and virtual and may be cast it as a 'heterotopia': the non-places that are temporary and transient, as described by Foucault in *Of Other Spaces* (Foucault, 67). 'Non-site' might be another useful term for considering radio's relationship to the origins of the sounds it broadcasts.

In explicating Robert Smithson's use of the term, Jack Flam writes:

The site represents the world itself, the unedited text with all of its complexities and possibilities . . . the non-site represents the focused articulation of part of the site which to some extent comes to stand for the site itself . . . and becomes a form of speech (Flam, 1996).

Within this research, radio broadcast filtered live sound through microphones and computers, relocating it to virtual space, from where places were articulated in a form that had the potential to 'speak' with audiences.

Broadcasts From Empty Rooms 'ungrounded' the viewer; it created events that mixed listeners with other places. One listener described the experience as that of being in a dark, fragmented place, neither at home nor 'out there'. I suggest that the complex networks of quiet sounds into which people leaned and listened were not static and did not end 'out there'. Salome Voegelin suggests that silence implicates its listeners in acts of perception through its quiet demand to be heard (Voegelin, 2011, 82). Thus silence produces its subject via anticipation: in the potential and tension between each small shuffle and click. In

3. All listener responses were captured through the Postgraduate Research Critique Program, University of South Australia (April, 2014).

Voegelin's reckoning, perception is active, creative and even tactile where the touch of sound might also have physical effects. Tiny sounds might be felt through the skin and jolt the listener, or 'contingent ephemerality . . . becomes material through my fleshy encounter' (Voegelin, 2011,90). Bodies register sound, are affected by it and take it into their sprawling physical systems at the peripheries where they sense and mix with the world.

Gilles Deleuze and Felix Guattari explicate a different framing of experience as 'forming' the subject. 'Becoming', to Deleuze and Guattari, is not a matter of metaphor or imitation, not an action of 'being like' a thing but rather one of entering the movement of, and moving in time with, another being or thing (Deleuze and Guattari, 1980, 305). To co-opt Deleuze and Guattari's 'becoming' to the experience of listening to *Broadcasts from Empty Rooms* might mean we move with the silence and become (for a fleeting moment) silence through the experience of it. Neither Voegelin's or Deleuze and Guattari's theories are metaphorical, they are grounded in the substance of molecules and flesh, and position the body and self as permeable: constantly changing in relation to the lively ecologies into which we enter.

4. Listening to lively places

Cultural theorist Jane Bennett's enchanted or vital materialism is useful for examining the unique liveliness and agency of the urban sound ecologies that formed *Broadcasts from Empty Rooms*. Bennett explores the force of things and the agency of objects. She writes, "by vitality I mean the capacity of things – edibles, commodities, storms, metals... to act as quasi agents or forces with trajectories, propensities and tendencies of their own" (Bennett, 2010, vii). A vital materialist view employs a heightened awareness of the lives of non-human things and acknowledges the (political) agencies of materials, places, animals and other life forms. This adjustment in point of view shifts agency from the assumed power of a central human figure to the field surrounding it, and sees humans acting with their environments rather than acting in mastery over them.

I noticed that there was some occasional snapping sound as if coming from the building itself and this put the strange twist to the broadcast as I wasn't just concentrating to hear the outside sounds but was also very aware that I am listening with the Post Office. (Listener response, April, 2014)

Awareness of the liveliness of materials, places and things might, in turn, affect human behaviour. According to Bennett, enchantment might offer a solution to the problem of how to enact a shift in the human to non-human power balance, tipping the scales via appreciation of the vitality of things and places. She writes, “Enchantment is the feeling of being connected in an affirmative way to existence” (Bennett, 2001, 156) and a sensibility attuned to moments of enchantment might motivate ethical behaviours. *Broadcasts from Empty Rooms* facilitated points of connection (perhaps enchantment) between humans and the complex ecologies of places. To follow Bennett’s logic, it was a gesture that might make ethical shifts in human to non-human relations possible.

5. The edges of radio

Radio generates an invisible social network that weaves and bounces on the silent airwaves towards a shared sense that can only ever be a passing moment of coincidence.” (Voegelin, 2012, 114).

I suggest that as a relational art form, radio has the potential to facilitate unobtrusive kinds of individualised participation. Radio listeners choose to tune in, pick their station, construct their listening environment and often undertake other activities with the radio on. Recent years have seen renewed attention being given to artists and writers exploring direct audience participation: Bourriaud’s *Relational Aesthetics* brought the spotlight to artworks defined in terms of their use and the social relations they might create (Bourriaud, 2003), Claire Bishop provided a historical definition of ‘participatory artwork’, defining it in terms of artworks that variously take in ‘people as material’ (Bishop, 2012) and Grant Kester coined the term ‘dialogical aesthetics (Kester, 2004) to describe artworks that create contexts to generate conversations. These frames of reference map approaches to active audience participation, against which radio provides an invisible, unobtrusive kind of participatory experience typified by individualised encounter.

While Internet radio stations can be accessed via an Internet connected radio and other screen-less devices, they are still mainly reached through webpages. By locating radio broadcast within the Internet, the way is opened for artists to decide to what extent they might utilise more directly participatory approaches and address global communities within

radio and sound art projects. The web interface for *Broadcasts From Empty Rooms* was designed with the intention of extending the potential of an ephemeral radio community into online space. As with traditional radio, listening with others was an integral part of the experience. A simple comment box was added to the website to facilitate optional, anonymous and co-incidental social networks. Comments were un-moderated and faded: disappearing after ten minutes, and it is hoped that in doing so they reflected the 'passing moments' in the sound broadcast.

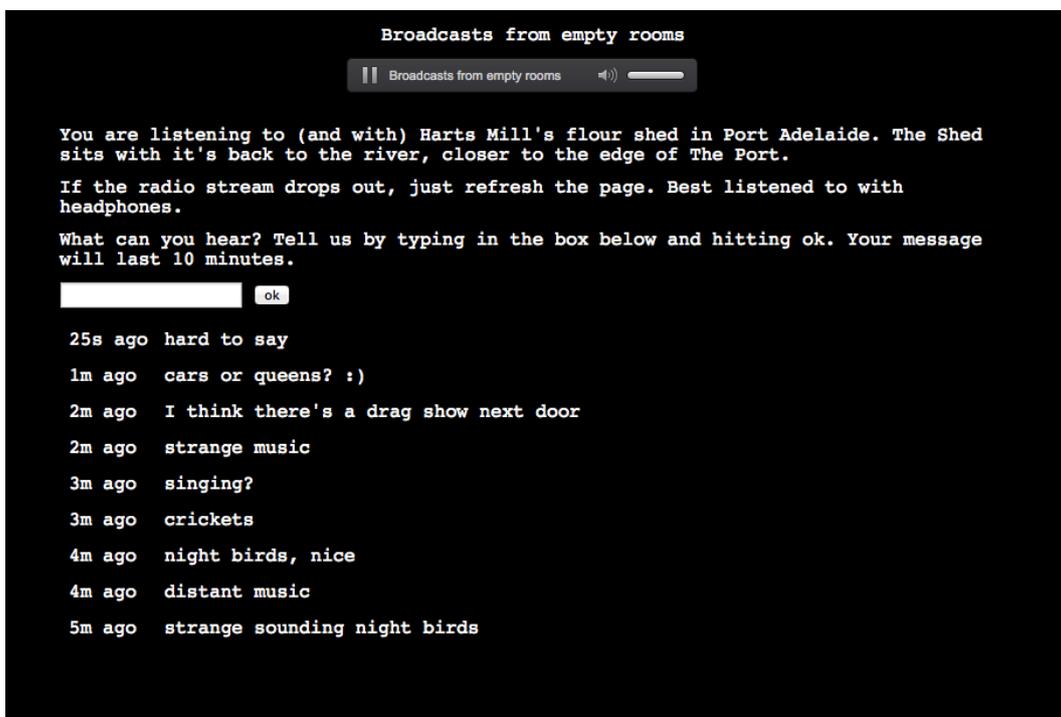


Figure 2. Screenshot from the *Broadcasts from Empty Rooms* Internet interface.

6. stereopublic: crowdsourcing the quiet

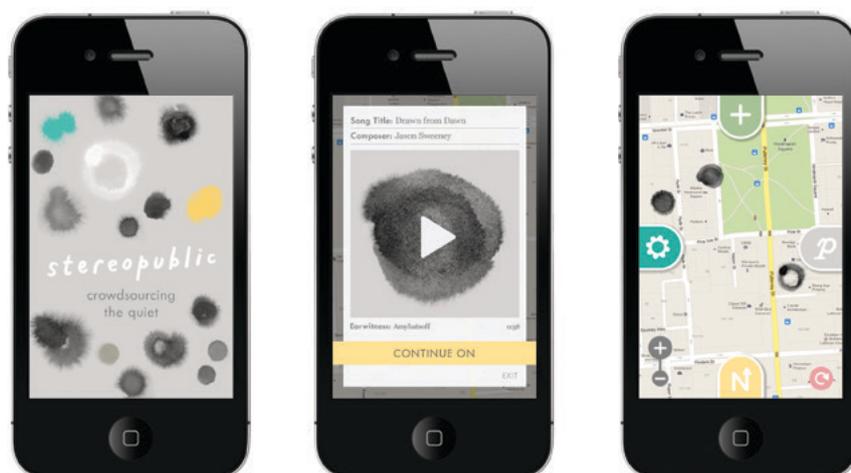


Figure 3. Screenshot from the *stereopublic* iPhone app.

Jason Sweeney developed *stereopublic: crowdsourcing the quiet* (ongoing) out of concern for the waning spaces of quiet in the city in which he grew up.⁴ The project was designed to prompt participants to find places of quiet in loud urban environments. Participants seek and record quiet sounds then upload them to an interactive global map. Sweeney offers to respond to each contributed recording with a sound composition. *stereopublic* (still live at the time of writing this paper) has become a global map of quiet places, an archive of field recordings, of his compositions, a community, and a conversation with Sweeney through sound.

stereopublic prompts one to navigate cities with heightened sonic awareness and to actively seek out moments of quiet amongst hectic urbanity. There are quiet places in Adelaide where it is best to not walk alone. Giving voice to these places of (dis) quiet brings attention to both the politics of urban space and to the changing qualities of the city sound environment.

The experience of silence is highlighted and mediated by technology, with the most common mode of interaction being through the *stereopublic* iPhone application. Once joined, the app automatically records and uploads thirty seconds of sound whenever the user identifies a new quiet place. During upload, users can opt for Sweeney to make a composition from (and for) their quiet recording. His composition is completed and returned to the participant (and added to the map) within 24 hours of their original quiet sound submission. During busy periods his adherence to this time restriction results in an endurance performance. Acts of work and reciprocity are key to the participatory approach taken by Sweeney.

4. Conversation with Sweeney, April 2014.

Miwon Kwon explores complexities surrounding gift giving and receiving in her essay *Exchange Rate*, and in particular the power relations and cycle of obligation between giver and receiver (Dezeuze, 2012, 92). Kwon identifies the receiver as having power with regards to the retaining of a gift whereby power of the receiver is located in the actions of accepting and keeping. The approach to participation in *stereopublic* embraces this right of refusal. Control of the cycle of reciprocity is placed firmly in the users hands.

7. Quiet kinds of making

Both *Broadcasts from Empty Rooms* and *stereopublic* take a position (within the field of expanded spatial art practice) towards art making that touches lightly, more akin to the acts of finding, witnessing or context creation than to traditional making actions like forming or shaping. They employ an approach to sound that sits closer to the found than to the made.

Chance, finding and creating a situation in which encounters might happen are significant to the processes employed by the artists. These quiet ways of making require a shift in language, which might hinge on the difference between ‘making-with’ a material / sound, as opposed to ‘making-from’.⁵ In both works, sound ecologies and places become active contributors, collaborators and “co-authors”. *Broadcasts* creates a platform for completely unedited live sound, while in *stereopublic*, Sweeney activates a community to find sound, then in his compositional responses, leaves the original recorded sound mostly untouched: composing by addition. He describes his approach to composition as ‘call and response’ whereby he adds his ‘voice’ via keyboard and a palette of drone sounds.⁶

Both *Broadcasts from Empty Rooms* and *stereopublic* facilitate events, and the making of these artworks exists in the aleatory interactions between people, places and things. Within such lively structures, the artist’s hand moves carefully, enacting a quiet sort of making by employing the actions of finding, witnessing and sharing. I suggest that this lightness of touch opens spaces of potential for the agencies of other people and places.

5. Bennett’s ‘Vibrant materialism’ also suggests an approach in which artwork might be understood as made-with place and things. “Vibrant material is not raw material for the creative activities of humans or gods” (Bennett, 2010, xii).

6. Conversation with Sweeney April 2014.

REFERENCES

Books

- Bennett, Jane.** *Vibrant Matter: a political ecology of things*. Durham and London: Duke University Press, 2010.
- . *The Enchantment of Modern Life*. Princeton and Oxford: Princeton University Press, 2001.
- Deleuze Gilles, Guattari Felix,** *A Thousand Plateaus: capitalism and schizophrenia*. Minneapolis, London: University of Minnesota Press, 1980.
- Bishop, Claire.** *Artificial Hells: Participatory art and the politics of spectatorship*. London, New York: Verso, 2012.
- Bourriaud, Nicholas.** *Relational Aesthetics*. Dijon: Les Presses du Reel, 1998/2003.
- Dezeuze, Anna and Kelly, Julia** Eds. *Found Sculpture and Photography from Surrealism to Contemporary Art*. Surrey and Burlington: Ashgate Publishing, 2013.
- Flam, Jack** (ed). *Robert Smithson: The Collected Writings*. Berkeley, Los Angeles, London: University of California Press, 1996.
- Kester, Grant.** *Conversation Pieces*. Berkeley, Los Angeles: University of California Press, 2004.
- Kwon, Miwon,** “Exchange Rate” in Anna Dezeuze (ed). *The ‘do-it-yourself’ Artwork: Participation from Fluxus to new media*, Manchester: Manchester University Press, 2012
- Massumi, Brian.** *Parables for the Virtual: Movement, Affect, Sensation*. Durham and London: Duke University Press, 2002.
- Mauss, Marcel.** 1924. *The Gift: the Form and Reason for Exchange in Archaic Societies*. W.D. Halls (trans.). New York: W.W. Norton. 1990.
- Sontag, Susan** “The Aesthetics of Silence” in *Studies of Radical Will*, chapter 1. New York: Farrar, Straus and Giroux, 1969; Anchor Books, 1981; Picador USA, 2002.
- Voegelin, Salome.** *Listening to Noise and Silence: Towards a philosophy of sound art*. New York, London: Continuum, 2011.

Articles

- Foucault, Michel** “Of other spaces” (translated by Jay Miskowiec) in *Diacritics*, Vol 16, No 1. (Spring 1986) p 22–27.
- Wrightson, Kendall** “An Introduction to Acoustic Ecology” in *Soundscape*, Volume 1, Number 1, Spring 2000.

Primary Evidence

Conversation with Jason Sweeney recorded April, 2014.

All listener feedback to *Broadcasts from Empty Rooms* was recorded through the Postgraduate Critique Program, University of South Australia, April, 2014.

Sounding Place: Towards a Practice of Field Recoding

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Abstract

This paper traces a path through current thinking about “place” in human geography, ethnomusicology, and phenomenology. It draws upon Maurice Merleau-Ponty’s insistence that knowledge of the lived world is generated by a living body; Edward Casey’s formulation that place precedes space as “the first of all things”; and Tim Ingold’s definition of landscape as “dwelling-place”. My perspective is that of an artist who uses field recordings as the primary material in a matrix of activities – composition, live electronics, and improvisation among them. My larger project is to develop an integrated and sustainable model of sonic practice that supports an embedded and non-hierarchical relationship with our ecological milieu. An anecdote will set the stage.

Keywords: Maurice Merleau-Ponty, Tim Ingold, Edward Casey, Steven Feld, field recording, place, phenomenology

“The world is not what I think, but what I live through.”

Maurice Merleau-Ponty [2005, xviii]

This paper traces a path through current thinking about “place” in human geography, ethnomusicology, and phenomenology. It draws upon Maurice Merleau-Ponty’s insistence that knowledge of the lived world is generated by a living body; Edward Casey’s formulation that place precedes space as “the first of all things”; and Tim Ingold’s definition of landscape as “dwelling-place”. My perspective is that of an artist who uses field recordings as the primary material in a matrix of activities – composition, live electronics, and improvisation among them. My larger project is to develop an integrated and sustainable model of sonic practice that supports an embedded and non-hierarchical relationship with our ecological milieu. An anecdote will set the stage.

It’s four-thirty in the morning and I’m standing on the banks of the Corbally Canal in Limerick, Ireland. I have brought a steaming mug of jasmine tea as proof against the chill. A special play of muscle and tendon is needed to carefully balance this vessel of hot fluid in one hand, a tripod in the other, while distributing the weight of a pack across my back. The specific movements required for these tasks recall previous field recording outings – memories stored in the body more so than in the mind. I place a digital audio recorder in the bushes. Soon a scatter of birds start up their song from the other side of the canal. From the far distance is heard the occasional sound of rubber tyres on tarmac, early commuters on their way to work. A silent cat passes close by. Will the recorder note its passage by way of a gap or change in the bird-song? Will its footpads be audible in the grass? Would it have travelled a different route had I not been here, scented with jasmine? The back of my hand is on fire from where stinging nettles brushed the skin. I forgot to bring gloves. Again.

For centuries the prevailing bias has been to read the world through visual metaphors; this bias is inherent in language and philosophy. But as the preceding narrative illustrates, we are each an archipelago of perception, memory, and cognition, operating across diverse interrelated sensory pathways. Many contemporary writers are now aware that an approach dominated by optics is insufficient for the task of developing a thorough and responsive phenomenology. Jim Drobnick has written of the “sonic turn” in the arts, practices of sound-making and listening that affirm “sound’s heterogeneous significance” and which reach towards understandings the eye alone cannot reveal [2004a, 10]. Volumes such as *Autumn Leaves* attest to the range of artistic practice through which sound is currently being interrogated

[Carlyle 2007]. More specifically, the eighteen interviews collected as *In the Field* highlight the diversity of contemporary field recording practice [Lane and Carlyle 2013].

Nonetheless, it is important to avoid establishing a facile opposition between the aural and the optical. This dialectic ignores cross-modal sensory connections, such as that illustrated by the ventriloquist illusion. Further, it risks over-simplifying hearing itself, specifically how hearing utilises not only the ear, but is embedded in the haptic through vibration and touch. As Tim Ingold insists, our perception cannot be “sliced up along the lines of the sensory pathways”, but rather must be considered as a whole [2007, 10].

This is the background for my current project, which aims to create a consistent ideological basis for sonic engagements with place. I start by examining two contrary ways of relating space and place: the empirical and the Archytan. Normative conceptions generally hold with the empirical position that space¹ is either an actual entity (Newton), or at least a relationship between or formed by entities (Leibniz, Locke, Hume). Kant may have believed that space was “in here” rather than “out there”, but he still held that space was *a priori* and “inheres in us before all perception or experience as a pure form of our sensibility and makes possible all intuition from sensibility, and therefore all appearances” [Janiak 2009, n.p.]. Practitioners in the discipline of acoustic ecology tend to the same view; space is an empty medium waiting to be filled with sonic events we can map and graph. In this, they follow Descartes, Galileo, and the mainstream of classical Western science in viewing space as isometric, homogeneous, and universal [Casey 1996, 20]. It follows that sounds can be catalogued as autonomous objects with independent qualities.

A very different relationship between place and space has been termed by Edward Casey the Archytan Axiom [1996, 16]. He traces the belief that “place is the first of all things” from Aristotle to Heidegger to Bachelard. For followers of Archytas, place comes before space; the individual and the local precede the general. Or, as Casey writes, “spaces are themselves emplaced from the very first moment, and at every subsequent moment as well” [18]. In the discipline of human geography, this consideration has led to what Greenhough has termed a “vitalist geography”, or what Anderson and Harrison have more generally described as “non-representational” geography [Greenhough 2010, Anderson and Harrison 2010b]. These authors champion an approach based on “the symbolic qualities of landscape, those which produce and sustain social meaning” rather than “physical artifacts (log cabins, fences, and field boundaries)” [Cosgrave and Jackson quoted in Anderson and Harrison 2010b, 5]. Fur-

1. And not just space, but time. In this paper I will not explicitly consider the temporal dimension for the sake of brevity, despite it being key to sonic understandings.

thermore, this symbolic order is not fixed and ordered *a priori*, but is arbitrary and contested, a product of cultural forces [Anderson and Harrison 2010b, 5].

This approach is demonstrated clearly in the work of ethnomusicologist Steven Feld with the Kaluli people of Papua New Guinea. In this culture, improvising “duets with birds, cicadas, or other forest sounds are not uncommon everyday events. Sometimes people will find themselves a waterfall just for the pleasure of singing with a shimmering accompaniment” [Feld 1984, 395]. The Kaluli make their way through the rainforest with their heads down, navigating by sound more than sight. Names for things – and especially places – come from the sounds of these things. Important rituals and everyday activities both have aural accompaniments, not as ornamentation but as substance. For the Kaluli “sonic sensibility is basic to experiential truth” [Feld 1994, np]. This new form of knowledge Feld termed *acoustemology*, a portmanteau for “acoustic epistemology” [Feld 1996, 91]. Despite the emphasis on sound in his analysis, Feld is careful to note that the Kaluli sensorium is indeed cross-modal. Their language even has a word meaning both “absorption by ear and nose” [99].

For some readers, these ethnographic observations have justified declaring tribal peoples as being “closer to nature”. For others it’s reason to lament lost knowledge² or the degradation of the “Hi-Fi” soundscape into the “Lo-Fi” [Schafer 1994, 43]. This is not the place to debate such topics³. Rather, it can be stated that Feld’s observations are, at the very least, a concrete demonstration of Merleau-Ponty’s thesis that knowledge of the world is generated by a living body. And though the Kaluli may represent rather obvious support for this thesis, the same experiential philosophy can be seen to hold true in our own urban and para-urban societies.

Tim Ingold follows the Archytian Axiom by considering “the world as it is known to those who dwell therein, who inhabit its places and journey along the paths connecting them” [2000, 193]. Landscape⁴ is a *dwelling-place*⁵, created through the accretion of tasks performed within the constraints that the landscape itself imposes. In *The Perception of the Environment* Ingold argues that this recursive process “is why the conventional dichotomy between natural and artificial (or ‘man-made’) components of the landscape is so problematic” [199]. This

2. For it is true that the Kaluli no longer live in the manner described, contact with outside societies, particularly Christian missionaries, being to blame.

3. Though one might wonder how, ideology aside, a massed cicada stridulation or a loud waterfall is preferential sonically to, say, a passing aircraft.

4. Ingold’s use of the term “landscape” should be distinguished from both “land” and “place”, though a fulsome discussion must wait for another opportunity.

5. This thought can be traced to Heidegger’s famous lecture “Building Dwelling Thinking”. It is important to note that this word has a generalised existential meaning in German. “The way in which you are and I am, the manner in which we humans are on the earth, is *Buan*, dwelling” [Heidegger 1951, 145].

is an argument against those practices of acoustic ecology that divide sound sources into biophony, anthrophony, and geophony [Krause 1998, 82 and Pijanowski et al. 2011b, 1214]. Such categories pretend that we, *Homo sapiens sapiens*, are somehow separate from nature, and, furthermore, that we are inherently deficient in comparison to other species.⁶

Ingold's thesis is largely based on the phenomenology of Merleau-Ponty. Being is always being-in-place, inflected and constrained by the specific milieu. (I use that particular word in order to avoid terms, such as "environment" and "ecosystem", that come heavily laden with existing ideological connotations.) Furthermore, Ingold insists that "the forms of the landscape are generated in movement" [2000, 198]. Place is not a static object that lies still for examination, but is instead always in the process of being constructed. It is appropriate, then, to read "place" as a verb rather than a noun. My proposition is that we should consider that each engagement with the world sounds a place. This sounding is limited spatially, temporally, and perceptually, and is all the richer for being so constrained. The visual term for the limit to perception is the horizon. Indeed Edmund Husserl, whose phenomenology underlies much thinking in electroacoustic music,⁷ wrote that "every experience has its own horizon". Edward Casey explicated that we "continually find ourselves in the midst of perceptual horizons, both the 'internal' horizons of particular things (ie, their immediate circumambiance) and the 'external' horizons that encompass a given scene as a whole" [1996, 17].

I specifically choose "sounding" as an acoustic metaphor, with the understanding that it applies not only to hearing, but across our integrated sensorium. The sounding reflects back to our senses qualities of the milieu, allowing us to gather knowledge of topology, dimensionality, and materiality. At the same time, the particular intentions and attentions we expend, as both individuals and societies, encodes meaning in the milieu. Place may be understood as both this activity (here "place" is a verb) and the tentative, ever-changing product of this reflexive and discursive process ("place" as a noun). Further, this encoding can never in fact be an original process, free of influence, since there is always already a milieu in place. Every sounding is, in fact, a recoding.

Several contemporary field recordists "sound place" in the manner I have described. Davide Tidoni stimulates sites by popping balloons; the results engage with social responses

6. The degree to which this ideology is held cannot be over-stated. In interview Bernie Krause claimed: "The sounds of the natural world are the sounds of the divine – the sounds of the human world are anything but" [Sriskandarajah 2012].

7. This is epitomised in the acousmatic tradition of Pierre Schaeffer and Michel Chion, about which I have written elsewhere [Parmar 2012]. It should be emphasized that Husserl's transcendental phenomenology, which ultimately rejects historical and technological context, is quite distinct from the existential and embodied approach of Merleau-Ponty as described in *Phenomenology of Perception*.

as much as acoustic results [Carlyle 2013, 80]. Dallas Simpson presents “intuitive improvisations using found objects” as binaural recordings, articulating his own ontological engagement with place [Simpson 2014]. Slavek Kwi (who also works as Artificial Memory Trace) playfully reconfigures field recordings through overt manipulation, establishing a strange symbiosis between himself and his subjects [Fischer 2013]. Mark Peter Wright plays recordings back out into their place of origin, before erasing them forever [Wright 2013]. Each of these practitioners deserves more complete study in light of the thesis developed in this paper; this work is ongoing.

My own sound works are rooted in my local environment, utilising recordings I make as part of my daily life. I take as a given Casey’s declaration that “[t]o live is to live locally, and to know is first of all to know the places one is in” [1996, 18]. An example of my practice is the composition “Caged Birds (Augmentation)”, originally created for the John Cage centenary celebration in New York City.⁸ The title is a play on John Cage, but is also a reminder that a recording is a sound no longer at liberty. The composition takes as its source material the dawn chorus described at the outset of this paper. Though it might initially be mistaken for an “untouched” field recording, it becomes apparent that the avian performers have been taught a new tune. The birdsong shifts in frequency, amplitude, and timing, much as actual birds have adapted their song to changing urban environments [Pijanowski et al. 2011a, 208]. In part, then, the piece is a metaphor for a particular ecological concern, though the fact that its aesthetic affects are derived from electronically-generated transformations belies nostalgia. The intent is to highlight, rather than resolve, any paradox inherent in this mediated engagement with what might only naively be called “nature”. The piece acknowledges the field recordist’s active involvement in the place they record.

This paper has attempted a synthesis of phenomenological observations from different disciplines, in order to examine the process and ideologies of field recording. Several key acoustic metaphors have been developed from the belief that the haptic nature of sound makes it particularly suited to the expression of cross-modal phenomenology. The core thesis is that perception exists in and through our being-in-place. Every act, inflected and constrained by a specific milieu, sounds a place, bringing it into being for a certain duration, within a certain circumambiance. This sounding reveals that place is not static, not simply “location”, but is instead a product of ongoing reflexive and discursive processes, both

8. *100x John: A Global Salute to John Cage in Sound and Image* was presented by Ear to the Earth from 20–23 December 2012 at White Box, New York City. “Caged Birds (Augmentation)” was subsequently played at the Hilltown New Music Festival 2013 in Ireland and the Symposium on Acoustic Ecology 2013 at the University of Kent, in different edits. For *Invisible Cities / Sounding Places* I have created a new four-channel diffusion.

personal and societal, that encode meaning in the milieu. Thus, field recording practitioners cannot appeal to any pre-existing “objective” reality that they might document as unattached observers. Rather, they should accept responsibility for their active role in creating the places they record.

Praxis that engages with these principles will be termed field recoding.

REFERENCES

- Anderson, Ben and Paul Harrison.** 2010a. *Taking-place: non-representational theories and geography*. Farnham, Surrey, UK: Ashgate.
- . 2010b. “The promise of non-representational theories”. In Anderson and Harrison 2010a, 1–34.
- Carlyle, Angus.** 2007. *Autumn leaves: sound and environment in artistic practice*. Paris, France: Double Entendre.
- . 2013. “Davide Tidoni interviewed by Angus Carlyle”. In Lane and Carlyle 2013, 73–83.
- Casey, Edward S.** 1996. “How to get from space to place in a fairly short stretch of time: phenomenological prolegomena”. In Feld and Basso 1996, 14–52.
- Drobnick, Jim.** 2004a. “Listening awry”. In Drobnick 2004b, 9–18.
- . ed. 2004b. *Aural cultures: sound art*. Toronto & Banff, Canada: YYZ Books & Walter Phillips Gallery Editions.
- Feld, Steven.** 1984. “Sound structure as social structure”. *Ethnomusicology* 28.3, 383–409. Available: <http://www.jstor.org/stable/851232> [accessed: 8 March 2014].
- . 1994. “From ethnomusicology to echo-muse-ecology: reading R. Murray Schafer in the Papua New Guinea rainforest”. *The Soundscape Newsletter* 8. Available: <http://www.acousticecology.org/writings/echomuseecology.html> [accessed: 8 March 2014].
- . 1996. “Waterfalls of song: an acoustemology of place resounding in Bosavi, Papua New Guinea”. In Feld and Basso 1996, 91–135.
- Feld, Steven and Keith H. Basso.** 1996. *Senses of place*. Santa Fe, New Mexico: School of American Research Press.
- Fischer, Tobias** 2013. “Complementary disconnections: interview with Slavek Kwi”. *The Field Reporter*. Available: <http://thefieldreporter.wordpress.com/2013/11/06/324/> [accessed 10 November 2013].
- Greenhough, Beth.** 2010. “Vitalist geographies: life and the more-than-human”. In Anderson and Harrison 2010a, 37–54.
- Heidegger, Martin.** 1951. “Building dwelling thinking”. In Heidegger 2001, 141–160.

- . 2001. *Poetry, language, thought*, translated by Albert Hofstadter. New York, USA: Harper Perennial.
- Ingold, Tim.** 2000. *The perception of the environment: essays on livelihood, dwelling and skill*. London, UK: Routledge.
- . 2007. "Against soundscape". In Carlyle 2007, 10–13.
- Janiak, Andrew.** 2009. "Kant's views on space and time". *The Stanford Encyclopedia of Philosophy* [online]. Available: <http://plato.stanford.edu/entries/kant-spacetime/> [accessed 15 May 2014].
- Krause, Bernie.** 1998. *Into a wild sanctuary*. Berkeley, California: Heyday Books.
- Lane, Cathy and Angus Carlyle,** eds. 2013. *In the field: the art of field recording*. Axminster, Devon, UK: Uniformbooks.
- Leadley, Marcus.** 2013. "Where is the soundscape? Landscape and site: reconsidering location". Symposium on Acoustic Ecology, 8–9 November 2013, medway, Kent, UK.
- Malpas, Jeff.** 2014. "Rethinking dwelling: Heidegger and the question of place". *Environmental & Architectural Phenomenology Newsletter* 25.1, 5–23. Available: http://www.arch.ksu.edu/seamon/Malpas_Heidegger_Place.htm [accessed 15 May 2014].
- Merleau-Ponty, Maurice.** 1962 (2005). *Phenomenology of perception*, translated by Colin Smith. London, UK: Routledge.
- Parmar, Robin.** 2012. "The garden of adumbrations: reimagining environmental composition". *Organised Sound* 17.3, 1–9.
- Pijanowski, Bryan C. et al.** 2011a. "Soundscape ecology: the science of sound in the landscape". *BioScience* 61, 203–216. Available: <dx.doi.org/10.1525/bio.2011.61.3.6> [accessed 29 May 2014].
- . 2011b. "What is soundscape ecology? An introduction and overview of an emerging new science". *Landscape Ecology* 26, 1213–1232. Available: <dx.doi.org/10.1007/s10980-011-9600-8> [accessed 29 May 2014].
- Schafer, R. Murray.** 1994. *The soundscape: our sonic environment and the tuning of the world*. Rochester, Vermont: Destiny Books.
- Simpson, Dallas.** 2014. "Personal performances" [web page]. Available: <http://www.dallas-simpson.com/personalPerformances.cfm> [accessed 18 May 2014].
- Sriskandarajah, Ike.** 2012. "A lifetime of listening", transcript of *Living on Earth* radio programme, broadcast 16 March 2012. Boston, MA: Public Radio International. Available: <http://www.loe.org/shows/segments.html?programID=12-P13-00011&segmentID=7> [accessed 18 May 2014].
- Wright, Mark Peter.** 2013. "(Auto) Dialogical feedback and the poetics of letting go". Symposium on Acoustic Ecology, 8–9 November 2013, Medway, Kent, UK.

Extended Phonography: the Intertwining of Soundscape and Landscape

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Abstract

In this paper I propose the use of extended phonography as a methodology that introduces new forms of representation regarding the experience of place and its relationship to sound. The paper goes on to outline the conceptual framework of the site-specific project *Constructing a Soundscape*, discussing the work as a direct outcome of this methodology. This work, both artistic and discursive, attempts to address the need for a vocabulary that mirrors new aesthetics arising in sound art.

Keywords: soundscape, landscape, *extended phonography*, place, memory, site-specific

1. Introduction

Extended phonography is grounded on similarities between photography (image recording) and phonography (audio recording). Technological developments in recording methods used in both fields have allowed for augmented perspectives of time and space that extend beyond the capabilities of the human senses. Such parallels are described here through the aesthetic vocabularies used by both practices.

Exploring notions of veracity further problematizes the conflicting relationship between the roles of documentation and representation of the ephemeral in photography and phonography. These concepts are developed through critical reflection on Roger Fenton's photograph(s) *The Valley of the Shadow of Death*, along with discourses expanded by Susan Sontag and Errol Morris. The issues raised by these photograph(s) are developed in the sonic domain through a historical contextual account of soundscape.

Following on from this discussion, I propose *extended phonography* as an integrated methodology, intertwining soundscape and landscape. By allowing concepts of soundscape and landscape to fold into each other, a dialogue is created between the act of listening, memory, place and sound; a hyper-reality composed by image, sound, and memory is weaved through the personal description of the narrator.

Constructing a Soundscape is then presented as an example of applied *extended phonography*. The viewer/listener is plugged directly into the framed environments, transforming recorded moments into the present moment by using memories and experiences to project and construct a personal, yet fictional, soundscape.

2. Photography and Phonography: beyond the “Original”

Photography and phonography have always had similar paths throughout history. Both practices started by substituting painting in the role of documenting “reality” through visual or audio representations, but as painting, they quickly departed from the presumptive veracity of mirroring reality becoming subjective portraits of the ephemeral.

Photography and phonography evolved to transcend the physical possibilities of the human body conferring both eye and ear the ability to go beyond. The rapid evolution of

photographic and phonographic reproduction technologies contributed to new augmented perspectives of the “original”. The ability to frame time and space, and focus on details that go beyond the capability of human senses, has expanded in ways it would be difficult to imagine when photography and phonography emerged.

“Original” became subject to multiplication, as argued by Walter Benjamin in “The Work of Art in the Age of Mechanical Reproduction”. In both practices the experience of recording (image or sound) is now challenged and confronted by what we perceived as “original” or “real” - what we experienced - and the representation of the same. Here Benjamin suggests that scale and materiality will also add new meanings to the original context - photography as a print, as a reproduction on a newspaper, on a magazine, in an email, on the web - will bring new perspectives and will provide different information regarding the original context and its possible perception. The same has happened with recorded sound - whether in the form of field recording, Musique concrète, soundscape composition, sound installation, a CD - the representation and the perception of the sound source is transformed.

New sets of technical tools¹, for both photography and phonography, have changed concepts such as looking and listening by providing new perspectives. Both practices allow one to articulate, at least partially, an experience of place:

The landscape is of course *visible*, but it only becomes *visual* when it has been rendered by some technique, such as of painting or photography, which then allows it to be viewed indirectly, by way of the resulting image which, as it were, returns the landscape back to the viewer in an artificially purified form, shorn of all other sensory dimensions. Likewise, a landscape may be *audible*, but to be *aural* it would have to have been first rendered by a technique of sound art or recording, such that it can be played back within an environment (such as a darkened room) in which we are otherwise deprived of sensory stimulus. (Ingold 2007).

In the 1970's R. Murray Schaffer, within the Acoustic Ecology movement, coined the concept of Soundscape as part of a move to find a terminology that focused on sound and the act of listening. Soundscape paralleled the landscape, but in contrast was drawn to the aural rather than the visual. Although extremely necessary in this specific context, this perspective is fragmented. As Ingold suggests above, sound exists in an environment that is more than aural.

1. e.g. binaural audio, macro photography, Audioboo and other locative media apps, pano and slo-mo iPhone capture, and general increases in recording resolutions.

3. Photography and phonography: After the event

Even two hundred years after the development of photography, the aesthetic vocabulary used to address it as a technique is very much connected to painting: composition, light, colour, texture, landscape, portrait, and perspective (Sontag, 2005). As with painting, photography acts as a framing of space and time as perceived by the photographer. After the event has ended, the picture will continue existing as an objectification of that specific moment. It will then confer on the event an importance it would never have otherwise enjoyed. The camera becomes the device that makes a personal perspective real. A photograph then goes beyond being the result of an encounter between an event and the photographer; it is an event in itself, a performance (ibid.).

Although the photographer is understood by some to be a technician who reveals an accurate interpretation of reality (Morris, 2011), it is clear that different photographers document the same subject in different ways. It is not the technical device that permits the representation, but instead, facilitates it. Thus, the supposition that a camera provides an impersonal and objective image yields to the fact that photography is not only a record but also an evaluation of the world through the eyes of the photographer (Sontag, 2005). Thus:

Photographs provide an alternative way of looking into history. Not into general history- but into a specific moment, a specific place. (Morris 2011, 31)

One can say a thin line is drawn between what are the possible roles of documentation and art. Concepts of veracity appear to cast a shadow on possible readings of a photographic work. A clear example of this is Roger Fenton's photograph(s) *The Valley of the Shadow of Death*. Roger Fenton was a pioneer in British photography well known for his war documentation with a special relevance in the Crimean War in the beginning of the 19th century.



Figure 1. Rodger Fenton's *The Valley of the Shadow of Death* (ON & OFF).

It's black and white. It shows a dirt road cutting through this landscape. Just one dirt road between two hills. There's nobody in the photograph. No birds, no trees, no people. There's really nothing living in the photograph. Not even grass. Nothing. But as you stare at this road a little more closely you realize why nothing is living in the photograph, because this road is littered with cannon balls. Cannonballs everywhere. As soon as you notice them the photograph springs to life. You imagine this fusel on of artillery fire raining down on this landscape. This is one really fascinating thing about photography; it's a time machine. There's a physical connection between that photograph and that world. (Radio Lab 2012)

Roger Fenton's body of work and life has been subject to an extensive study made by both historians and photography critics. There is a wide discussion over the legitimacy of the above-mentioned photograph(s) as the documentation of a war scenario. The possibility that one of the most emblematic photographs of socio-political documentation was staged continues to be a subject of controversy.

Morris's (2011) detailed research on this work reveals that there are two photographs of the exact same space, made in the exact same day, with the exact same tripod position, one after the other. One has its path filled with cannon balls and the other the cannon balls are placed on the left hand side of the road. Although the two negatives have been printed and exhibited, the photograph presented as the document of the situation, adding drama to the scenario, is the first one (ON).

As relevant as it might be in an historical perspective to analyse the veracity of these two photographs, and their social or political implications, one of the most interesting questions that arose from this doubt is the fact that photography is a subjective account of reality.

This argument reinforces once more the role of the photographer as a creative artist who operates a technical tool, while making decisions that facilitate representations at times mythological in nature.

As with the act of recording in photography, the act of recording sound is consciously also a choice to describe a specific moment, a specific place. Some of the terminology used to describe sound, again, also has a parallel with photography or painting for that matter: composition, light, colour, texture, landscape (Ingold, *op. cit.*), portrait and perspective. The choice of a recording device, a wide set of microphone possibilities and their position in the landscape, work towards reinforcing the intended composition- the sound composition. As with photography, a sound recording will also act as a representation of a chosen frame of space and time as perceived by the listener. After the event has ended, the audio recording will continue existing as an objectification of that specific moment. The representation of reality will, as in photography, be molded according to a series of technical tools mastered by those operating them. Going once more back to Sontag, it will then confer on the event an importance it would never otherwise enjoyed. The sound recorder will become the device making real a personal perspective. A sound recording then goes beyond being the result of an encounter between an event and the sound recordist; it is an event in itself, a performance.

As the technical possibilities of a camera allow a different range of perspectives on space and time, a microphone creates similar possibilities. Whereas the camera position, the lenses' characteristics and settings, generate endless possibilities to view and represent the experience of place, different microphones and their positions construct different possible perspectives over the same landscape. As argued by Francisco Lopez (1998) in "Environmental sound matter":

Now that we have digital recording technology (with all its concomitant sound quality improvements) we can realize more straightforwardly that the microphones are - they always have been - our basic interfaces in our attempt at apprehending the sonic world around us, and also that they are non-neutral interfaces. Different microphones "hear" so differently that they can be considered as a first transformational step with more dramatic consequences than, for example, a further re-equalization of the recordings in the studio. Even although we don't subtract or add anything we cannot avoid having a version of what we consider as reality.

The aesthetic options across the form of viewing or listening to place will then ultimately condition the achievable systems of generating meaning through selection, archiving, and framing. The act of recording (image or sound) can thus become a creative tool used to experience and articulate place. This raises questions of listening and engagement both from the point of view of the recordist and the other listeners.

4. Extended phonography in practice: *Constructing a Soundscape – Site #1 and Constructing a Soundscape – Site #2 (Belfast, 2012)*

Site#1 and *Site#2* are here presented as examples of applied *extended phonography*. Each work contains a set of three 100x70cm digital photographs graphically manipulated through the addition of layered text that describe and tag the sonic environment. The text and graphical elements, anchor sounds to their locations, thus visually maintaining their relation with the surrounding space. The graphical representation then suggests that the sounds are anchored to their original source maintaining their relation with the objects and place: background and foreground. The narrator of the project is placed at the center of the image observing, listening and describing the sonic environment at the moment of the photographic ‘click’.





Figure 2. *Constructing a Soundscape - Site #1(Stills #1, 2 & 3).*

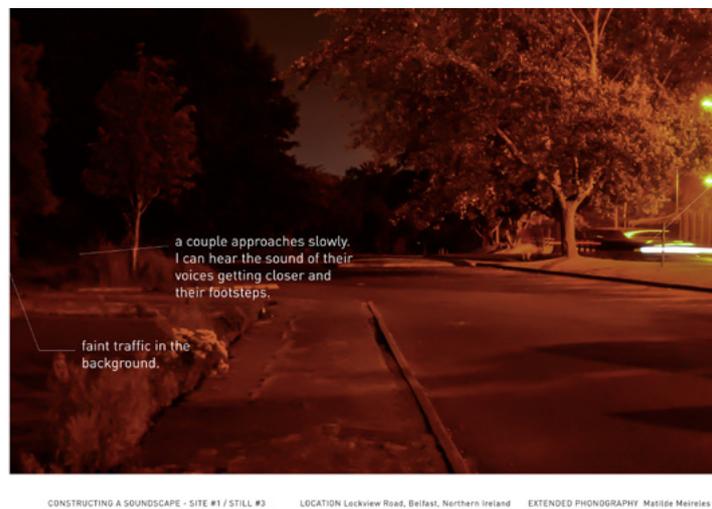


Figure 3. *Detail of Constructing a Soundscape - Site #1/ Still #3.*

Constructing a Soundscape - Site #1 and *Constructing a Soundscape - Site #2* are composed by three sequential moments in one day - sunrise, middle of the day and evening. These moments frame transitions in the dynamic of sound events at times when they are most likely to occur in the daily cycle. The sequential framing suggests movement and duration.

This project engages with new experiences of space derived from methodologies embedded in cinematic hyperrealism and its concerns with everyday phenomena. Each image is composed as a medium-distance fixed frontal plan causing action to reside at times completely outside the frame (Margulies 1996). As Ben Singer (1989) describes the 1975 film by the Belgian filmmaker Chantal Akerman's *Jeann Dielman, 23 Quai du Commerce, 1080 Bruxelles*:

[...] with the result of fixed framing and distended temporality, we study the smallest detail of the material *mise-en-scene*. Our eye caresses the outlines of objects. It is an intimate and tactile sort of vision- we synaesthetically “feel” and manipulate objects.

Each three-image narrative entails more than a “documentary” record of reality. They seek to not only act as visual and aural analogies of the perceived reality, but also offer the possibility to construct new realities. This resonates with Michelangelo Antonioni's story of photographic forensics in the film *Blow Up*:

Under one image there is always another one which is more faithful to reality, and under this one there is yet another, and again another under this last one, down to the true image of that absolute, mysterious reality that nobody will ever see. (Antonioni 1996, 63).

It is arguable that this process of unveiling reality is possible with any image; however, this project explicitly encourages this form of engagement in both visual and aural domains.

Constructing a Soundscape started from my desire to find a methodology that could frame my artistic practice, while allowing me to articulate the experience of place by converging the visual and the aural. This methodology fed on my personal experience of place, but comes to life with the spectator's own projections, memories and experiences; thus reconstructing the place I had experienced.

Following my interest in expanding the experience of place within the context of sound art, this paper suggests *extended phonography* as a methodology that has allowed the concepts of soundscape and landscape to fold into each other.

The paper methodically reflects on the experience of place through a system based on the parallels between photography and phonography by introducing soundscape as one of the elements within the perceived environment. Here I have proposed a possible way of transcending the fragmentation of the senses found in these two disciplinary practices, a resistance brought about through their combination and extension. This has provided an alternative way of representing a specific moment, a specific place: a hyper-reality composed by image, sound, memory and context, weaved through personal narratives.

REFERENCES

- Antonioni, M.** (1996). *The Architecture of Vision: Writings & Interviews on Cinema*. (M. Cottino-Jones, Ed.). New York: Marsilio Publishers.
- Benjamin, W.** (2008). "The Work of Art in the Age of Mechanical Reproduction". London: Penguin Group.
- Ingold, T.** (2007). Against Soundscape In Carlyle, A. (ed.) *Autumn Leaves Sound and the Environment in Artistic Practice*. Paris: Double Entendre.
- Lopez, Francisco** (1998). "Environmental Sound matter" <http://www.franciscolopez.net/env.html> (accessed 23 April 2012)
- Margulies, I.** (1996). *Nothing Happens: Chantal Akerman's Hyperrealistic Everyday*. (D. U. Press, Ed.). Durham and London.
- Morris, E.** (2011). *Believing is Seeing* (observations on the mysteries of photography), (Penguin Group (USA) Inc., Ed.). New York
- Radio Lab** (2012) Season 11, Episode 1 "The fact of the Matter: In the Valley of the Shadow of Doubt": <http://www.radiolab.org/story/239499-in-the-valley-of-the-shadow-of-doubt/> (accessed 18 June 2012)
- Schafer, M.** (1993). *The Soundscape*. (D. Books, Ed.). Rochester.
- Singer, B.** (1989). Jeanne Dielman: Cinematic Interrogation and "Amplification". *Millenium Film Journal*, (No22), 56-75.
- Sontag, S.** (2005). *On Photography*. (RosettaBooks LLC, Ed.). New York.

Interpelled: Psychological Considerations of Directional Sound Technology

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Abstract

Take a moment and think about the undercurrents that may shape your own listening. Language in a sense speaks us; it is a system that shapes our expression. We take in information, interpret it, and express it all through the filter of language. Audio technologies are also a system which shape our expression. Most educated people understand that media shapes our concept of the world, and that the power of the disembodied “voice,” which I’ll be focussing on in the coming pages, is extended and expanded through audio technology. Though we’re not always conscious of it, these two systems both influence and constrain our thoughts and actions.

We’re about to examine how audio awareness reveals choices that we might otherwise miss; particularly how sound and voice conspire to inform our ideas about what is possible. When a sound or message makes its way through and resonates with us, we pause, and a cognitive or emotional shift takes place. These often fleeting and elusive consciousness shifts can take many forms, waking us up to the present moment, and for that instant, communicating something about ourselves to ourselves. I will argue that this is precisely the moment when we are most capable of challenging and expanding our preconceived notions of reality.

Keywords: Audio Intervention, Creative Activism, Hypersonic Sound, Climate Crisis, Morality, Interpellation

Interpelled is an ongoing project that blends research and practice to explore how an innovative use of sound can be a unique tool for creative activist intervention.

Interpellation is the ways in which ideology speaks to the individual. My work with interpellation is the result of being troubled by questions of morality in the face of the climate crisis. This led me to wonder how I might creatively use hyper directional sound to inspire reflection and dialogue around what I considered to be the world's most pressing issue.

During several one-on-one interventions at the annual 2010 UN climate talks I used a HSS (hyper directional sound) speaker to project recordings of children laughing and playing at individual conference attendees. I wanted them to hear the sounds as if they originated from their own bodies, as if the sounds were the voice of his or her conscience speaking.

Fueled by the belief that we are greatly influenced by what we consciously and unconsciously hear my creative goals in this project lie in what happens when the way in which we hear the world shifts and the impact this has on our lives.

Let me explain. These conferences function like an intensified microcosm of the scripted interactions that often take place in many other situations. Through my attendance at such events I have come to understand, that how we hear and remember hearing, affects the way we participate in our environments.

Direct action succeeds when it plays on the unexpected to achieve results. Effective activism today requires innovation, new strategies and tactics, and experimentation. Effective art plays with expectation, interrupts, and challenges the way we think. Art at its best inspires reflection. My experiments at COP16 aimed for all of that by venturing to expand 'reality' through the creative use of sound and gesture.

Through a narrow beam of sound a hypersonic sound speaker emits ultrasonic waves with enough volume that new frequencies are created within an audible range that we can hear through a process known as non-linearity. Simply, a hypersonic speaker allows its user to focus sound waves via a narrow beam of sound on a specific point. The sound projected from this speaker is absorbed by the first surface it comes into contact with.

Working creatively with a technology that most people don't know exists but that plays with people's expectations and perceptual reality is not easy. As a dialogical project where the research informs the practice Interpelled raises phenomenological issues. People do not consent to advertising nor do they to surveillance. Ethics applied to research are quite different from the ethics we apply to surveillance. With sound and interpellation added to the mix, we begin to see the complexities that directional sonic tactics reveal. The research and creative potentials of directional ultrasonic sound politically and ethically are largely uncharted.

Due to recent political events there has been influx of commentary on art's function and relationship to activism. A review of the current literature out there is that this project couldn't be more timely. There appears to be a perspective shift that considers audio research as a valid form of inquiry. While some methodologies may still be in infancy, it is becoming more evident that there is a need for solid experimental sonic research.

Interpelled examines the psychological undercurrents involved in unexpected and conceptualized hearing, underscoring how words become voice (even when they are never heard aloud), how sound and voice mediate our spatial relationships, inform our psychological associations, and affect the ways in which we navigate our physical and social environments. I believe sound and voice can interrupt, influence, and ultimately intervene at key moments in ways other intervention art strategies can't. In the context of COP16, or even during a fairly recent Black Friday intervention, I saw and continue to see this strategy as having potential and the possibility to yield poignant and surprising reflections and responses.

1. Who Should I Say Is Calling?

Voice is a paradox, for it can motivate or paralyze its listener. Captivating speeches, heartfelt stories, and evocative audio work grab our attention and challenge the way we think and feel, moving us to act or stopping us dead in our tracks. Sounds enter our consciousness and provide a structure for interaction. Voices validate and punctuate our existence. Sounds of swarming starlings signal seasonal change in audible black clouds every spring and autumn. Cautionary parental voices are resurrected from memory intervening during moments of indecision or transition. Even our cell phone, whether ringing or not, speaks to us when we are longing to hear from someone. Sometimes these sounds are just a sound. Other times what we physically hear becomes internally significant – sounds become more than a sound, they take root in our minds, and become voice. Depending on our emotional state it could be anything from the cacophony of a busy restaurant, to a misheard phrase, or the sound of a stranger's strained breathing while you're in a physician's waiting room that could transform sound into voice.

How well can you remember sounds? Take a moment and think about the sounds that registered with you today. Try to remember the last thing you heard before falling asleep and what you heard when you woke up. It's likely harder than you initially think. That's because

our daily lives are layered, complex, conglomerates of sound. For most people sounds trigger memories, shift in moods, or a heightened state of awareness. Sound permeates boundaries and inherently invokes doubt because hearing takes more work than other sense modalities. What we hear incorporates both identifiable objects and unseen forces. Sound's seeping qualities make it hard to contain, locate, and identify with certainty. Mindful listening takes practice and the elusive qualities of sound only compound this challenge. As difficult as it may be to remember sounds from today there are, however, instances when we overhear something seemingly insignificant and it makes a lasting impression. The absence of a sound such as the disappearance of traffic from a busy intersection could cause pause and a momentary shift in consciousness. The tone your lover has when they mention someone's name to the emergence of insect sounds may be "insignificant" examples that cause you to re-focus your attention. We are acutely aware that when we listen to something that is outside ourselves, this "other" seemingly speaks to us, and the meanings we attach to what we hear are just for us only. But what is it that suspends preconceptions and causes reflection? What exactly is resonating with the listener? Who is calling and what is being conveyed?

Sound invites us to respond just as questions do. When we hear a voice or a peculiar sound we instinctively respond and our ears zero in. Hearing is unique sense modality because sounds speak directly to our emotions and reflect our personalities – choice exists in listening much more than, for example, smell. We tune in or out to sounds and what we wind up tuning into says something about us personally. This is specifically true if what we hear catches us off guard and exceeds our expectations of the situation or location. Whether we decide to investigate this overheard source says something about ourselves too. If we associate personal experience with what we hear then those unexpected sounds take on figurative existence. Sounds become creative interpreters when we transform sonic material into the personal or socially significant. Interpellation is what happens when individuals identify themselves as the recipients or subjects of a perceived message. Sound and voice combine and take on an internal conceptual existence that then influences our behavior. In many everyday situations sounds become signified and sometimes interpellated. Interpellation signals our attention through voice. When this happens identity suddenly becomes intertwined through what is heard.

In unexpected resonating moments we experience a heightened sense of awareness. Sound and voice collide in a way we can perceive. We identify inflections, interpret hesitations, and sense mood shifts by attributing meaning to the spaces between words as much as the words themselves. Dimension is added to perception when we tune in and listen; understanding deepens and questions arise. We wake up ... if only for a moment.

2. Do You Hear What I Hear?

Hearing is more complex than just the mechanics of our ears. What we hear and how we hear is mediated by culture, ethics, psychological history, and our neurobiological make-up. Quickly, through hearing, we can access what is intriguing, safe, inviting, dangerous, and reasonable. We are hardwired to make split second decisions based on our ability to interpret information acquired through hearing. The success of our species is no doubt partially due to this kind of neurobiological relay.

Let's take a moment and analyze hearing. Physical hearing is the pressure of airwaves on our eardrums, but it is as instinctual as it is corporeal. The ability to detect external sounds involves a bodily interaction with the world that is both conceptual and physical. Conceptual hearing exists internally; it is a private process where imagination, intuition, and intellect dialogue. Unlike physical hearing, ideology and our psychology frame our interpretation of sound – this is what differentiates conceptual hearing. So what we physically hear and what we internally or conceptually hear are not always the same things.

Complex associations develop whenever physical hearing blends with conceptual hearing. Suddenly a voice within the sound calls to us. This phenomenological distinction between the two types of hearing, however, does not diminish the affect of the heard voice on the listener. Auditory perception is further complicated by the fact that we often hear things that we don't see.

Ephemeral and temporal, unless the sound we hear registers as close, we often perceive sound as neither here nor there but everywhere. Perhaps this is why a disembodied voice arouses feelings of wonderment, fear, instability, and inspiration in us. Voice whether spoken or internal has an immediacy that people are just unable to ignore. It is our most accessible and expressive vehicle. Voice catches our attention in a halting way. The term 'hearing voices' conjures up all sorts of imagery and associations. As an artist this presents both a challenge and an opportunity. As an artistic medium sound's strength is its subjectivity. When the audio source is indeterminate, sound is experienced as a disembodied voice and our subjectivity is intensified.

For a sound work to speak, it literally has to call to and connect to the listener's head-space. Conceptually, this means that the sound used must be situation specific along with being personally and socially significant. Reciprocity is implied when one recognizes they are being called upon.

When using sound as a creative form of activism interpellation also beckons the listener to respond. This response was something I considered when I imagined the Interpelled project functioning as a conscience at COP16. When using sound as a medium, ethical implications are increased especially when dealing with the possibility that someone will hear the sounds as if they were originating from their own body. My sonic intervention had a couple of trajectory points. The first came from a desire to do something with the haunting climate crisis voices in my own mind that whisper to me that time is running out. The second was to create a reflective space through sound for COP16 attendees to reflect on the core issues and what's at stake.

Imagining how a sound might be perceived is not an easy task and this is a challenge sound artists face when making work that is contextual and situation specific rather than work that is primarily spatial or algorithmically motivated. In my experiments and especially at COP16 I hoped to be able to detect when someone heard or felt the beam of sound hit his or her body. The reality wasn't that simple. Listening is highly subjective, often there is little confirmation of what another person hears. Given the nature of directional sound this ambiguity in response was both understandable and surprising. I encountered a handful of conference participants that stopped, most likely because they were startled or because they were trying to locate the audio, they paused in a way that would lead me to consider that were reflecting

In most cases there wasn't a recognizable 'ah-ha moment' with my intended listener. It's fascinating to explore what penetrates sonically and what remains unheard or lost. While working on this project I entered into a deeper dialogue with myself about how I relate the climate crisis with a crisis in morality. I began to wonder how a significant opening of internal space would be received and what would be the collective ripple effect. As this project began to take shape I recalled decade old phrases that didn't seem particularly significant when first heard but now have *become* the voice driving my ongoing research. I've come to understand more deeply that we hear and remember what we hear because we perceive it as *emotionally* significant. What we hear affects the way we participate in our environments. The voices and experiences we carry guide each step, albeit mysteriously. This led me to wonder what happens when the way in which we hear the world shifts and how this impacts our lives.

3. Are You Talking To Me?

This section will investigate power dynamics of sound and voice, and continue to address the relationship between what is heard and choices we make. We'll look at examples of how audio seized popular attention, influenced masses, and examine agendas that use the manipulative abilities of sound.

Artists, advertisers, educators, and everyday people all have access to audio technologies that have creatively redefined public and private space. Everyday we use a myriad of devices to communicate our thoughts and connect with each other but we also use these same devices to create private pockets of space. Interestingly, the development of many of these technologies was not driven by a desire to communicate humanistically but rather by a desire to control the public and gain military advantage.

The voice conveys far more than just information. Inherent tension exists in the dynamic of who is able to be heard and who is kept in silence. In power struggles it all depends on whom, how, and when silence is used. In this way, silence sometimes says more about a situation than the words that are spoken. What is left in and what is left out of communications are strategic political moves especially when powers that be attempt to control public opinion. The ways in which sound has been conceptualized says many things about the concerns of a culture. Governments often use sound to subdue the public and regulate order while advertisers use sound to influence the market by playing upon perceived desires. Audio has been manipulated not just to pronounce ideas but also to dominate populations. Efforts to enact social control have been aided by the manipulative use of audio technologies.

Sounds in public space are designed to direct attention. In most modern cities there are sounds that prompt us to complete a variety of tasks. We have beeps and buzzes that indicate when it is 'safe' to cross the street or which elevator has arrived. Alarms and sirens are used to navigate traffic to alert the public to danger and urgent situations. Electronic sounds confirm that an ATM transaction is completed. Many of us are tethered to devices that habitually interrupt focus via messaging sounds.

We are in a feedback relationship with these indicator noises; often becoming impatient or confused when a button doesn't make a sound when we expect it to. Usually this mixture of sounds fades into the background of our more pressing thoughts.

Forces that can shift and capture our acoustic attention are directionality, volume, and frequency. Changes in volume and frequency affect our sense of physical and psychological security. The US Military treads ethically questionable territory especially when it comes to their employment of sonic weaponry. Beyond the more popularly known examples in the

media of the US Military blasting popular music at prisoners in Abu Ghraib, today the military conducts extensive research in virtual soundscapes, infrasonic frequencies, and directional sound lasers to gain advantage over the imagined enemy. Sonic weapons are the dark side of what happens when sound and voice forcefully employ agendas of control and anxiety.

Working creatively with a technology that most people don't know exists but that inherently plays with people's expectations and perceptual reality is not easy. Working on this project I began to realize that it brought up skepticism and fear. The mere description of the project seemed to cause a form of conceptual hearing in itself. Fear especially is a hard thing for people to acknowledge let alone talk comfortably about. Often I found when I explained the project it took people some time to imagine positive possibilities of a technology originating from military usage.

4. Can You Repeat That?

Having been to a UN Climate Conference ten years prior, I was aware that delegates, ministers, activists, business leaders, and organizations come to these meetings already knowing what they will or will not say – they have a “script” of some kind. Divisive discussions are common at these events and open meaningful dialogue is not. These conferences in a way mimic many of the scripted interactions that we can all imagine; talking with sales people, meetings at your job, perhaps even interacting with extended family.

After learning more about Hyper Sonic Sound I wondered if I could break through this scripted blanket and inspire a different type of reaction and reflection. Banner hangs, protests, scripted and shouted chants seemed almost destined to go unnoticed by those who attend these conferences because they fit in the paradigm. Understandably measures activists often take at these events tend to be less about opening up space for innovative solutions and more about dogging, pressuring, and guilting officials in the hope of achieving concrete results.

I knew I needed to be careful and considerate for my work to function as an inner mirror in this context. I certainly did not want my project to be experienced as more rhetoric. I didn't want to project statistics at delegates or make a cute clever rhymes about the planet's destruction. My intention was for conference attendees to pause and deeply listen. To be effective, there were logistical restraints I needed to consider. I thought about how hurried

and crazed these ten-day conferences can be. I knew most of the attendees would be sleep deprived and wanted to respect what I imagined to be their semi-frazzled mental states.

Keeping in mind the frequency requirements of the HSS, I limited my audio material to the human voice. During my experiments pre-conference I tested a variety of sounds that could be recognizable to an international population. Uncertain of accessibility, I had no idea how long I would have with my any one person so I thought about sounds that would translate if heard only for a few seconds. Since memes function in a contagious way I thought about using a meme for the audio material and how this might reinforce or negate my intentions with the project. Realistically I knew I had to plan around the possibility of only having about ten seconds with people. I tried to think of how snippets of constrained audio could create space while communicating context. I wanted the idea of the work and the sound to take root both with people who experienced the intervention first hand and those who heard about it second hand or through documentation.

What was good for the project may not have been so good for my mental health. I spent the weeks before the conference obsessively listening to ten years worth of archived climate conference meetings. I then took snippets from past conferences that I found moving and edited those statements and sentiments down to their essence. Compiling the audio files, I created a soundboard I would access from my smart phone. With the help of an inverter and battery rig concealed in a shoulder bag I was able to make the HSS speaker portable and innocuous. If the opportunity presented itself my plan was to speak to the passing of precious time by haunting COP attendees with their own words and reflections from the past ten years.

Connecting context and intention with sound and phrases appropriate in tone and message was a struggle. I have to admit there were moments during this process when the whole project felt too big and I worried if I would ever find the right sounds to appropriately express my intentions. Beyond words, what sounds would be symbolic and contextually appropriate?

Then, one night it came to me as I was walking downtown. Whizzing past in a car was the sound of children's voices. Hearing their squeals jolted me from my train of thought. It was in that moment, I realized that the voices of playing children translates no matter what your nationality. Under the looming climate crisis, after late night meetings and in between events, the possibility that a conference attendee would hear children laughing and playing with laser focus resonated in more ways than one. At that moment I discovered that this kind of human utterance pierced through the noise and spoke to the heart.

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Sonic Thinking: How Sound-Art Practices Teach Us Critical Listening to Space

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Abstract

This paper proposes that sound art works (or sonic artistic practices) can encourage auditory conscientiousness and thus foster stronger concepts for the future of urban sonic environments. Artists and their works can do this both by revealing ways that urban spaces could sound as well as reflecting ways that we could listen. Founding the discussion in practices of the soundscape movement a few case studies will be considered, including installations (sounding and silent), soundwalk and interactive (artist research) approaches.

Keywords: Sound Art, Soundscape, Listening, Ear Cleaning, Sonic Commons, Acoustic Ecology, Urban Sound Space

1. Sound and City Planning

Sound art practices, including public installations, composition, performance, soundwalking, and even 'silent' sound works, can be framed as strategies for developing auditory awareness of urban environments. Such works can teach us to 'think with our ears' – a prerequisite skill for effective urban sound planning.

From the side of urban planning there has been growing recognition that sound should be taken into account in city development.¹

Before a concept of a desired future sonic environment can be constructively integrated into the shaping of new urban sound environments, an understanding of already-present sound spaces – as well as the nature of being a listening agent – must be further developed and deepened.

If there has not yet been enough energy invested in developing listening practices, or (encouraging) sensibility to the sonic environment among those involved in city planning, then, this serves as a suggestion, for those coming from fields where sound is more unfamiliar territory, to tap into the cumulative resource formed by the approaches to the sensory environment developed by sound artists and acoustic ecologists over years of engagement in and with urban spaces.

Sound art pieces and practices can encourage auditory conscientiousness by activating us as listeners, giving opportunities and reason for exercising auditory attention, by rewarding this attention and by reflecting back to us our listening posture. Audio works in public space can also offer alternative sonics and ambiances for urban architectures. Furthermore this aesthetic culture can initiate and support communication and dialogue about auditory experience and urban space. Especially these last aspects may foster a stronger concept development for the future city spaces.

So many artists are working with urban sound, that a fair overview is impossible here, and only a few artists are mentioned (even fewer considered in depth). These are prefaced by a consideration of practices related to the soundscapes movement and acoustic ecology. In keeping with the inclusive definition of sound art and sonic practices, the works below

1. One example is the recent "Sounder City" action planning in London for which Max Dixon was brought in as a sound consultant. Dixon suggests that the (potential) sound of city space should be taken into account from the onset of urban planning projects and, further, that sound should be approached by planners in a positive manner. From presentation given in Berlin at http://sonic-places.dock-berlin.de/?page_id=346; see also PDF of Sounder City Strategy at http://www.silence-ip.org/site/fileadmin/SP_J/Dixon.pdf

include forms of soundwalks, installations (both unsounding and resounding), performance, and interactive or artistic-research approaches.

2. Approaches to the Soundscape

It is greatly to the credit of artists, in particular composer and environmentalist R. Murray Schafer, that the term *soundscape* became established, along with a discourse on sonic environments growing since the late 60's, first as The World Soundscape Project and now through the World Forum for Acoustic Ecology. Schafer, and the field of acoustic ecology, is concerned with the changes that our environment is undergoing on an auditory level – in ways that often remain invisible – primarily as a result of industrialization and technological culture.²

Schafer characterizes soundscapes most simply in terms of hi-fi and lo-fi, where hi-fi refers to a high signal to noise ratio, i.e. a soundscape in which one can easily discriminate the various sounds or sound events in it and each sound has the potential to be perceived and identified. This allows a listener to grasp onto *earmarks* (Schafer's aural twist on the word landmark), characteristic sounds that punctuate a particular area.

A lo-fi soundscape is one in which it is difficult to discriminate various sounds and sound events. It is commonly framed as a product of our modern industrialization being compounded by our electrical revolution. Schafer generalizes the spectrum of hi-fi to lo-fi as running from country to city, from night to day and from ancient times to modern.³ In other words, as we humans increase our cities and lead ever more round-the-clock lives, our soundscape is increasingly lo-fi. The difference is not purely in volume level but the high density that the overlapping of many sounds create. The audible horizon is contracted into a closed in ambience in which a sense of distance and perspective is lost.

Whether or not you agree with the dualistic characterization of urban/lo-fi versus natural/hi-fi soundscapes (and despite a few valid critiques of the usefulness of the term soundscape for urban contexts⁴) the discourse forms one basis for useful concepts and practices

2. Raymond Murray Schafer, *The Soundscape: Our Sonic Environment and the Tuning of the World* (Rochester VT: Destiny, 1994), 43.

3. R. M. Schafer, *The Soundscape*, 43.

4. See e.g. Jean-François Augoyard and Henry Torgue, *Sonic Experience: a Guide to Everyday Sounds* (Montreal: McGill-Queen's UP, 2006), 7.

for developing critical listening to space. These include *ear cleaning*, *soundscape composition* and *soundwalks*.

Schafer encourages practicing *ear cleaning*, or training one's auditory environmental awareness, e.g. by using various exercises such as those compiled in "A Sound Education"⁵. These mix simple ways of attending to common sounds around with exercises reminiscent of traditional musical ear training. They ask one to listen to streets; to attend to landscapes but also indoor ambiances; to listen moving and standing; to actively create musical improvisations with ordinary objects; to track sounds across space and over time. Schafer touches on themes including the way sounds interact in space, the imagination of sound, how we talk about sounds (e.g. by making up new words to describe them) as well as developing a habit of recording and cataloguing sounds.

This habit of recording and cataloguing found sounds is also at the base of *soundscape composition* which, as the name suggests, is a practice of creating audio works based on field recordings. This musical practice, as well as more freeform experimentation with field recordings, can become a valuable tool: a means for attuning to the characteristics of urban sound space. As any artist who has worked with field recordings might relate, the active recording and use of the audio material retunes one's ear to the live space in various ways. Additionally, the experience of comparing field recordings one has made back to the site in which they were made can help elucidate that recording is by no means a copy of the original atmosphere but in fact presents a quite particular – a mediated – sonic impression.

Soundwalking at its foundation involves walking and listening, but it can be practiced in a wide variety of forms including walks lead by an artist along a predetermined path; walks with eyes closed or open; walks with pauses to stop and listen or walks involving small sonic manipulations or interventions.⁶

The concept of walking around or going to listen to a particular urban place is a recurring theme in sound art practice and many artists have their own unique versions. It is no surprise that Max Neuhaus, a pioneer of sound installation art had a *Listen!* series in which, starting in 1966, he lead people to nearby sites to experience the sounds he had encountered there.⁷ Among other related works are *Electrical Walks* (2003–) by Christina Kubisch, which

5. Raymond Murray Schafer "A Sound Education:100 exercises in listening and sound making" Arcana Edition, Ontario Canada, 1992.

6. On a soundwalk I was personally able to take part in with well-known practitioner Hildegard Westerkamp among the memorable sonic moments was when she took dry leaves and crumbled them softly close to our individual ears.

7. Alan Licht *Sound Art* 23 and also "Sound Art: Origins, development and ambiguities" in *Organised Sound* Vol. 14, No. 1 April 2009 CU Press, 4-10. p5

use headphones that can detect electromagnetic signals allowing pedestrians to tune into an invisible and normally inaudible dynamics of urban space).⁸

3. Sound Art

3.1. Silent Signs

By playing with what is and isn't there, many sound artists encourage us to stretch our auditory perspective and reflect on its normal limits (to ponder what it is we might miss). Sound art works often elicit a confrontation with one's own listening posture, transforming a simple 'visitor' to a sonic performer of/within the work. Examples of this include Akio Suzuki's *Oto-date* (or *Echo Points*) and Peter Ablinger's numerous chair pieces and installations which relocate the composition of the piece on to a willing participant – putting into focus the person's immediate, multi-modal and performative experience.

Many works of Peter Ablinger are interdictions that 'frame' an auditory space. Using arch-like constructions, or objects as simple as chairs, Ablinger plays with a reconsideration of the perceptual possibilities that are in fact always available to us in our audition of open space.

Ablinger has realized a number of works using texts or configurations of chairs as *Hörorte* or listening places. A group of chairs (sometimes arranged with other objects) will be set up in a spatial composition, structured with reference to elements of the site. These are at the same time a kind of sculpture and also indicates (conceptual) audience space. An empty chair points to the potential presence of a seated auditor. The sites designated by the chairs as listening places remain so after the chairs have been removed, as with *Listening Piece in Four Parts* (2001) in which 20 chairs were placed at four sites on four different days. Though the seats stayed in each case for only about two hours, according to Ablinger "the four places remain—now as a piece of music—for anyone aware of this fact."⁹ It is not directly the sounds of the particular place that Ablinger's pieces highlight but instead the experience and process of listening; the touching of world and ear.¹⁰

8. Licht 2009, 6 ; Cox 2009, 24.

9. "Peter Ablinger– Stühle, als Hörorte/Chairs as Listening Places". <http://ablinger.mur.at/docu01.html>.

10. Ibid.

Another work, *3 Easy Pieces* (2004) is an installation realized around a harbor. Its three parts are, first, acoustic interruptions or framings by a couple of sound absorbent passage-ways. Second, chairs set up as though for a concert. Third a construction of four pedestals at the four cardinal points is placed in a field. The pedestals bear various instructions on holding and removing the hands behind the ears, with different variations for each direction.¹¹

The visitor becomes audience, performer, and conductor in the piece, attentively listening within these self-imposed conditions. Such works highlight what or in what ways we could perceive a city site for ourselves, if only we came to think about it in a certain way.

Along a similar vein, Akio Suzuki, a composer and performer, also has works that focus on listening in space, such as *Oto-date*, which can also be thought of as a unique form of urban soundwalk. These *Oto-date* piece(s) come from the ideograms for *oto* (sound or echo) and *date* (place or point), and are therefore essentially *echo points*.¹² They made up of a circle drawn into a street or sidewalk enclosing two figures which appear at the same time to be footprints and ears. This sends the message at once: stand here and listen.

First appearing in Berlin in 1996 Suzuki has placed his *Oto-date* in cities including Paris, Torino, recently Bonn, each time seeking out locations in which a standing listener might hear something interesting or unexpected, in particular echo. They offer a chance for people who may already be familiar with a certain site to experience it anew. Similar to Ablinger's chairs, they ask for a change of (listening) attitude. While chairs ask for a literal change of bodily position, the *Oto-date* ask an unfurling of ears.

The echo points encourage us to ask: what *should* I be hearing, why *this* spot and not another, what are the points that *we* might have marked for ourselves (and why). This last thought links to one of the crucial questions for city sound planning, namely, what aspects of our urban sonic environment would we want to emphasize, and why?

Ablinger and Suzuki's works show us ways to attend to the environment; encouraging listening perspectives that illustrating the contingent nature of auditory experience.¹³ While silent installations encourage us to reflect on our listening attitude, installation that do use audio material can provoke us to think about how a space should or *could* sound, as well as what sounds belong in particular spaces, and who is allowed to make them.

11. "Peter Ablinger- 3 easy pieces" <http://ablinger.mur.at/docu12.html>. (Last accessed, 06.14.12).

12. "Akio Suzuki: Hana / Otodate in Torino" <http://www.estatic.it/en/content/akio-suzuki-hana-otodate-torino> and "Akio Suzuki at Borgovico33" http://www.bv33.org/schede/14_suzuki/e-suzuki.html (last accessed, 06.14.12).

13. Suzuki and Ablinger's pieces also have the benefit of illustrating energy efficient, environmentally friendly approach to artistic practice.

3.2. O+A and the Sonic Commons

While changing infrastructural conditions, construction/demolition of buildings, and shifting social aspects can have various effects on the acoustic environments, sometimes the change can work the other way: changing the sonic character can have social consequences. Artists Bruce Odland and Sam Auinger have been engaged with the sonic environment of cities for decades. During their collaboration they have created pieces that have done just that: influenced the character of public spaces through an alteration of their sound.

As a result of years of attention and engagement with in the auditory environment sound artists are a wellspring of interesting and useful concepts to reflect our listening experience of urban space. Bruce Odland and Sam Auinger are among artist who stress our complicity in the present sonic environment. They articulate this in an idea of the *sonic commons* which is expressed by them as “any space where people share an acoustic environment and can hear the results of each other’s activities, both intentional and unintentional.”¹⁴ The sonic commons makes a point that the people who share the acoustic environment are responsible for its aural character are hearing each other as sound-making participants. If there are trains overhead, it is because people are riding around in them, if a city green space sounds instead like a traffic island it is because we indirectly allow it through acceptance of status quo; we are receiver and perceiver of self-made conditions.

Works like their audio-visual performance *my eyes...my ears* can serve to expose the absurdity of the auditory conditions we create for ourselves in urban environments but also point to ways that that city sonics can shift over time for the better, or worse. *My eyes...my ears...* is a performed in a double binaural presentation method – two times two ears each replayed in a spatial quadrant of loudspeakers and three screens set up around the seated audience. The four-ear audio composition is intermittently visual, replaying scenes in cities such as New York (2009).¹⁵ The piece weaves through bright day and introspective night scenes, from the shut-in shell of an automobile to the rhythmic rattatat of subways. To the audience, doubly hearing and half seeing it can be both dreamlike and real.

In a documentation of the piece O+A are shown making recordings at Dumbo, a highly valued urban neighborhood.¹⁶ From its riverside the Manhattan skyline shows its profile, accented behind an elegant arch of the bridge overhead...on which a train roars extremely

14. Sam Auinger’s Page <http://www.samauinger.de/page.php?ID=503>, see also: Bruce Odland and Sam Auinger, Reflections on the Sonic Commons, *Leonardo Music Journal*, Vol. 19, pp. 63–68, 2009

15. Documented both on Bruce Odland Homepage <<http://www.bruceodland.net/>> as well as that of Sam Auinger <<http://www.samauinger.de/page.php?ID=503>>

16. CBS video: <<http://www.cbsnews.com/video/watch?id=5578344n&tag=contentBody;housing>>

loudly. Despite the intense amplitude a woman walks along the gravel path of a park below the bridge pushing a baby carriage. The question comes to mind whether subjecting the unexposed and non-consenting ears of an infant to the screech of metal rails overhead could be considered a form of abuse. With these scenes, “*my eyes...my ears*” bears [ear]witness to the all too common absurdity of who and what we are subjecting to a sonic overload of our own creation.

O+A also are known for their series of installation works using urban sound recorded through *tuning tubes* (which result in a harmonic structuring of the sound) and transmitted in real time to omnidirectional speakers positioned in a public space in the vicinity. Among these is *grundklang bonn* (2010-present) a work created when Sam Auinger was designated as Bonn’s first official “city sound artist” in 2010.¹⁷ Two unassuming cubes positioned in an urban square by the main station resonate respectively with a live feed of sounds from the adjacent street, and a feed from the nearby Rhine river. The physical acoustic characteristics of the tube turn the unstructured ‘noise’ of the street into an acoustically organized ambience which is surprisingly restful.

Other works of theirs test the material and resonances of urban architecture through large scale installations, making possibilities of alternative sonic environments tangible. In their performance-installation *urban space, urban sound* (2013) used a combined approach in sounding out a stretch of newly built underground train tunnel in Cologne. Two stations and the two parallel tubes between them became resonating bodies for recordings, filling the station spaces with displaced sonic realities such as New York’s Grand Central Station, and the tunnels with real-time feeds of sound from the streets above (harmonically filtered through tuning tubes, as with the cube installations). Interwoven with this was a long duration performance that used manipulations of the real time audio-feed to further activate the immense space of the tunnel.

While works like *my eyes...my ears...* are valuable for provoking discussion and reflection on the state of the sonic commons, O+A’s long duration ‘concerts’ in urban architecture probe the acoustic potential of those spaces thereby opening up auralizations of alternative ways such spaces might sound. Their use of tuning tubes for permanent installations bring a third important aspect, namely, possibilities of constructive sonic design for urban public space – which may well transform the identity of a site not only aurally but socially. According to the artists the social character of the square in Bonn has had a noticeable changed

17. One indication that cities have an interest in sound art: for the last few years Bonn has recognized a number of artists as official *Stadtklangkünstler*, or *city sound artists*. <http://samauinger.de/timeline/grundklang-bonn/>

over the last few years. In a sense these sound installations make places out of non-places, bringing an auditory focal point that works to focus the attention of passersby back onto the sonic environment of the site (sound that usually serves as the original material basis of the work).

3.3. Peter Cusack and Personal City Sounds

Another practice, exemplified by musician and sound artist Peter Cusack, is to quite literally engage in dialogue with people about the sounds of their cities. Besides his music and his work making field recordings of “dangerous places” Cusack has travelled to over a dozen cities investigating individual listening experience: his *Favourite Sounds Project* demonstrates how personally meaningful our auditory surroundings can be.

In cities including New York, Berlin and Beijing he interviews residents about their sonic experience, primarily by asking what is their favorite sound of the city, and why. This positive question on urban sound opens a communicative space for reflecting on people’s experiential relationship with their (home) urban living space. It reveals the variety with which people might hear a city and the creativity with which such impressions can be related once invited to express them. Cusack uses the collected opinions of residents as a guide to make field recordings of those favorite sounds in the respective city, which are collected in an accessible interactive map of the cities’ sound spaces and provide a subjective sampling of their sonic environment, audible anywhere in the world.¹⁸ Cusack’s work is largely grounded in acoustic ecology and an interest in working towards the positive development of soundscapes. He has been active in trying to turn acoustic field work and closer considerations of particular urban sonic spaces into a more important part of a city planning dialogue.

4. Listening Practice

The discourse of acoustic ecology advocates developing aural competence towards the sonic environment. Barry Truax describes listening as our “crucial interface” with the environment, as well as “a set of sophisticated skills that appear to be deteriorating within the tech-

18. <http://favouritesounds.org/>

nologized urban environment”.¹⁹ One might further extend the idea of listening as not only interface but a participation with our surroundings. While one might find many indications of a fall of aural culture, there are areas in which listening is being further preserved and developed as a skill: among these are the diverse forms of sonic art practice.

Truax suggests that a competent auditory attention to the soundscape – which must be taught and developed – is being neglected in society today but that it is a cultural responsibility to foster.²⁰ Training ourselves to listen is a human responsibility as not only the perceivers but creators of sonic experience, such as when it comes to constructing our living spaces, namely cities.

Listening training can take various forms: author Jonathan Sterne, in his account of the conceptual development of modern auditory culture, *The Audible Past*, provides a genealogy of listening as a cultural practice linked with particular tools and media. Like Truax, Sterne describes listening as a set of skills, but his way of investigating the socio-cultural as well as technological aspects is to trace the development of *audile technique*: Sterne’s term for the practical skills and attitudes of and toward listening as a technique. Sterne’s account characterizes listening through its forms of engagement, and frames it as a method that “carried with it a great deal of cultural currency.”²¹ One could say that artists engaging with sound in the city have been developing audile techniques for diagnosing and positively developing our shared urban sonic environment.

What connects many of sound art works and practices are the ways they strive to sensitize auditory awareness to dynamics – visible, invisible, implicit, explicit, aesthetic, political, social, architectural, personal – normally left unreflected in the present and in turn disregarded in the planning of urban spaces of the future. Many pieces also provide a sense of auditory possibilities (what sounds / sonic dynamics might be present if particular conditions were to change). Works can point out the conditions that lead to a particular impression (e.g. effects caused by architecture or visual elements). Sonic art practices can also encourage the development of an aurally descriptive language. One often hears claims that sound is difficult to talk about (e.g. because we are visually oriented culture, or because it surpasses verbal expression). One way to counteract this is to create more opportunities to communicate positively about sonic experiences (e.g. having a discussion about the experience of a particular sound installation).

19. Barry Truax, *Acoustic Communication* (Westport, CT: Ablex, 2001), 15.

20. B. Truax, *Acoustic Communication*, 58.

21. Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction* (Durham: Duke UP, 2003), 137.

They also bring an sensitivity to the individual auditory perspective: O+A through performances sharing their own personal experience as in my eyes my ears; Akio Suzuki by inviting visitors to perform and become the work, as with the *Oto-date*; Peter Cusack through his direct questioning of residents as to their unique aural preferences. In a sense such works recognize and utilize personal sound space, which conceives of auditory environments as centering on an individual (recognizing that at the same time these are physically, mentally, socially participating in a larger dynamic with those around them).²² Thus sonic art and its practices provide a needed counterweight to the objectified and abstracted tools conventionally used to address the auditory environment of cities (e.g. such as noise mapping). It is vital that opportunity is made for continuing artistic investigations and provocations of sound spaces, and for listeners to experience sound works which intervene, reframe, provoke and play with city sound environment – for finding new ways to tune into (and retune) urban space.

22. A Consideration of Personal Sound Space here: <http://journal.sonicstudies.org/vol01/nr01/a09>

REFERENCES

- Augoyard, Jean-François, and Henry Torgue.** *Sonic Experience: a Guide to Everyday Sounds*. translated by Andra McCartney and David Paquette, Montreal: McGill-Queen's UP, 2006.
- Cox Christopher.** "Sound Art and the Sonic Unconscious" in *Organised Sound* Vol. 14, No. 1 April 2009 CU Press, 19-26.
- Licht, Alan.** *Sound Art: Beyond Music, Between Characters*. Rizzoli International Publications, New York, 2007.
- "Sound Art: Origins, development and ambiguities" in *Organised Sound* Vol. 14, No. 1 April 2009 CU Press, 4-10.
- Odland, Bruce and Sam Auinger,** Reflections on the Sonic Commons, *Leonardo Music Journal*, Vol. 19, pp. 63-68, 2009.
- Schafer, Raymond Murray.** *The Soundscape: Our Sonic Environment and the Tuning of the World*. Rochester, VT: Destiny, 1994.
- Schafer, Raymond Murray.** *A Sound Education: 100 exercises in listening and sound making*. Arcana Edition, Ontario Canada, 1992.
- Sterne, Jonathan.** *The Audible Past: Cultural Origins of Sound Reproduction*. Durham: Duke UP, 2003.
- Truax, Barry.** *Acoustic Communication*. Westport, CT: Ablex, 2001. Print.

Web Sources (in order of appearance)

Max Dixon at Sonic Places, Berlin <http://sonic-places.dock-berlin.de/?page_id=346>

Max Dixon Sounder City Strategy at http://www.silence-ip.org/site/fileadmin/SP_J/Dixon.pdf

Peter Ablinger– Stühle, als Hörorte/Chairs as Listening Places <<http://ablinger.mur.at/docu01.html>>

Akio Suzuki: Hana / Otodate in Torino <<http://www.estatic.it/en/content/akio-suzuki-hana-otodate-torino>>

Akio Suzuki at Borgovico33 <http://www.bv33.org/schede/14_suzuki/e-suzuki.html>

Bruce Odland Homepage <<http://www.bruceodland.net/>>

Documentation of my eyes my ears project: “The Future Of Noise - CBS News Video.” Breaking News Headlines: Business, Entertainment & World News - CBS News. <<http://www.cbsnews.com/video/watch/?id=5578344n&tag=content-Body;housing>>.

Sam Auinger Homepage: my eyes...my ears..... <<http://www.samauinger.de/page.php?ID=503>>.

Mention of grundklang bonn <<http://samauinger.de/timeline/grundklang-bonn/>>

Favourite Sounds Project Homepage (Peter Cusack) <<http://favouritesounds.org/>>

A Consideration of Personal Sound Space here: <<http://journal.sonicstudies.org/vol01/nr01/a09>>

Landscapes Soundscapes: Dronestrikes on Saturn

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Abstract

Dronestrikes on Saturn is the collaboration in between raxil4 and his Nameless Is Legion, an audio work that uses reverb laden drones with pedals, sine generators and a four track with loop tapes of some fine recordings or sonifications of the Saturn radio waves recorded near the poles of the planet via the Cassini spacecraft. It is a media ecology audio work offering an ethical composition and an aesthetical piece for preservation of the space, the urban space or the outer space, where these waves have been captured. In this case, preservation laws could develop a strong policy to facilitate the research for audio work in the conservation of sound as (eco)system.

Keywords: audio work, drones, generators, sonifications, waves, media ecology, soundscapes, sound ecosystem, landscape, sonic landscape

1. Introduction: Spatial Aesthetics, Situationism & Cybernetics.

A Soundscape is a tool to map the city, a counter mapping ideology opposed to surveillance. Following **Situationism** and **Psychogeography**, sound art in public space defence the connections between the place, the identity and the memory, refusing the commodification of non-places and the unifying non-symbolic landscape proposed by capitalist architecture. Since surveillance has turn into merchandise, artists and medialabs transform the public space into a more sociable place within the implication of alternatives strategies for communication which use geophysical instruments such sensors or lasers.

Brandon LaBelle in *Background Noise: Perspectives on Sound Art* describes a soundscape as a potential tool to transform reality [1]. As he says, revolutionary statements make a claim onto history to charge a given time and place with radical energy: to galvanize the masses, to overturn social behaviour, to disrupt and ultimately transform reality. Such statements act as momentary bursts of outrage and political conscientiousness, giving definition to the here and now as a time in need of rupture. Exploring revolutionary desire as a temporal moment, Brandon LaBelle examines various historical texts and statements calling for social transformation. From **Situationism** to Black Caribbean rights, random melodies are lyrical homages to revolutions. Comments and suggestions about art production, time of spectacle, and organization of labour are used to declaim about the revolutionary moment as a recurring intensity throughout history. But, in a deeper projection, LaBelle also refers to **soundscapes**. A part to understand the powerful meaning of sound in history, in *Acoustic Territories: Sound Culture and Everyday Life* he explores the features of the **auditory paradigm**, its relation within the surrounding environment and the condition of architectural spaces [2]. There is a genealogy or list of sites and topographies, such as underground spaces, the street or the home, to investigate how sound lends to experiences of place. This is further explored by considering place according to particular **sonic behaviours**. Understandings echo, vibration, feedback, rhythm, silence, noise and transmission, all are used to investigate and unfold particular auditory histories and cultural narratives, and to detail the **sonic geographies** of everyday life. In that sense, Brandon LaBelle, is one of the main exponents on the **Spatial Aesthetics**, a philosophic movement, influenced by **cartography**, **mapping**, **Psychogeography**, non-objectual tendencies in contemporary art, geopolitics and materialism. Spatial Aesthetics connect art with technology and ecology. **Geopolitics**, **Psychogeography** and **Situationism**, as well as **soundscapes**, and other metaphysical and artistic movements considering the effects of **public space**, territory or space in general, are studied and ana-

lysed under its features. **Spatial Aesthetics** has an intention to define and introduce a methodology to study theory of systems and universal laws.

Another point to consider is **Psychogeography**, the science or study of the effects of the landscape on the emotions of its passers-by. In this sense, there should be a **sound-psycho-geographic-practice** to pay attention to the establishment of security practices in public space consisting on the display of CCTV. Electronic technologies provide vide-surveillance devices such as cameras or microphones for public space. CCTV, wireless video and other surveillance system are imposed to reduce the crime. There is one example to be analysed and it is the recorded video material of an incident occurred in Woolwich, London, U.K. It is an historical case about progress, technology and civil rights. The attack in Woolwich is described as a terrorist attack, where the British Army soldier: Drummer (Private) Lee Rigby of the Royal Regiment of Fusiliers was killed by two men near the Royal Artillery Barracks. The existing CCTV recorded material was analysed by the police but not released in the media. The Independent Police Complaints Commission released a statement about the incident based in the recorded CCTV footage. But, the images taken from passers and residents using mobile devices and telephone cameras were distributed through media channels like YouTube and newspapers as Daily Mirror. The most important about the case, refers to the audio captured and recorded from i-phones and microphones from mobile telephones. This is an historical novelty about **public space sound recording**, new journalism and surveillance. Regarding the Data Protection Law 1998 it is not permitted to record sound in public space. Electronic communications are subjected to privacy legislation. Phone calls, emails, text messages, web browsing sessions, GPS data, although being able to capture and record sound, they are finally not permitted, its uses are against the law and against privacy and human rights.

Following, **Situationism** is a counter-culture tendency in art and public space. It is defined as a furious reaction to the establishment of a mainstream culture. Their reaction implied an option that encourages struggle, populism, and favours a position for ecology in public space. The artists and writers who participated in the **International Situationist** were Guy Debord, Libero Andreotti, Herbert Marcuse, among others. **Situationism** is the European alter-ego of the **Beatnik** generation, formed by Bob Dylan, Burroughs or Brion Gysin, in America. Both movements have been influenced by oriental philosophy and open processes to understand art, science and society. The Beatniks trusted that *“Things does not happen in logical sequence. Any writer who hopes to approximate what actually occurs in the mind and body of his characters cannot confine himself to such arbitrary structure as logical sequence. Joyce was accused of being unintelligible and he was presenting only one level of*

cerebral events: conscious sub vocal speech. I think it is possible to create multilevel events and characters that a reader could comprehend with his entire organic being". This paragraph offers an idea about what exactly was the definition of a **landscape of sound** in mind for the **Beatnik** artists. Gysin in the Dream Machine achieved to measure the ontological and **metaphysical dimension of sound** through lighting the sense of vision towards the inside of the brain. The effects of the movement in the neurons produced by the sparks of lights created an **inner soundscape**. The **Beatniks** understood why sound is an open process and a non-linear system. Supporting that, **Beatniks** referred about how different levels of speech in the mind of oneself, could resemble the idea of different range of frequencies found in a sound spectrum. This is also a statement exposed by James Joyce in *Finnegan's Wake*, and it is about the multi-layered labels of language in the brain. Finally, it also has to be said how the **Situationism**, and among them, Guy Debord declared themselves against "*La Societe du Spectacle*" criticizing the media production, the cultural industries, and the pop rock celebrities mass culture. From the counter culture scene, **Beatniks** and **Situationists** were also defenders of punk D.I.Y. do it yourself ideology as anti-corporative movement. [3]

Another supporting idea about **landscapes** and **soundscapes** is about **inner landscapes, mindscapes** or experiences with Dream Machines. Here is to say why the composition of audio works is a complete construction offering meaning and answer to the space that surrounds us. This idea is defended in **Cybernetic** theories developed by Norbert Wiener. The author offers an analytical response to understand the Sound as a non-linear system. Through an approximation to **noise** as an effect in the computational process, sound is determined as a chaotic and non-determinate responsive process. Moreover, Norbert Wiener cites the Copernican system and the Ptolemaic system as philosophical examples to study the geocentric system of the Universe. Those ancient traditions are based in trigonometric analysis. But in **complex system** (such as electronics, computation or physics), **random and indeterminacy** are main features to non-linear processes, making systems become more complex and sometimes subjective. **Noise** is understood as a random system. This effect creates an approximate definition of creative processes in the Universe. In Norbert Wiener, all these considerations regarding complex system, leads to determine a new direction for **Cybernetics** and scientific rationalism. And this is the development of new models of techno-science based in electronics and biology. This new model of science is dedicated to the study of life as a complex, dynamic and random system, and moreover to **sound as an (eco)system**. Experiments with brain waves give us more information about biological process and brain functions. Sounds coming into the brain give us a physical response to the surrounding environment. So, sound is studied through biologic processes based in Hei-

senberg, who developed the theory of atomic indeterminacy, based in molecular textures, homeostatic processes (changes in matter and temperature) and micro unities of measures. In addition, **Cybernetics** as a confluence between biology and electronics, in most part of the cases uses sound, **noise** and audio works to study complex systems altogether with gas and other substances. It makes to change the idea about the definition of system, a concept that belongs to mathematics, but becomes obsolete here because of new processes to study more analytically the meaning of an eco-system, rather than a system. It means, organized or not, a system that is alive. Indeed, the theory of the **Cybernetics** supports the idea of cyber-biology, techno-science and cyber-feminism. This New Science considers sound as an **eco-system** of spectral frequencies. Stochastic processes imply not only a re-consideration of the biological condition of the **sound spectrum**, but also a new designation and definition for the idea of the ecosystem of sound. To study sound as a phenomena under the point of view of mathematics and logic, means to accept the definition of a system, but considering the 90's idea of a lively systems under the point of view of the biology, sound as ecosystem introduces a change in natural history and cybernetics. **Cybernetics** studies of frequencies and spectrums and various ranges of oscillations are using homoeostatic processes to consider the reaction of gas and air in the spectrum of sound. These processes connect automatically with the idea of the **soundscape** as a landscape of materials where micro-materials define the **metaphysic of sound**. In that order, the experimental use of sound in Cybernetics and neuroscience connect art, science and technology and resolve this idea of **noise** as a fundamental part on **Cybernetics** theories, because cybernetic noise considers and connects with disciplines as communication engineering, cardiology, mathematics and neuroscience, a part of sound and vision .The major idea here is to defend too, the processes of **inner soundscapes** as a response of an **outer landscape**.

Another supporting idea about how the system of sound becomes an **ecosystem of sound** (**soundscape** or **landscape** too) is represented in *Music of Changes* by John Cage. In John Cage, **indeterminacy** is the main feature to create music, and it brings light to the idea about the **nonlinear systems of music**. **Uncertainty, fractal, indeterminacy, chaos** are main features for music influenced by oriental system of thought. John Cage opened the possibility to indeterminacy, a prophetic style in art and music that develop the cutting edge of the scene in vanguard culture. It takes some references from cut up projects. In its study of language as a multi-layered element of brain, John Cage describes the use of different registers of voices those who allow personality and human being to develop memory and to communicate. These registers are studied for artists belonging to **Beatnik** generation such William Burroughs and Brion Gysin. In their poetics and aesthetics, the Beatnik generation,

Fluxus movement and **Conceptual Art**, follow orientalism and Zen attitude, producing audio works resembling **inner landscapes**, states of **soul**, transcendent and immanent **inner visions**, explaining **spacing out** phenomena. Nowadays, artists have a better scientific approach to resolve the problem of the senses, using methodologies based in atomic physics and neuroscience, solving interconnection between sound and vision [4]. Finally, it has to be said that a contribution to these **soundscapes**, is the one that Marshall McLuhan offered. His version about the optical cortical nerve, denominated quiasma, is a cross in between 2 nerves that produces the exchange between **sound and vision** and explains the phenomena of **spacing out** as an inner **soundscape**.

2. Three Examples of Sonic Landscapes: Locus Sonus, Psychogeophysics Summit and OrbitandoSatelites.

Here it is mentioned different supporting examples to illustrate the idea of soundscape as a solution for ecological systems in public space. First, there is the practice with microphones and field recording for live streaming. One of the most advanced systems of this type is **Locus Sonus**, a pure data tool for microphones and soundscapes that collaboratively creates a network of connected profiles worldwide established. **Locus Sonus** is a live open microphone network online. **Locus Sonus** artists work collaboratively curating sound art exhibitions and producing different events and conferences involved in sound resources. The project **Locus Sonus** is a global open microphone network based in Southern and Central France. **Locus Sonus** is engaged at all levels, from hosting a network to develop streamings hardware and promoting research. One of the last actions has represented more than 10 sound artists from London (raxil4, hNIL, Luke Jordan, Grant Smith, Graham Dunning, Robbie Judkins) in an exhibition about **wavefield recording**, amplifications, microphones improvisation, distortions, radars and telegraphs sounds, signal intrusions and electromagnetic interferences, soundscapes, warscapes and seascapes, using filters, feedbacks, echoes and experimental d.i.y. devices. Grant Smith presented for the occasion a live **audio stream** under the Antarctic ice made available by the AlfredWegener Institute's PALAOA marine research project. This was distributed in the exhibition space through two severed communications tubes found on site. Moreover, Grant Smith organizes **SoundCamp**, a daybreak listening event in London, broadcasted in a 24 hour worldwide transmission, relayed by streamers

on the **Locus Sonus** network and elsewhere. Reveil/SoundCamp engages with the study of place, nature, and merges philosophical enquiries about art, ecology, politics and the use of technology. Reveil/SoundCamp project aspires to be a fully global collaboration. In London, it is connected with the Centre for Sound Arts Practice (CRiSAP) at LCC/UAL, and in Belfast with the Sound Arts Research Centre (SARC). Reveil is catalyzed and coordinated by SoundCamp. Reveil is interested in **Wild soundscapes**, the implications of listening attentively and especially listening live to **fragile soundscapes**. There is an intersection with the concerns of **bioacoustics** on land and under water, as these involve monitoring, habitat conservation/reconstruction, and **environmental activism**. To **soundmap** demonstrate that the experience to listen to a sound locally gains a new dimension different than placed elsewhere, the auditorium, for instance. Reveil is an evolution of **field recording**. Bernie Krause has said that most of the locations where he has captured sound since 1968 are now severely degraded if not actually 'without voice'. All these different ways to produce audioworks or artworks, offer a new possibility to understand and interpret reality.

Second, the **Psychogeophysics Summit** is used to explain **landscape** and **soundscape**. It develops experiments in interaction with sound as a **local spectral ecosystem**. Reading the memory of the landscape, artists give a counterculture radical position of established policies of art, industries and resources. Following to the definition of **Psychogeography**, **Psychogeophysics Summit** introduces to the study of geographical environment, the consideration of emotions, behaviour and mental states of the citizens and passers-by. Including geophysics and studies of **local spectral ecology**, the term **Psychogeophysics** was first used explicitly during a research group conducted as part of the Transmediale.10 festival, Berlin in February 2010, entitled Topology of a Future City. **Psychogeophysics** names a new direction in which many artists and researchers have explored recent history of sound. The first **Psychogeophysics Summit** took place in early August 2010 in London, assembling an international group of artists, researchers and theorists to promote this novel discipline with a series of public oriented experimental workshops and seminars investigating various psychophysical fictions in East London. **Psychogeophysics** borrows techniques from EVP/ITC (Electronic Voice Phenomena and Instrumental Transcommunication), classical **psycho-geography**, thoughtography, amateur radio astronomy, archaeological geophysics, TEMPEST analysis and environmental steganography. These techniques include: excitation, intervention and performance, domains and frequencies (earth or skin resistance or impedance measurement), low and highfrequency electromagnetic radiation detection, all frequencies of sound signal detection. Apparatus and technologies that are used correspond to VHS, tape recorder, television, magnetometers and spectrometers, and sometimes electroencephalo-

graphs. Supporting **Spatial Aesthetics** philosophy, **Psychogeophysics** also contributes aesthetically and technically to **re-mapping**, to **archaeological geophysics** of urban locations, to data forensics and hidden emissions, and to **geomagnetic phenomena**. Among the **Psychogeophysics** activities and projects such day collective exploration of spectral phenomena, investigations of non-causality and detection of anomalies within processes of measurement and observation are underlined. So, **Psychogeophysics** authors follow to describe a non-scientific knowledge based on research and experience. Its constant influence of **landscape**, memory and **drift**, among electromagnetic techniques and factors such indeterminacy, uncertainty, refer to our hearing as a response and transposition of the sensible/metaphor and metaphysics [5].

Finally, it has to be considered the **aero-spatial practices** as part of the **landscape of sounds**. **OrbitandoSatelites** was a workshop conducted by sound artists, engineers, hackers and musicians; the workshop used geophysics methodologies and typologies for a quantitative observation of the **earth**, the **sun** and **lava flows** altogether with its correspondent physical properties. **OrbitandoSatelites** was part of Plataforma0 and took part in LABoral Gijón. It showed some of the results of a process of investigation begun by Plataforma Cero in May 2011 with the meeting of a group of artists, investigators and amateurs dedicated to listening, watching, thinking and imagining satellites. The aim was to approach and improve the observation and listening to satellites and its technology, the **outer space** features and their poetics, and finally to analyse data captured from satellites and transcript into sound and images. Among the participants, Alejandro Duque, Joanna Griffin, David Pello, Reni Hofmüller, Luca Carrubba Husk, Lord Epsilon, Xiu Cueva, Bruno Vianna, Cinthia Mendonça, Laura Plana, Pedro Soler, Gonzalo Garcia, Pablo Gallo, Victor Mazón, Raquel MP19, Una_Fremen, Ana Arbolea, Nuria Rodríguez, Cristina Ferrández, Lorena Lozano, Josian Llorente, Aritz-Zabaleta. The Manual OrbitandoSatelites [OS] presents text by text and one by one all of the authors. It is said that since 1990s, the arrival and growth of the Internet facilitated the exchange of information among Natural Radio hobbyists and eventually made real time solar and **geomagnetic information** available to everyone. During the workshop, the participants developed and learned from different tools, software and hardware to manage and listen to the satellites that are already orbiting the earth:

1. **Gpredict**, a real time satellite tracking program for GNOME, based on the tracking engine of John Magliacane's excellent satellite tracker Predict and written by Alexandru Csete, also known as OZ9AEC, a physicist from the University of Aarhus, working in the European space industry, holder of a CEPT Cat.1 amateur radio certificate since 1991 [6].

2. **PureData**, written by Miller Puckette and the PD community, used by Husk, connected via OSC to Gpredict in the audio track to the exhibition called Dreaming Satellites.
3. **GNU radio**, developed toolkit that provides the signal processing runtime and processing blocks to implement software radios using readilyavailable, low-cost external RF hardware [7].
4. **SatTrack3D**, written by Makoto Kamada, Japan [8].
5. **FunCUBEDongle**, connects the antenna reception to GNU radio via USB by AMSAT-UK as part of the FUNcube satellite project [9].
6. **OpenROTOR**, built by David Pello in Plataforma Cero, 2011, an Ionic Satellite Fountain model based in one built by Bruno Vianna in Plataforma Cero, 2011 [10].
7. **OSC module for Gpredict**, written by David Pello with contributions from Alejandro Duque and Bruno Vianna as part of the Orbitando Satellites project 2011 @Plataforma Cero, LABORAL, it was first envisioned as a useful bridge to allow experimental uses of data in sound installations during interactivos10 @medialab-prado 2010 and the module enables Gpredict to send values out to other programs allowing the control of motors and other hardware or software via OpenSound Control. All this techniques and different range of tools, allow artists to capture sounds, intercept communications and provide more information about the **outer space**. All was an exercise inside the imperceptible realm of the waves of **radio electric frequencies** to spot and listen to both geosynchronous and low elevation orbiters. To locate and observe, like the ornithologist, guided by **sound and spectral analysis** technologies of the Victorian age, and given as a result **soundscape** captured with a VLF (Very Low Frequency) receiver to allow the listening of satellites.

3. Dronestrikes on Saturn

Dronestrikes on Saturn is the audio work resulting from the collaboration in between raxil4 and hNIL (his Nameless Is Legion). An audio work that uses reverb laden drones with pedals, sine generators and a four track with loop tapes of some fine recordings or **sonifications** of the **Saturn radio waves** recorded near the poles of the planet via the **Cassini spacecraft**. It is a **media ecology** audio work offering an ethical composition and an aesthetical piece for preservation of the space, the urban space or the outer space, where these waves have

been captured. In this case, preservation laws could develop a strong policy to facilitate the research for audio work in the conservation of sound as **(eco)system**. Here, the **Cassini Orbiter Instrument** survey and sniff, analyse and scrutinize. And of course, they take stunning images in various visible spectra. The 12 science instruments on board the Cassini spacecraft are seemingly capable of doing it all. Each instrument is designed to carry out sophisticated scientific **studies of Saturn**, from collecting data in multiple regions of the **electromagnetic spectrum**, to studying **dust particles**, to characterizing **Saturn's plasma and magnetosphere environment** [11]. The instruments gather data for 27 diverse science investigations, providing scientists with an enormous amount of information on the most beautiful planet in our **Solar System**. Inbetween them **Optical Remote Sensing**, mounted on the remote sensing pallet, these instruments study **Saturn** and its rings and moons in the electromagnetic spectrum. Composite Infrared Spectrometer (CIRS), Imaging Science Subsystem (ISS), Ultraviolet Imaging Spectrograph (UVIS), Visible and Infrared Mapping Spectrometer (VIMS). A part, **fields, particles and waves** are studied and analysed through particular instruments to detect the **dust, plasma and magnetic fields** around **Saturn**. While most don't produce actual "pictures," the information they collect is critical to scientists' understanding of this rich environment. These are the Cassini Plasma Spectrometer (CAPS), Cosmic Dust Analyzer (CDA), Ion and Neutral Mass Spectrometer (INMS), Magnetometer (MAG), Magnetospheric Imaging Instrument (MIMI), Radio and Plasma Wave Science (RPWS), Microwave Remote Sensing. So, using **radio waves**, these instruments **map atmospheres**, determine the mass of moons, collect data on ring particle size, and unveil the surface of Titan, with Radar and Radio Science (RSS). In this sense, electronic artist **raxil4**, Andrew Page, has created an immeasurable beautiful series of audio work based in **Saturn**, and other planets. The series so far have featured a range of **soundscapes** manipulations. He creates sounds from **field recording** and electronics, sometimes using the radio emissions from planets like **Jupiter**. His sounds also feature de-tuned radios, televisions, computers, turntables, CDs and MP3 players, tape recorders, electronic games, vintage equipment and handmade electronic devices and sculptural instruments [12]. Some examples here: Solo, a white dwarf star GD358 track [13], a live mix of Saturn, the Sun and GD358 [14], and a new live version on 3 four tracks featuring 3 new tapes, a second recording of Saturn, the Diamond Star and Alpha Centauri, as well as the original Saturn tape, The Sun and GD358 [15].

It has to be said, that within the last 3 examples, involving **Dronestrikes on Saturn, Orbitando Satellites** and **Psychogeophysics Summit**, all these are using **spectrometer** (spectrophotometer, spectrograph or spectroscope) to measure the unit of light on the electromagnetic spectrum [16]. And also **magnometers**, among others devices, but these both are

the common ones and the more important. It is primordial to use and understand these devices and tools in the creation of audio work to define nature of soundscape. A part of sound techniques to capture landscapes, there are many others to capture, like the UAVSAR, the Uninhabited Aerial Vehicle with Synthetic Aperture Radar, used in image science, equipped with radars to get images through interferogram techniques. All of these tools and hardware capture images in polimetric phases detecting changes on earth with time to show interferometric images. It has to be added, radio waves detectors, wavelength in airplanes with autopilot for geo-scientific exploration and remote sensing apparatus [17]. This versatile NASA equipment of imaging radar system is showcasing its broad scientific prowess for studying our home planet. More information about tools is available at NASA [18].



Figure 1. Raxil4 – his Namelessness Is Legion.

REFERENCES

- [1] **LaBelle, Brandon.** *Background Noise: Perspectives on Sound Art.* London.
- [2] ——. *Acoustic Territories: Sound Culture and Everyday Life.* Continuum Books, 2010.
- [3] **Miles, Barry.** *William Burroughs, A portrait.* London: Virgin Publishing Ltd., 1992.
- [4] **Cage, John.** *Indeterminacy.* <http://johncage.org/indeterminacy.html>
- [5] **Anonymous.** *The Psychogeophysics Handbook.* London, 2010.
- [6] **Gpredict.** <http://gpredict.oz9aec.net/>
- [7] **GNU Radio.** <http://gnuradio.org/>
- [8] **Satellite Tracker 3D.** <http://mada.la.coocan.jp/sat/index.htm>
- [9] **FUNcube UK Amateur Radio Educational Satellite.** <http://funcube.org.uk/>
- [10] **Vianna, Bruno.** *Ionic Satellite Fountain.* LABoral, 2011.
- [11] **NASA,** Jet Propulsion Laboratory, California Institute of Technology, Cassini <http://saturn.jpl.nasa.gov/spacecraft/cassiniorbiterinstruments/>
- [12] **Jackson, Steve.** *From the sound of Jupiter to old TV's, discover the world of raxil4.*The Lincolnshire, 2014.
- [13] **Raxil4.** *Solaris Variations.* London. <http://raxil4.bandcamp.com/album/solaris-variations>
- [14] ——. *Cronus.*London. <http://raxil4.bandcamp.com/album/cronus>
- [15] ——. *Live on Mars.* London, 2014. <http://raxil4.bandcamp.com/album/live-on-mars-11-04-14>
- [16] **Browning, John.** *How to work with the spectroscope: a manual of practical manipulation with spectroscopes of all kinds.* London: Browning. 1882. <https://archive.org/details/howtoworkwithspe00browrich>
- [17] **NASA** Flies Radar South on Wide-Ranging Scientific Expedition http://www.nasa.gov/home/hqnews/2013/apr/HQ_13-097_Science_Radar_Flights.html
- [18] ——. <http://saturn.jpl.nasa.gov/index.cfm>. <http://saturn.jpl.nasa.gov/>

Berlin Sonic Places

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Abstract

Berlin Sonic Places was a wide-ranging sound arts and research project carried out in 2012 that aimed to explore the importance of sound in the urban context and the impact of planning and development on city soundscapes. Berlin has undergone constant redevelopment since unification so is a particularly relevant city to raise such issues and look for answers.

Berlin Sonic Spaces brought together different interest groups –artists, architects/planners, sociologists, musicians, residents, administrators and the public – for a broad dialogue on Berlin’s changing soundscape. Research and sound arts projects were commissioned in three specific locations chosen for the types of development exemplified – Prenzlauerberg (gentrification), Rummelsburg (total redevelopment), Tempelhof Airfield (future planning). These led to public events where the work was presented as installations and performances together with open talks and discussions. Core themes included ‘sound and social change’, ‘methods for studying and representing soundscape issues’, and ‘future city soundscapes’.

The talk will briefly overview the whole project, but focus in detail on Rummelsburg, where important soundscape and planning questions have been raised during its regeneration from a grim prison and industrial area to today’s leafy waterside development with a growing residential community.

http://sonic-places.dock-berlin.de/?lp_lang_pref=en&page_id=6

The Local and the Distributed in the Sonic Arts

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Abstract

This paper addresses the relationship between local and distributed strategies with reference to two recent participatory sound art projects in Belfast and Rio de Janeiro. The local concern for site and place is discussed and juxtaposed with distributed practices, which, by definition question and extend the very notion of site or *locale*. I refer to examples from ethnomusicology, anthropology and education in which participative horizontal research methodologies lead to a dynamic articulation of local conditions and allow for a reflection on how technology impacts on social interaction and relationships with place. The works of Samuel Araújo, Georgina Born and Brazilian pedagogue Paulo Freire provide a framework of reference in this context.

Keywords: sonic arts, sound arts, network, participative, collaboration

1 Introduction

The notion of “the local”, often set in binary opposition with “the global” has framed ideology and discourse in the arts throughout much of the 20th century, in particular through the modernism-postmodernism “transition”. At the height of modernism in the 1950’s, global aesthetics promoted by for example the “International Style” in architecture (Hitchcock, 1995) celebrated universality and detachment from context at the expense of the local. Post-modernity re-introduced the local and reclaimed context as a critical element of culture and meaning. During the 1980’s and 90’s the importance of local context and by extension, notions of community and participation gained relevance and prominence in public art, ethnography, anthropology and education (Freire, 1993). The term “local” is a relative one and is, in this context, used not simply in geographic terms but as a surrogate for a dynamic threshold around a community of interest, a collective, a site or a place. In other words, the local refers to lived experience in a territory, to the relationship between human behaviour and space. The engagement with the local is then the dismissal of notions of unity and universality as Latour elaborates in “War of the Worlds”:

“Nobody can constitute the unity of the world for anyone else, as used to be the case in the times of modernism and post-modernism, by generously offering to let the others in, on condition that they leave at the door all that is dear to them: their gods, their souls, their objects, their times and spaces – in short, their ontology. . . . From now on the battle is about the making of the common world and the outcome is uncertain.” (Latour, 2002)

Cultural research within disciplines such as ethnomusicology, for example, re-invented itself to almost completely erase the universal or even comparative discourse¹ in favour of local engagement in which the distance between the subject and object of study becomes ambiguous or simply collapses. In other words, the notion that one can understand “an-other” culture by devising more or less universal models of particular aspects of society became increasingly problematic and alternative methods for conducting research began to emerge. The work of Brazilian ethnomusicologist Samuel Araújo is specifically innovative in this context. Since the late 1990’s his study of music in the Maré favelas in Rio de Janeiro has been conducted through participatory action involving groups of inhabitants who themselves set

1. The term “comparative musicology” was used in the first half of the 20th century before the discipline of ethnomusicology became common currency. Ethnomusicology methodology favoured the study of musics within wider cultural and social research rather than the study of sound alone that was associated with “comparative musicology”.

the research agenda through “Musicultura” – an independent research group based in Maré, involving researchers from both inside and outside the community (Cambria, 2008). This example of collaborative research highlights the importance of articulating local conditions for the understanding of cultural trends and actions; themselves fuelled by contingent idiosyncrasies rather than universal truths. Here, the local is no longer the site of interest and exploration (what used to be referred to as indigenous) but rather the site of action, decision-making and the site of difference.

This focus on the unique grain of local condition seems, at first inspection, diametrically opposed to discourses of technology that often promote romantic views of utopian universal access or at times uncritical democratisation of culture as elaborated by writers such as Harraway (1991) and Negroponte (1996). A critique of the universal utopian claims enabled by the ubiquitousness of technology is eloquently argued by Coyne in “Technoromanticism” (1999). There are arguably some contradictions between activities that value decision-making based on local experience and those aiming at generalisation and universal models. The two modes of operation can indeed be seen as opposite as in the stereotypical binary between the good-natured village craftsman and the evil multinational co-operation. This binary polarity would however be over simplistic as well as tangential to this text.

Instead, I wish to reflect on the notion of the local and the distributed through creative work in sonic arts that celebrates a focus on community, site, place and the everyday, elements that have become so crucial in the recent history of sound art (Chaves, 2012, Labelle, 2010). As a lot of this work involves technology of some sort, there is often a tension between the universality implied by technological design and engineering and its actual “local” use. Unorthodox uses of technology are common place in game mods and remix cultures, just as hardware hacking practices take pride in re-appropriation of disused technology to provide new uses and thus relentlessly transforming old toys into musical instruments (Collins, 2009). Once out on the shelves, technologies are embedded in communities and gain meanings often not predicted by its creators. As with any cultural artefact, technologies carry social values open to interpretation, re-interpretation, use and misuse.

2. Distributed Sound and Place

The place of musical activity is determining for practices, hierarchies and performative languages. The development of places for music-making or *musicking* (Small, 1998) shows us how architecture can have a determining role in the emergence of certain instruments (church organ), instrumental formations (chamber music), musical form (opera) as well as stage and audience layouts (orchestral pit). The church, the chamber, the concert hall, the lounge, the club, the elevator, the street are all archetypal places for music making. Each one of them is associated with a particular practice that gains definition through the articulation of how music making inhabits place and site. “Church music”, for example, suggests specific practices, languages, acoustics, behaviour, physical layouts, rituals, collectives etc., which will be different from those inherent in “street music” or “club music”. This pairing between place and music is a simple yet powerful device for addressing music as cultural and social practice rather than as isolated aesthetic object. A piece of concert hall music can arguably become a piece of street music with little or no alteration of the musical materials but with significant changes to the musical experience (as reflected, for example, in execution, interpretation, performative presence, acoustic environment, relationship between musician and audience, listener’s intention etc.). A piece of music is inevitably and constantly mediated by site.

The ways in which sound belongs to place plays has an important role in our everyday listening experience as we negotiate the balance between what is expected of a place and what is “from elsewhere”. Practices in transmission art by, for example, Bill Fontana and his iconic re-placement of the sound of the Brooklyn Bridge in the World Trade Centre plaza plays precisely with these expectations of belonging. Initiatives such as the EU funded Newaud project deliberately take concert music out of the concert hall to reframe this relationship between music and place with the aim of reaching new audiences.

This relationship between sound and place is increasingly challenged by notions of transmission, streaming and the ubiquitous network that promotes, or at least facilitates, access to any sound in any place. Is the network a platform for simply connecting existing places or is it a site in itself? Notions of site, when it comes to the internet are certainly embedded in the language of the media; to *visit* a page, to *go* online, to *be* on Facebook and so on. Spatial inflections in internet terminology are numerous and continue to emerge from William Gibson’s already 30 year old *cyberspace* (Gibson, 1995). For the present discussion, it is sufficient to entertain the notion that the network is often treated as place. A place that is,

in my view, no longer described by distinctions between the virtual and the actual that pre-occupied so many thinkers in the 1990's. The internet/network is simply another place with its own conditions, dynamics and locality. To speak of *the network* is as generic as to speak of *the church*; these are terms that broadly define place but perhaps most importantly act as surrogates for articulating the specifics of a social situation or types of collective behaviour. We can limit these social situations to musical practice which, if we append to our list of archetypal places, gives us reasonably well defined situations: church music, chamber music, concert hall music, lounge music, club music, elevator music and street music. Considering the network as place, is it then possible to talk about network music?

Research into network music covers a wide range of topics motivated by two distinct positions. Firstly, bringing music to the network by creating conditions under which music can be practised (based on our understanding of the environment for conducive musicking). Secondly, understanding how the network acts as a mediating, potentially disruptive, aspect of music making to suggest new practices that are of the network. These new practices have, for sometime, been explored by artists such as Max Neuhaus, Atau Tanaka, Chris Chafe, Jason Freeman, Pauline Oliveros amongst others through a focus on understanding the conditions of the network as a site for creative agency. Born, in her study of mediation in music, highlights the creative potential of digital internet distribution and suggests the notion of “relayed creativity” as a state which can better define the type of intervention that can take place once music is distributed across space, time and people, becoming an object of constant de-territorialization and re-territorialization (Born, 2005). It is in this context that relationships emerge between the local – as defined by specific contingencies, tensions and resistances – and the distributed – resulting from a network of agency, aggregation and relay. Elsewhere, I've discussed notions of network dramaturgy as a way of articulating different approaches to music making that are mediated by computer networks and by places that potentially connect other places (Rebelo, 2009). Dramaturgy is a potentially useful term in the context of network music making as it deflects attention from music as object and suggests that network activities are subject to frameworks which in themselves need to articulate notions of presence, authorship, collaboration as discussed by Schroeder (2010). As the relationship between agents is often intertwined with the sociality of music making, in network music (or for that matter any type of music making that promotes itself as new or experimental), these agencies and relationships must be considered and to some extent designed. This design of conditions is inseparable from the design of the *music itself* to an extent that it becomes impossible to separate activities such as composition from performance design, stage layout, sound engineering... The music to be made is contingent on the

design of presence, nodes, places, to an extent that *the music* cannot be made a priori; it is forever subject to the dynamics of the situation and therefore does not exist as object. But in what way is this different from any other emerging musical forms? Surely one can argue that the same is true of opera, Javanese gamelan, West African drumming, Jazz, Free Improvisation etc. I would suggest that this concern for engaging in the social and in the design of the mediation (be it related to place, the public or technology) is present at some stage in all musical practices, arguably only ceasing to be once practices become ossified. Often, these are stages of change or experimentalism that are articulated by unspoken tensions and rules. This state thrives out of specific dynamics between groups or individuals, that embrace the messiness of making without an overriding concern for the made. The Fluxus movement, for example, focus deliberately on these transitory and fluid practices through embracing ephemeral performative action over traditional forms of producing and consuming art.

The notion of distribution is used here in the sense of social relationships that are not geographically confined, providing a sufficiently rich network for the emergence of creative practice with the involvement or not of technology.

2.1. Local Sound and Place

In contrast with the concern for the network or utopian notions of global musics, are the practices which acknowledge that culture is contextual and defined by changing territories and sites of activity. This reliance on territory applies as much to the community driven village brass band as it does to the Turner prize circuit. The intent in a cultural action is forever tied to a set of local conditions, which define physical, social and technical environments necessary for that action to produce meaning. These conditions and environments are subject to constant change as are the agents involved. As such, the relationship with the local can only be transitory and of the moment. It can only capture a particular reality conditioned by place, people and time.

I would like to re-fold the place-music relationship described above into one that is perhaps more revealing of the link between site and sound. Site-specificity has for some time been closely aligned with sound art practices. Max Neuhaus's "Listen to This" is an example of the "you had to be there" experience. By taking his audience for a sound walk after stamping the words "Listen to This" on their hands, Neuhaus captures the ephemeral nature of the event and resists any objectification or, for that matter, aestheticisation of sound materials. The focus of the experience shifts then to the action of listening and therefore to the agency of the listener. Meaning subsequently emerges not out of site and sound as objects but rather through the personal experience of a listener. It is the articulation of this experience that

Neuhaus captures so succinctly while resisting objectification of the sound of a particular site. In this case, site-specificity lies not in the specificity of place but in the specificity of the act of listening.

Although every place has its own sonic characteristics, it is remarkably difficult to identify the sound of a site by listening. The field recordist listening back to a recording unescapably recalls the experience of being in place through sound. She does therefore complement the aural record with the memory of being in that particular situation. The way in which this relationship between the recorded object and the experience of recording is communicated to the public remains a challenge of much field recording and soundscape work. The notion of soundscape as an aural reality that can be objectified away from cultural context has been powerfully critiqued by Feld (2004) and Ingold (2007). The relationship between site and sound doesn't lie in obsessive acoustic cartography but rather in understanding the lived experience of place and listening. We must therefore evolve from a terminology associated with object (i.e. site and sound) to one that is more to do with place making and the process of listening – *listening in place*.

In order to engage with this *listening in place* in the context of creative practice one must unfold layers of objectification that construct a barrier between what is heard and who is hearing it. One must also lay the agenda open to the dynamics of the territory and not treat the local as the exotic or the other. An understanding of, and engagement with territory is clearly possible to communicate to others but that assumes a two-way knowledge transfer from the “local” to the “expert”. This means the expert, in this case, the practitioner who wishes to engage with the local, cannot bring a pre-determined agenda. This type of engagement goes beyond a willingness to gather “local knowledge”. To ask the inhabitant of a village where the best restaurant is, does not necessarily relate to her experience of place. The notion of a map of best restaurants (or indeed tourist attractions) is fundamentally alien to the lived experience of the local who doesn't eat out nor visits attractions in her own village. When engaging in creative practice which addresses the relationship between listening and place one must avoid yet another layer of alienating re-mapping of an exotic territory. The local is therefore an ephemeral condition articulated by an experience of place. This experience is not articulated by the extraordinary (the best restaurant or tourist attraction) but by the everyday.

2.2. Two participative sonic arts projects

A concern for articulating local aural experiences in a participative environment is at the core of two recent socially engaged sonic art projects. These projects developed method-

ologies for engagement in the sonic arts through a reflection on everyday relationships between sound and place.

“Sounds of the City” (Pedro Rebelo, Rui Chaves, Matilde Meireles and Anghus McEvoy) is an example of a participative art project engaging local communities through the experience of listening.

“Sounds of the City” (www.soundsofthecity.info) is a community project and exhibition commissioned by the Metropolitan Arts Centre (MAC), Belfast in 2012. Over a four-month period, the team worked together with two intergenerational groups in Belfast with the aim of addressing specific sound qualities of places, events and stories. Themes that surfaced from this process constitute the basis for an exhibition, which promotes listening as a form of intersecting daily life, identity and memory. Five installations address aural contexts ranging from Belfast’s industrial heritage to the local family home. These are shaped by present and past experiences of workshop participants at Dee Street Community Centre in East Belfast and Tar Isteach in North Belfast. The themes and contents of these installations centre upon the relationship between sound and memory, sound and place, and the documentation of everyday personal auditory experience.

All materials exhibited emerge through workshops, interviews and field-recording sessions. Workshops act here as a basis from which to share with each group the project’s aims, methods of listening, methods of documenting sound and the wider areas of soundscape studies and acoustic ecology. They also provided a central point allowing participants to organize outside activities and share material for exhibition.

The focus of the project was in articulating how a local sonic experience, in this case of a small group or an individual, could be communicated in the context of a public sound art exhibition. The sonic experiences that emerged throughout the project were clearly meaningful for the participants themselves even though some were more easily communicated than others. Examples of these experiences include group memories of sounds that ceased to exist (factory horns from Belfast’s industrial heyday), an individual’s relationship to a place with a particularly strong aural identity (a public swimming pool), or the recounting of personal stories triggered by a sound event or memory (the sound of thousands of heavy boots as men walk back home after a shift at the shipyard). The methodologies employed in the project were numerous, some of them established and others more experimental. The major concern was to engage participants in activities enabling the articulation and awareness of the listening experience. This was achieved through actions such as sound walks, field recording, sound diaries, annotation of photographs with sounds and informal interviews. The

variety of methods employed led to the reinforcement of particular experiences and themes making the process of exhibition design constantly informed by the participants.



Figure 1. Sounds of the City "Five Places".

The participative nature of the project was focused on a collaborative relationship between communities and artists. This relationship was predicated on the design of an exhibition about the city but rooted in the experiences of the participants and the artists' contribution. This model of shared creation raises interesting authorship questions, which are still unresolved. Again, the ethnomusicological work of Samuel Araújo offers a number of solutions based on joint authorship that could be applied to creative practice. In the case of Sounds of the City, the act of collaboration focused on the joint development of themes, which through discussion and negotiation became the core elements of the exhibition. An aspect of the project that outlives the exhibition is the Belfast Soundmap (www.belfast-soundmap.org), an open online platform initiated with Sounds of the City but gaining a new life after the exhibition. The soundmap aims at opening the experience of listening in place to a wider community and for extended periods of time².

2. The design of the map was focused on allowing any user to upload sound, text or images associated with a location in Belfast and to create projects, which filter entries according to a particular activity. The map shares some of its aims with other soundmaps around the world but is primarily focused on capturing the listening experience

“Som da Marè” (somedamare.wordpress.com) is a more recent project aimed at further developing the participative methodologies mentioned above. This time, the context is one of the largest clusters of favelas in Rio de Janeiro and a partnership with Museu da Maré, situated in one of the Maré favelas. In contrast with “Sounds of the City”, this project aimed at extending the engagement of participants to the exhibition design process. Themes of the everyday were explored through sound as were territorial politics – a common focus of debate in favela communities (i.e. territorial control by drug factions and/or police).

The project took place over six months at the beginning of 2014 and culminated in three installations at Museu da Maré, a guided soundwalk in Aterro do Flamengo (a well known leisure area in Rio) and a subsequent installation at the Mac Niterói modern art museum. The participants were six 17/18 year olds who were selected for a work placement at the museum. Their families by extension provided access to different generations of Maré inhabitants. Another group of participants were eight postgraduate students from areas such as architecture, design, music and visual arts at the Universidade Federal do Rio de Janeiro. The various methodological and participative aspects of this project are beyond the scope of this text and will be explored elsewhere. From the perspective of the current discussion however it is important to reflect on how the local and the distributed provided sources of intense collaboration but also of tension.

Distributive characteristics, in the case of “Som da Maré” took the form of horizontal decision making in which various project tasks are self assigned amongst the participants. The variety of skills, experience and engagement to some extent forced a distributed approach to the production of an exhibition. Here distributed in a sense that any participant could have access to any asset (an idea, an interview, a field recording) and work on an aspect of the project without feeling she was taking some else’s job. Although the project is admittedly about the local conditions of a particular group of favela residents it also aims at a distributed understanding of sound and everyday through a re-placement of memories, experiences and audio materials from the favela to another part of the city. This re-placement articulates the inherent conflict between the “official” and “other” parts of the city but it also articulates the shared nature of so many everyday listening experiences; the street vendor calls, children playing outside, the rain...

The sound worlds revealed through an engagement with the local also become distributed as they are shared and re-contextualised in order to open relationships with other groups

of an individual in place through sound itself but also through descriptive text or image. The growing number of entries and different types of engagement with the map will in time constitute a valuable resource for addressing attitudes to sound and place across the city of Belfast.

and individuals. In “Som da Maré” this was done through re-placing relationships between sound and the everyday that emerged out of the work with Maré residents into a guided soundwalk format in another part of the city. Environmental audio materials and voices from Maré as heard over headphones in Aterro do Flamengo, remap places and memories of the everyday: the football pitch, water...

3. Conclusion

This paper attempts to articulate how notions of the local and the distributed can co-exist in creative practice. What can, at first, be seen as a binary relationship between socially engaged “local” work and highly technologized and institutionalised networked collaborative or distributed work, is re-folded into two types relationships that can be developed in parallel.

I’ve argued how place-sound relationships are predicated on listening experience rather than objectification of aural characteristics. As such, the network can act as a platform for mediating experiences of place through articulating difference and relationship. Notions of re-placement or distribution can act as strategies for articulating the local and the particular. Engagement with the local relies on collaborative participation, which in turn suggests non-hierarchical models of authorship – distributed authorship. This approach inevitably generates a more complex and rich set of relationships between participants and the materials at hand. The notion of the distributed as discussed here re-folds the local by allowing for the opening up of the particular into the shared. This is then in turn again re-folded into another local, another set of relationships, which become particular or personal for another group.

In this sense, the aim of a project such as “Sounds of the City” or “Som da Maré” is not to re-create the experiences of a community but rather to extrapolate and to distribute those experiences so that they can gain meaning in different contexts. The participatory work that roots these projects is common to a lot of socially engaged art practices, and relies on placing value in the process as much as in the final results. As such, these processes emphasise the making rather than the made, the experience and process rather than the object. Sound, at its most evocative, becomes the trigger for articulating lived experience of place and a reality of listening we all share. The everyday acts as a vehicle for expressing the personal, the societal and the political, which one hears, and others do to...

REFERENCES

- Araújo, Samuel, Gaspar Paz, and Vincenzo Cambria.** *Música em debate: perspectivas interdisciplinares*. Mauad Editora Ltda, 2008.
- Blessner, Barry.** *Spaces Speak, Are You Listening?: Experiencing Aural Architecture*. Cambridge, MA: The MIT Press, 2007
- Born, Georgina.** "On Musical Mediation: Ontology, Technology and Creativity." In *Twentieth-century Music* 2, no. 01 (2005): 7–36, 2005
- Cambria, Vincenzo.** "Novas Estratégias na Pesquisa Musical: Pesquisa Participativa e Etnomusicologia" in Araújo, Samuel, Gaspar Paz, and Vincenzo Cambria. *Música em debate: perspectivas interdisciplinares*. Mauad Editora Ltda, 2008.
- Chafe, Chris, Cáceres, Juan-Pablo and Gurevich, Michael.** "Effect of Temporal Separation in Synchronization in Rhythmic Performance." *Perception*, 39(7), 2010.
- Chaves, Rui, and Pedro Rebelo.** "Evocative Listening: Mediated Practices in Everyday Life." *Organised Sound* 17, Cambridge University Press 2012
- Chew, E., Sawchuk, A.A., Zimmermann, R.** "Distributed Immersive Performance: Ameliorating the Psychophysical Effects of Network Latency." In *Proceedings of the Corporation of Education Networks in California (CENIC) 2005 Meeting*, Marina del Rey, CA, Mar 7-9, 2005
- Collins, Nicolas.** *Handmade Electronic Music: The Art of Hardware Hacking*. New York: Routledge, 2009.
- Coyne, Richard.** *The Tuning of Place: Sociable Spaces and Pervasive Digital Media*. Cambridge, MA: The MIT Press. 2010.
- Coyne, Richard.** *Technoromanticism : Digital Narrative, Holism, and the Romance of the Real*. Cambridge, Mass. ; London: MIT Press, 1999.
- Feld, Steven, and Donald Brenneis.** Doing Anthropology in Sound *American Ethnologist* 31, no. 4. 2004
- Freire, Paulo.** *Pedagogy of the Oppressed*. London: Penguin Books, 1993.
- Gibson, William.** *Neuromancer*. London: Voyager, 1995.
- Ingold, Tim.** *Against soundscape in Autumn leaves: Sound and the environment in artistic practice*. Ed. Angus Carlyle. Association Double-Entendre, 2007.
- LaBelle, Brandon.** *Acoustic Territories: Sound Culture and Everyday Life*. New York: Continuum. 2010.
- Latour, Bruno.** *War of the Worlds: What About Peace?* 2nd edition. Chicago: University of Chicago Press, 2002.
- Rebelo, Pedro.** *Dramaturgy in the Network*. *Contemporary Music Review* 28, no. 4, 2009.
- Hitchcock, Henry-Russell.** *The International Style*. New York; London: W.W. Norton, 1995.
- Schroeder, Franziska.** "Dramaturgy as a Model for Geographically Displaced Collaborations: Views from Within and Views from Without." *Contemporary Music Review* 28, no. 4, 2009.
- Small, Christopher.** *Musicking*. Wesleyan University Press, 1998.

An Inclusive Approach to Sound Creation in 'Art in-the-public' Interest

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Abstract

The paper takes up an approach to sound art creation in the public art sphere. Addressed in line with the perspectives on public art by some of the critical authors and artists in the field as Arlene Raven or Susanne Lacy, the paper reinforces the analysis of the sound art practice in the public sphere related to notions of commitment, ephemerality or temporality which are crucial for the 'art in-the-public interest' paradigm and, broadly understood, for the public art today.

Keywords: Public Art, sound creation, Art in-the-public, temporality

1. Cross origins

This section directly linked two terms, those of 'sound installation' and 'public art'. The origin in both cases brings to the United States and a year, 1967. It was at this moment, 1967, when the State University of New York at Buffalo presented *Drive-in Music* a sound installation by Max Neuhaus conceived for the cars' radios driving through a large avenue while catching sounds broadcasted from some devices on the sides. This installation, largely studied, is considered today the first sound installation ever made, mainly because Neuhaus was who coined the term, but also, and beyond that fact, because it is the first example of an installation of this magnitude having sound as a central role. The year 1967 was also the date in which public art practices were institutionalized due to the establishment of the Art in the Public Places Program at The National Endowment for the Arts (NEA) in the United States. Its first finished commission was the *Grande Vitesse* by Alexander Calder, a monumental red sculpture of sinuous forms installed in a square in Michigan.

Both of them were specifically conceived for the occasion, although with different purposes. While Neuhaus' piece was playing with the space Calder's one was mostly occupying it. *Drive-in Music* was an experimentation responding to Neuhaus' interest in leaving the concert halls; the *Grande Vitesse* however responded to the initial objective of the NEA to commission pieces by renowned artists to be installed in the public space and thus make them accessible to the general audience. The experimentation of one artist versus the consolidation of another isn't the only difference in the conception of these two pieces. While the *Grande Vitesse* was conceived in consonance to the permanence of the architectural site, the devices that made *Drive-in Music* possible were installed in the avenue from October 1976 till April 1968, a little more than half a year covering different seasons (an important factor for the piece) and in consonance with the continuous movement and temporal practices in the city exemplified in the cars and the radio.

The installation by Neuhaus, *Drive-in Music* not only worked in the cross of the public and private space, making the private space of the car interact with the result of its own presence in the public space of the street, but introduced a temporal element and thus created a circumstance, an impossible to retain and evanescent situation connected to the immediate perception and the highly codified relation of all the agents involved in that particular moment. Moreover, the piece did not impose itself to the audience, who mainly might tune the specific dial and find it by surprise. As in many others of his pieces, this real-time installation worked to be temporarily appropriated and then leave behind. This feature of

what is intangible in time is distinctive of the 'public space'. Its absence of a single ownership, does not let it be appropriated but only temporally.

Although it is unclear when the expression 'public art' was first used, there is an early example in one of the texts published by the art critic and historian Irving Sandler in the catalogue of the *Sculpture in Environment* exhibition organised by the city of New York in October 1967. "If enough artists are enabled to work in public places, – stated Sandler – a new aesthetic tradition may develop, a tradition of a modern public art, different from that of studio art."(Harding 1997) This use of the term is in line with the 'art-in-public-space' paradigm adopted by Miwon Kwon (2004) to refer to modernist abstract sculptures placed in open spaces of the city. A public art, which as mentioned by Barbara Hoffman "wasn't public for the most part, in the sense of shared aesthetic vocabulary, symbolism or worldview between artists and their audiences" (1990, 114). This conception of public art, which seemed indecipherable and meaningless to the audience started then to be criticized and carried to public sculptures and projects very much connected to the architectural space.

Entry [into a work] is facilitated when the public perceives the work as performing some useful task, whether it is simply that of shade and seating, or something even remotely associated with the sense of leisure. To be guided through space in a way that rewards the passer-by is of prime value to the public. (Kardon 1980)

All the ideas tended to discuss about the 'public' in 'public art', a slippery concept that has been given much thought. A concept that is or has been depending on the historical periods, connected to art in open spaces, architectural furniture, social works, public sculptures, art and activism among others and of course to the audiences, publics and/or citizens. A concept, which has been associated with different ideas of usefulness, playfulness, commitment, participation and ornament, that continues to be problematic in its definition in the art sphere. A concept, however, opened enough to not refer to techniques and disciplines but concepts, methods, strategies and possibilities of action.

2. Art in-the-public interest

The eruption of artistic practices related to a socially conscious art in the 1980s carried the production of 'public art' to the model of *Art in-the-public interest*. This field initially studied by Arlene Raven and later problematized by Susanne Lacy in *Mapping the terrain*, comprehended practices such as the following listed by Raven: "(...) street art, guerrilla theatre, video, page art, billboards, protest actions and demonstrations, oral histories, dances, environments, posters, murals, paintings and sculpture that radically changed the face of contemporary public art" (1989, 3); a set of practices all of them, that were named later by Suzanne Lacy the "new genre public art".

Unlike much of what has heretofore been called public art, new genre public art—visual art that uses both traditional and non-traditional media to communicate and interact with a broad and diversified audience about issues directly relevant to their lives – is based on engagement. (...) The term 'new genre' has been used since the late sixties to describe art that departs from the traditional boundaries of media. Not specifically painting, sculpture, or film for example... new genre art might include combinations of different media. Installations, performances, conceptual art, and mixed-media, for example, fall into the new genre category, a catchall term for experimentation in both form and content. Attacking boundaries, new genre *public* artists draw on ideas from vanguard forms, but they add a developed sensibility about audience, social strategy, and effectiveness that is unique to visual art as we know it today. (Lacy 1994, 19–20)

Mainly, these practices approached public art beyond the media, and were defined for the methods. The artistic interventions, whether installations, performances, or any other kind of work, were defined by the ways of proceeding or doing something and not necessarily by the inner implications of the media used. This approach to public art, was very clear in the first traces of sound art in the public space: the dé-coll/ages and happenings where sound was an important factor were mainly reclaiming attention to social issues or reflecting on the political and economical situation. The Situationists practicing the drifts and using sporadically walkie-talkies, acted on the same basis, although there are some differences in between them and the projects, such as *Three weeks of May* by Lacy in 1970, which are included in the 'new genre public art'. While in the former, the artists conducts a collective experience,

acting as a mediator in an artistic field that creates a connection with the public sphere, in the second one the artist instigates the general audience to merge a topic of public interest, if necessary disturbing them with public demonstrations. *Three weeks of May* comprised a series of events that denounced the high number of rapes and aggressions against women that took place over a three-week period in May, in the city of Los Angeles.

These practices, as Malcom Milles states “resolves the contradiction of public art by determining ‘public’ as a ‘space’ (or ‘time’) of public issues while subverting the gendering and separation of the public and domestic realms” (1997, 62).

Despite the intentionality of pieces like *Three weeks of May*, the relationship of public artworks, the public domain and the public is ‘uneasy’ according to Raven. Probably because of the amplitude and broadmindedness of the different approaches and the perception of the audiences, but also for the complexity previously noted of defining each of the terms. And probably as well, for the role the artist acquires in this ‘in-the-public interest’ model, and the indistinctness of the artistic practice with activists practices that intend to “affect and transform”- in Lazy words. Lacy in *Mapping the terrain* added some interesting questions to this discussion:

“Is ‘public’ a qualifying description of place, ownership, or access? Is it a subject, or a characteristic of the particular audience? Does it explain the intentions of the artist or the interests of the audience” (Lacy 1994, 20)

Her questions show once again the ambiguity of the term, recalling the attention on thinking the role of the ‘public’ (in public art) to express a quality of mayor concepts, but also suggesting the idea of public as a committed attitude by the side of the artists, and beyond that, inquiring if the ‘public’ of public art is on the intention of the artist or the interest of the audience.

In 2009 the Mexican group Teatro Ojo organized the project *México mi amor nunca mires atrás. Estado Fallido 2: multifamiliar Juárez* (Mexico my love never look back. Failed State 2: Multi Juárez). A dirt football pitch, where a Nike slogan proclaimed, “Nunca mires atrás” (Never look back), was the pretext for this art action, which looked at the state of tension between history and memory, by holding a football match. The territory, that is today a playing field, was once a cemetery, then the site of a national stadium and finally the place of residences – designed as part of a modernizing program undertaken by the Mexican government – which later suffered severe earthquake damage. Through this project the territory became a scenario charged with history and its contradictions that was activated through a

popular football match between the neighbours' football teams, and a specific sound intervention.

While the game was underway, the loudspeakers reproduced the narration of the game between the national selections of England and Mexico in the 1966 World Cup. Since the action on the field had nothing to do with the narration coming from the loudspeaker system, a paradoxical situation arose somehow uncovering the value and role of the media that was subverted by the real process having place in the playing field. In addition, interspersing the game several suspensions took place, like time capsules, broadcasting recordings of political rallies, speeches and other historical archives that could be heard by the audience in the field, coming this time from small speakers carried by the players, who had stopped all their activity.

The action is seen to be a rupture that falsifies play and recovers, in an unusual manner, times gone by, revealing the gap that arises from the tension exercised by history and memory, not just in this playing field but in the entire Mexican state. On the one hand the audience, as public of an artistic action in the field of an anti-artistic practice like football, faces the temporal dislocation, and then embodies the archival speeches in the sweaty and dusty body of the players. A strong situation appears where time lapses and real situation mix through the reminiscent power of archival sounds relocated in that specific context. Visualizing that way, through play and mass culture, the fissures in the fabric of the public codes on which the present is built.

“This construction of a history of new genre public art is not built on a typology of materials spaces or artistic media, but rather on concepts of audience, relationship, communication, and political intention” (Lacy, 1994, 28–29)

3. Ephemeralness and distancing

Contrary to the permanent relations forced by the big minimalistic sculptures, the temporal practices, which happen and end up in a short period of time allow to elaborate dynamic relationships in which both the permanent structure of the public space and the ephemeralness of the events provokes the brightness of the immediate. Patricia Phillips who has widely written on Public Art, points to the temporality as the feature that stimulates in public art

‘the idea of the research laboratory’ (Phillips 1989, 332) allowing to rehearse approaches to the public and thus creating and/or proposing new readings of the public sphere.

“A temporal public art may not offer broad proclamations; it may stir controversy and rage; it may cause confusion; it may occur in non-traditional, marginal, and private place. In such art the conceptual takes precedence over the more obvious circumstantial” (Phillips 1989, 332)

In 2007 Sharon Hayes performed during one week in New York *Everything Else Has Failed! Don't You Think It's Time For Love?* She stood in front of the offices of an important financial services company at lunchtime with a microphone and a PA system and spoke to an anonymous lover. The private sentences of one lover to another heard in the public space, displaced from the intimacy and carried to the publicness of what might be listen by an other anonymous, provoked a situation of strangeness and triggered curiosity of some people, causing as well indifference in many others.

The ephemeral features connected to relations of perception, semblance and codification organizes – following the anthropologist Manuel Delgado – the public space as a social construction based in the anonymity and mutual neglect. (1999, 12) In this space, actions like Hayes’ make an incision that is closed after its disappearance. Who and how appropriates it in the meanwhile, and how the artwork implicates and derives from the context makes it public.

The transitory environment of the public space, which is mutable and flexible, makes temporality in public art an opportunity to converge attention on specific issues. The sequence and the stacking of unstable components characterizing the public space made the public space oscillate for Delgado. The public space is unstructured not because there is no structure, but because it is always structuring. (Delgado 1999, 12, 46) In the continuous movement and transformation of the public spaces, things, actions and situations appear and disappear. That’s the reason why he asserts, “the public space is a foamy space is which almost nothing deserves the privilege of staying” (Ibid, 46) Things appear and disappear, are consumed, ignored, refused or accepted by a period of time. The meaning is gained in that temporality.

“The inclusion of the public connects theories of art to the broader population: what exists in the space between the words public and art is an unknown rela-

tionship between artist and audience, a relationship that may *itself* become the artwork” (Lacy 1994, 20)

In 2011 Iván Argote filmed *Untitled (New York)* a video in which people in the city turn back looking towards the camera for a very short period of time. In silence and slow motion the video captures the short period of attention he managed to attract by yelling words of love. Two years later, in 2013 this piece was installed in the frame of *Augmented Spatiality*, a project on public space and sound creation held in a suburb of Stockholm¹. Argote’s piece was installed in a big window shop of a café in the main street of the neighbourhood. Facing the street the piece repeated the original action, that of yelling, with the power of the image this time. The image and sights of people in the video, acting as a silent yelling in the real space appealed for moments the attention of citizens and evidenced once again and real time, the micro-responses that actions in the public space originate. The unregulated audience of the piece, citizens of the neighbourhood, suspended their activity for a very short period of time – that of decoding the situation – and then continued their way. The temporal and spatial distance in between the video and the recognition of the situation created illustrated once again the attention and neglect policies in public and urban environments.

As Phillips argues “Ephemeral public art provides a continuity for analysis of the conditions and changing configuration of public life” (1989, 335). A public life whose temporal practices make the public space be lived – as the sociologist Isaac Joseph stated – “as spacing, that is, as a social space governed by the distance” (1995) which might be shortened by micro-practices flowing with the rest of the complex public grid.

4. An inclusive approach

This paper addresses topics such as distance, ephemerality or the public interest to point to different issues in which sound creation and public art are considered to meet in interesting areas of work and analysis of the public: methods and strategies of appropriation, notions of identity and anonymity, topics of analysis on temporality and urban space or practices that

1. For more information on the *Augmented Spatiality* project, curated by the author of this paper, visit the website www.augmented-spatiality.org

activate and reflect on the public. These issues open up some of the topics that I'm working on my on-going research, which is not grounded on the qualitative aspects on sound art, but rather on concepts sound art incites which are similar to those previously pointed by Lacy such as "audience, relationship, communication and political intention" (Lacy 1994, 29) and others to come.

REFERENCES

- Delgado, Manuel.** *El Animal Público: Hacia Una Antropología de Los Espacios Urbanos*. 4a ed. Barcelona: Anagrama, 1999.
- Harding, David.** "Public Art. Contentious Term and Contested Practice." In *DECADEnt – Public Art – Contentious Term and Contested Practice*. Glasgow: The Glasgow School of Art, 1997. Retrieved from http://www.davidharding.net/?page_id=19 (Revised 16 June 2014)
- Hoffman, Barbara.** "Law for Art's Shake in the Public Realm" In *Art in the Public Sphere*. Chicago: University of Chicago Press, 1992
- Joseph, Isaac.** "Reprendre la rue". In : Joseph, Isaac (ed.). *Prendre place. Espacepublic et culture dramatique*. Paris : EditionRecherches , 1995.
- Kardon, Janet.** "Street Wise/Street Foolish" In *Urban Encounters*, exh. Cat., 8. 1980
- Kwon, Miwon.** *One Place After Another: Site-Specific Art and Locational Identity*. MIT Press, 2004.
- Lacy, Suzanne.** *Mapping the Terrain: New Genre Public Art*. Seattle, Wash: Bay Press, 1994.
- Miles, Malcom.** *Art, Space and the City: Public Art and Urban Futures*. 1st ed. New York: Routledge, 1997.
- Mitchell, W. J. Thomas.** *Art and the Public Sphere*. Chicago: University of Chicago Press, 1992.
- Raven, Arlene.** (1989) *Art in the Public Interest*. New York: Da Capo Press Inc, 1993.
- Phillips, Patricia C.** "Temporality and Public Art." *Art Journal* 48, no. 4 (winter 1989): 331-335.

The Housing Project: A Case Study in Using Sound Art and Ethnographic Interpretation in a Social and Political Intervention

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Abstract

The Housing Project: A case study in using sound art and ethnographic interpretation in a social and political intervention poses questions of how can we represent the views of urban dwellers in public art. How can we as artists maintain a space of community participation, consultation, and conceptualization in our work? How can a public artwork take the pulse of a city and present the views of its citizens? What strategies can be implemented to do this while creating an inventive, playful and engaging interactive artwork?

I employ *The Housing Project* created in Melbourne, Australia as a case study to answer these questions. This engaging interactive sound/sculpture installation uses generative sound, edited interviews from a broad range of citizens and complex programming algorithms to create a biography of a city. Urban audio stories are triggered by placing miniature ceramic houses, trees, factories and tall buildings on an interactive glass platform to create a never-changing sound environment. Heard in this changing cityscape is a mix of hundreds of people's voices from all walks of life and many ethnicities. Refugees, migrants, minority groups, children, parents, architects, university students, urban planners, design professionals, young people, and elderly citizens offer points of view, memories and stories about their experiences of urban life. Emerging from this work is a conversation about the current issues surrounding city living, shelter, urban design, sustainability, prejudice, tolerance, and reconciliation.

Keywords: sound art, interactive art, collaboration, social and political intervention, interactive installation, urban life, Sound and sense of place, community participation, positive soundscapes, Urban Sound place and identity, tactile interface, field recordings, urban design, sustainability and climate change

1. Introduction

This paper employs *The Housing Project* as a case study example to demonstrate how an interactive sound/sculpture installation can be seen as an archive, a snapshot of a community, and a social and political intervention. I describe how such an artwork can take the pulse of a city and present the views of its citizens. I outline the strategies adopted to create this inventive, playful and engaging artwork.

I will draw some conclusions about the management of projects that involve community participation and cross art form collaboration. I will make some informed observations about the management of complex collaborations, and describe how such projects can function as a tool for social and political intervention. I will also discuss some methodological aspects of the production process that are replicable in different communities, creating the potential for a series of comparable sound/sculpture based interventions to be created in further iterations of this work in other cities.

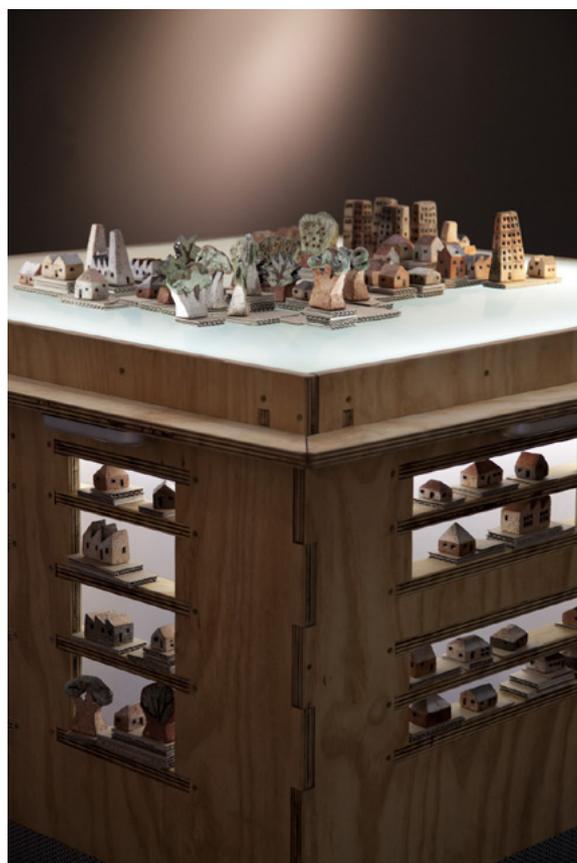


Figure 1. The Housing Project installation. Box designed and built by Angus Durkin, Ceramics by Ann Ferguson. Photo by Tobias Titz

2. Overview

The Housing Project is the result of a creative collaboration between six artists working in the fields of ceramic sculpture, community arts, sound recording, composition, table construction and design, and interactive programming.

The Housing Project takes the form of a playful and engaging interactive installation that explores citizen's views about urban life. In the exhibition of this work, gallery visitors are invited to select miniature ceramic trees, houses, multi-storey buildings and factories and place them as they wish on an interactive glass platform. As the city is laid out and arranged the barcode on the base of each ceramic object triggers a sound file, which contributes to a generative, evolving, and responsive sound environment.

The work captures the views and stories of urban life of a range of people who live in a 21st century multi-cultural, medium/high density city. The discussion of city life is contextualised within a composition of electronic sounds and field recordings made in and around the city, composed and programmed by Melbourne artists Chris Knowles, Keith Deverell and Marco Bresiciani.

Heard in this changing cityscape is a mix of hundreds of people's voices from all walks of life and many ethnicities. Refugees, migrants, minority groups, children, parents, architects, university students, urban planners, shop owners, design professionals, young people, and elderly citizens offer points of view, memories and stories about their experiences of urban life. Emerging from this work is a conversation about the current issues surrounding city living, shelter, urban design, sustainability, climate change, prejudice, tolerance, peace and reconciliation. Included are comments on city design and planning, tales of the worst student share house experiences imaginable, life in public housing towers, and views about how to make our cities more sustainable and enjoyable to live in.



Figure 2. Ceramic object interface used to trigger sound environment in The Housing Project. Objects made by Ann Ferguson. Photo Tobias Titz

3. Collaboration

The Housing Project concept was devised by Greyspace artists Sue McCauley and Keith Deverell and produced by Sue McCauley through a Creative Producer Fellowship awarded to her by the Australia Council for the Arts. At the commencement of the project, shared ownership and a collaborative production method were negotiated amongst the artistic team. A second programmer joined the team for the second year of development. The other artists valued his contribution greatly and agreed to add him to the credits as a collaborator.

There are many definitions of creative collaboration. One that I find resonates with my practice comes from the Helsinki Design Lab. They define creative collaboration to be, “a particular kind, in which by interacting with others you discover genuinely new ways of thinking about and then doing something together. ... for collaborators ... not only conceive of the work, they also play principal roles in carrying it out. (Downie, et al, 2012 p. iii). The identification of principal roles and the management of the various timelines required by professionals working in this unusual cross-disciplinary creative collaboration meant that attention to timeframes, and a focus on shared problem solving was critical in developing this project.



Figure 3. Keith Deverell (concept and programmer) and Ann Ferguson (Ceramic artist) working together at a ceramic workshop held at Signal Youth Arts Centre, Melbourne.

Could projects such as *The Housing Project* be made in other development contexts? The answer is that it needed the collaboration to deliver the range of skills and the shared problem solving which was so effective in the production process. Vera John-Steiner discusses modes of authorship in collaboration, in her books *Notebooks of the Mind: Explorations of Thinking* (1985), and *Creative Collaboration* (2000). She investigates the relationship between group authorship and creative innovation in the work of artists and scientists. She observes that innovative collaborations are those, “that lead to change in their domain’s dominant paradigms.” (John-Steiner 2000, p.196) She suggests that this is because creative artists who are interested in working collaboratively are those who see the value in working with people from a range of disciplines. All artists in the team assembled for *The Housing Project* came with a wealth of experience and expertise in their own field of activity. Some of them had worked on cross-disciplinary projects before, but never with such an unusual cast of characters, combining as it did, ceramic sculpture, furniture design, community art, digital programming and sound design. One reason that an artist may find it creatively satisfying to

be engaged in such an unlikely collaboration, is that it is in trans-disciplinary collaborative practice that innovation can occur. It is in the clash of traditions and methodologies that new knowledge can be created. (McCauley 2007, p.13).

The notion of there being a leadership role in collaboration may seem to be a contradiction in terms – but this is the best description of the production method employed during *The Housing Project*. This management role is that of the Creative Producer, and in this production I played this role. It is increasingly found in practice, particularly in the development and management of successful projects that have a focus on social and political intervention through community engagement.

I examined and theorized the role and its impact on production in PhD research completed in 2007. I found creative producers to be instrumental in developing effective strategies of community engagement and in creating a successful collaborative production models to suit project conditions. The inclusion of the creative producer fundamentally supports the creative dynamics, the team relationships, the management activities, and the communication processes within the collaborative team and that the introduction of the Creative Producer role may create a new production model for such community-based, multimedia productions that may affect not only what media products are made, but also how they are produced. It is a production model that is particularly effective in small productions, where multi-tasking is inevitable. In larger productions, the creative producer, is often less hands on, but still critically involved in creative visioning, communication, and team management.

A key to the role is communicating effectively with the artistic team, community stakeholders, organisations and individual participants involved in the process. In such collaborations, the Creative Producer is involved in developing the concept, team selection, and financing. He or she is responsible for the development of an effective production design that incorporates the specific requirements of various creative practices.(McCauley 2007, p.13)

The key focus of my practice as a creative producer is to develop projects constructed through a collaborative process with other artists, while seeking to maintain a space of community participation, without compromising the high standards of professional arts practice. In the “creative” side of the role my activity is focused on creating and maintaining a clear project vision, thematic development, community engagement, and the process of creative collaboration. In the “producer” aspects of the role my concern is with the “nuts and bolts” of budgets, timelines, and project management.

In this production, I was both inside the collaboration working as a sound recordist and editor, engaging in the creative process and the discussion around how to build the work. At

the same time, I was managing the production, problem solving, and keeping the community engagement process activated.

The multi-level engagement and management process was successful in this instance because it kept me fully informed of progress, provided a deep understanding of process, and enabled me to be aware of difficulties, disagreements, and problems as they arose in the creative/technical team.



Figure 4. Sue McCauley (Creative Producer) of The Housing Project interviewing students with Chris Knowles Sound (Sound designer).

4. Process

The thematic and presentation challenges that the project team explored in the creation of this work were about how to gather and present people's views about living in cities. This was not to be an exercise in didacticism, but a social and political intervention that was playful. The aim of the team was to make a work that was an engaging interactive experience. The creative idea that was the inspiration to make this work came from looking at a collection of little ceramic houses, and wondering what might be heard if you could eavesdrop on the conversations of people who lived in them. This interactive sound/sculpture installation acts strategically as an archive of sentiment, a snapshot of a community, and a social and political intervention. In its construction, the work incorporates ethnographic investigative techniques, digital programming and an unusual ceramic tactile interface.

The Housing Project had an initial production schedule of more than six months culminating in its first proof of concept exhibition in an architecture and design festival. This

initial exhibition was followed by a further twelve months of debugging and technical refinement and two further exhibitions. In such a lengthy process it was essential to have effective leadership and excellent communications amongst project team and contributing community participants.

The Housing Project was created with serious investigative intent on the part of the creators, while at the same time it provided an exciting and stimulating sound art experience for the users. Technically the project design was a complex experiment. The collaborators wanted to investigate how to create an interactive installation using the ceramic objects as an interactive interface. They wanted to develop some type of triggering device that used audio clips from citizen interviews as part of an evolving, captivating, and never repeated sound/sculpture work.

Critically, in this model of production there was space for expert knowledge and cross-disciplinary innovation. The selection criteria for team members were threefold. Each member was selected for their specific expertise in technical and creative domains, proven ability to collaborate and to do so across disciplines, and sensitivity to community engagement. Each was responsible for their particular area of activity, such as programming, or sculpture design and construction, over which they had substantial autonomy. failure.

When it came to overall project design and implementation there was considerable discussion and opinions sought as to the success or otherwise of technical and creative proposals and developments amongst the team members. Critical decisions were made through collective agreement.

It was fascinating watching the team in action, testing ideas quickly, intuitively judging what was most likely to work at both a creative level, in the design of the table, the sound and the objects used as the tactile interface to trigger the soundscapes, or working out how to integrate and work with different software programs for interactivity and file selection. Cognitive psychologist Jerome Bruner (1979) in his observations about the role intuitive knowledge in professional practice argues, "*Intuition implies the act of grasping the meaning or significance or structure of a problem without explicit reliance on the analytic apparatus of one's craft.*" (Bruner 1979, p.102). Donald Schon (1983) investigates the nature of intuitive knowledge based on experience. He acknowledges that, "competent practitioners ... exhibit a kind of knowing in practice, most of which is tacit... Indeed practitioners themselves often reveal a capacity for reflection on their intuitive knowing in the midst of action and sometimes use this capacity to cope with unique, uncertain and conflicted situations of practice." (Schon 1983, p.viii-ix). It was this intuitive knowledge based problem solving capacity of the team as a whole and individuals within it that made the role of the Creative Producer, sat-

isfying on one hand and challenging on the other. I had to display trust in the team, respect intuitive leaps in thinking, and provide space for experimentation and

Difficulties most commonly faced were often about understanding what issues a team member working in another discipline were facing. For example, there was confusion about the meaning of terms. This was the first time the ceramic artist had worked with programmers, and sound designers. She had some difficulty understanding the technical language of the discussion at certain points. It reminded me of the scene in Lewis Carroll's (1872), *Through the Looking-Glass*, when Humpty Dumpty and Alice are discussing words and meaning:

When I use a word,' Humpty Dumpty said in rather a scornful tone, 'it means just what I choose it to mean – neither more nor less.' 'The question is,' said Alice, 'whether you can make words mean so many different things.' 'The question is,' said Humpty Dumpty, 'which is to be master – that's all.'" (Carroll, L. 1872, p. 72)

Just as Alice recognised that there was the potential for confusion in the meaning of words, we had to make agreements about the meaning of terms because disciplines interpreted certain terms completely differently. An “object” to a ceramic artist and an “object” for a programmer for example are not the same thing. In a collaborative team without a “Master” making decisions, we had to come to a collective agreement about the meaning of terms in the production context.

Another example of a cross-disciplinary issue, was one faced by the ceramic artist about the size of the ceramic objects to be produced. The objects had to be big enough so that when a glyph (ambisonic barcode) was attached to the base of a tree or a house it could still be read by the camera. The camera would recognise the glyph and then trigger a sound file to start playing. Until the size was determined, the ceramic artist could not build the objects. The artist had concerns about making objects too large and losing the aesthetic she desired. The programmer was concerned that if the objects were too small the glyphs might not be recognised by the camera. The determination of the glyph size therefore had to occur before the ceramic sculptures could be made. Often solutions required input from various members of the team.

5. Community Engagement

5.1. Ceramic Workshops

One connecting activity of this project was that the key artistic collaborators all attended the community workshops enabling some shared experiences across the team, and general acknowledgement of the power of the workshop process, and the value of having a practical workshop connected to an interview process. We wondered if trust that developed during the making of little houses meant that when we interviewed these people, there was greater preparedness to talk about their experiences of urban living. We think it did, but we have no proof of this.

Many of the audio recordings used in this installation were made during community workshops where people made ceramic houses under the direction of ceramic artist, Ann Ferguson. The ceramic houses made by community participants at these workshops were fired and exhibited as a community-made city alongside the installation. The ceramic objects used in the installation were made by Ann Ferguson. We used these in preference to the community made pieces because they were more regular in their sizes and more robust in their construction. Darren Tofts (2011) in catalogue essay for the project notes, *“It’s hard to not touch, fondle and enjoy the pleasing solidity, mass and rough grittiness of Ferguson’s ceramic buildings and trees. They put us back in touch with basic elements of the earth, of clay and pigments, the fire and heat generated by a kiln. And in doing so they awaken us to other fundamental and immersive qualities of immediate experience.”* (Tofts, 2011) Ann Ferguson’s ceramic objects have a rustic and almost universal quality of “home”. They are far from the plastic mouse used to drive most interactions. They are tactile and beautiful and evocative of childhood toys.



Figura 5. Students from Carlton Primary School with the houses that they made.

The workshops were hosted in Melbourne at a children’s art centre called Artplay, a youth art centre called Signal, with classes of recently arrived refugee children at Carlton Primary School, at Re-inforce – an organisation lobbying for rights of the intellectually disabled, and with the Jesuit Social Services who run a successful program for teenagers at risk of homelessness. The workshop participants included planning, fine art and architecture students, parents and their children, people with disabilities, refugee children, town planners, architects, elderly people living in a nursing home, and young homeless people.



Figure 6. Parent and Child workshop held at Artplay Children’s Art Centre Melbourne.

5.2. Interviews

During these workshops we took the opportunity to interview participants about their views of urban living and their personal housing stories. Esther Anotolitus (2011) in her review of the exhibition in the journal *Architecture AU* notes that, “Recording ceramic workshop dis-

cussions and interviews with housing professionals, the installation spoke from a diversity of perspectives and communities of interest. “You can’t negate personal experience,” says Chris (Knowles, sound designer). “You can’t just say ‘That’s not true.’ There’s no questioning it.” Homeless people, newly arrived refugees, children and their parents could be heard alongside planners and developers – a striking array of voices expressing their passions, frustrations, strategies and hopes. An ambitious and complex proposition, *The Housing Project* succeeded in giving architecture a compelling voice on contemporary residential development. (Anotolitis, 2011). The range and authenticity of the contributing comments from the general public add to the sense of the content being central to this interactive. This is the level where this work can be said to be a social and political intervention.



Figure 7. Chris Knowles (sound designer) recording conversation between two students from Carlton Primary School.

5.3. Interaction

A further level of interaction and community participation take place in the exhibition of *The Housing Project* installation. In the exhibition of the work it performs as an interactive game that provides intellectual and emotional rewards in the form of sound, familiar yet mysterious, and spoken content – in direct response to the actions of its players. In short, the sound design that provides an emotional and intellectual journey, and can also be played as a game.

6. Sound Design

Hundreds of short sound files about the public and personal experiences of living in an urban environment are triggered by audience interaction with the ceramic buildings on the table. *The Housing Project* software tracks the movement, location and density of the ceramic factories, highrise buildings, houses and trees. It interprets the information to control the sound clips, to create ever-changing audio mixes, to moderate the discussion themes and voices, and to locate these sounds in space around the players and audience. Professor Darren Tofts (2012) writing in the exhibition catalogue notes,

The physical act of triggering unexpected sounds by moving objects around a responsive table is suggestive at once of a board game and the balancing of different channels on a mixing desk. Once you have cottoned on to this effect it is possible to play the installation as if it were a musical instrument, a responsive DIY kit for synthesizing the look and sound of cities, as well as an urban story generator in which you play the role of conductor, interviewer and neighbour. In this the work intuitively exploits the contemporary Esperanto of interaction that has been hardwired into the psyche through the experience of a generation saturated with new media. (Tofts,2012)

The sound files form the components of a modular composition that is moderated through software, but is ultimately composed by the audience players. *The Housing Project* work was made through the generosity and genius of many programmers worldwide who publish their software through the GNU and open-source movements. At the core of this project are two technologies, reactIVision and ICST-ambisonics. We are grateful to them and all the others who have without knowing given much to this work.

7. Exhibition

The Housing Project was officially launched in Melbourne in September 2012. As one visitor to the first exhibition of the work at Pin-Up Gallery in July/August 2011 noted in the comments book, "A playful perspective on housing issues that affect us all. I really like the interviews and

the interactive/tactile nature that makes this a pleasure to watch and/or participate. Great project". Another visitor to the first exhibition wrote, "Great sense of togetherness emanating from *The Housing Project* – you can really feel the true sense of community. I really enjoyed playing and listening to the different configurations that are possible" and a third picking up on the social and political intervention aspects of the project said, "I loved the idea to play like a child about a serious subject: housing, spreading suburbs... A very independent way to give a message!" (Comments Book, 2011).



Figure 8. Architects activating *The Housing Project* by designing a city with ceramic objects. PinUp Project Space Melbourne. Photo Tobias Titz.



Figure 9. The houses made by community participants during the workshops. Image Tobias Titz.

An additional element of the exhibition of this work was the performances of the table by the artists. The artists performed *The Housing Project* at advertised times, providing audiences with the opportunity to hear the work at its best, and to see how the table could be manipulated to create a contemporary sound composition of unusual power and impact.



Figure 10. Chris Knowles and Keith Deverell performing *The Housing Project* Pin Up Project Space Melbourne.

The value of the sound composition was recognised by an Australian radio program, called *The Night Air*. This was devoted to broadcasting and discussing sound art and compositions. The radio producer came to see the installation and took a feed from the table and presented it in a radio program broadcast as a unique sound composition along with interviews about people's experience of interacting with the work.



Figure 11. Child taking a photo of his city. Pin-Up Project Space Melbourne. Photo Tobias Titz.

8. The Future

The Housing Project is in many ways a prototype that tested a technical and creative idea. The workshop process provided an effective way to engage with members of the community. It provides a mechanism for communities to tell their own stories. Now that it has been built,

exhibited, revised, and exhibited in two further contexts, we can observe the interaction. From comment books and watching people interact with *The Housing Project*, we know that it is a successful model. It is fun to use. It creates beautiful evolving soundscapes. It gives a community a voice, and is a social and political intervention in a city. It could be recreated in other contexts.

The Housing Project takes ethnographic snapshot of a city, and can operate as a story-telling machine, which, in further manifestations could be stocked with stories from other cities, making the work replicable and relevant to many urban contexts. For example the next version of this project might occur in the remote city of Alice Springs and explore the disastrous situation of housing for indigenous Australians. It could be implemented as a work in Cyprus, investigating the experience of life in a politically and culturally divided city.

I am open to discussion about how and where and with whom Stage two of this work could be developed. There is the potential for a series of comparable sound/sculpture based interventions to be created in further iterations of this work in many other cities around the world. Stage two will present this global perspective and to do this the project will be renamed – *The Global Cities Project*.

REFERENCES

- McCauley, S.** 2007, *The Dynamics of Creative Collaboration*, RMIT University Library online, Melbourne, Australia
- Downie, M. Eshkar S. Kaiser P.** 2012, *Creative Collaborations Sitra*, The Finnish Innovation Fund, Finland
- John-Steiner, V.** 1985, *Notebooks of the Mind: Explorations of Thinking*, Oxford University Press, New York, USA
- John-Steiner, V.** 2000. *Creative Collaboration*, Oxford University Press, New York, USA
- Anotolitis, E.** *The Housing Project*, 2011, Architecture.au.com, Accessed 21st May 2014
- Carroll, L.** 1872, *Through the Looking-Glass*, Hayes Barton Press, UK
- Tofts, D.** 2011, *The Housing Project* catalogue (unpublished)
- Schon, D.** 1983, *The Reflective Practitioner: How Professionals Think in Action*, Basic Books, Harper Collins, USA.
- Bruner, J.** 1979, *On Knowing: Essays for the Left Hand*, Expanded Edition, Belknap Press, Harvard University Press, Cambridge, MA, USA.

Audioworks

Biding and Unseen

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Abstract

Created from field recordings, *Biding and Unseen* is inspired by urban environments. The sound material in “Biding and Unseen” was micro-processed via granular synthesis from material initially containing sounds of the city. Granular synthesis emptied out the representative aspect of the recording, forming an abstracted texture characterized by a plurality of microscopic events, coalescing in time-stretched patterns.

As a discovered atmosphere *Biding and Unseen* makes it possible to hear traces of the physical environment that are otherwise hidden within everyday city life. The visual aspect of *Biding and Unseen* features the Hudson River in New York City. The visual representation of the river gestures toward the natural environment, the presence of which is unobserved in day-to-day human life, yet is ever-present and biding within the physical makeup of the city.

City Soundings

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Independent artist

Wiska Radkiewicz

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Independent artist

Abstract

City-Soundings is a collaborative composition in which a variety of cityscapes were recorded by several composers in different countries and were collectively assembled into a unique composition. Each participating artist (14 artists from 9 countries, including us) was asked to record and upload three soundscapes that represent the best his/her vision of the city where she/he lives.

We asked do record several types of sounds:

- soundscapes that characterize your city
- places you like or dislike
- places that remained in your memory
- places where your presence is audible
- your voice in close up

The sounds could be recorded indoors or outdoors and could include the voice of the composer (his/her language) or voices inherent to the environment.

After the bank of sounds was completed, we have asked each artist to compose and upload one or several short fragments using all the sounds previously uploaded.

In the last stage of the process, from which the final composition emerged, each participant modified the piece in the predetermined order using all sound materials previously uploaded. According to the order determined by 14 randomly chosen numbers, the composition circulated from one composer to the next. Each was able to modify the previous version of the piece and/or added a short new portion to it. In this final stage composers could use any techniques of electroacoustic composition to work on the piece. The piece was completed after the last artist contributed his modification. This work not only reflects and

combines several compositional styles, but also represents a mosaic of sonic representations of urban landscapes brought by all participating artists.

List of participating artists:

- Steven Brown (UK)
- Marek Choloniewski (Poland)
- Victoria Estok (USA)
- Brad Garton (USA)
- Janete El Haouli (Brazil)
- Andrew Hugill (UK)
- Malle Maltis (Estonia)
- Hernan Risso Patron (Argentina)
- Franziska Schroeder (UK)
- Andrei Smirnov (Russia)
- Marie Wennersten (Sweden)
- Lidia Zielinska (Poland)
- and Wiska Radkiewicz & Andrea Cohen (Soundson Collective), authors and initiators of the project.

Jardin de combustibles

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Conservatoire de Musique de Montréal

Abstract

Jardin de combustibles is an acousmatic piece alternating between fast and slow, agitated and calm, like the alternating phases of work and rest. Some of the main action concerns construction site sounds with the sound of machinery digging ground in the city. The inspiration for this piece is an experimental movie presenting a chain reaction with everyday life objects and chemically reactive substances (*Der Laufe der Dinge*, by Fischli and Weiss, 1987).

oneroomafteranother

Andrea Parkins

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sound artist, composer, electroacoustic performer

Abstract

In October/November 2013 I created a site-determined 8-channel sound installation for the two reverberant rooms of the Q-02 Workspace for Experimental Music and Sound Art in Brussels, Belgium. The work in Brussels featured pitched, slowly shifting layers of electronic feedbacks and more subtle, delicate and articulated sonic details, primarily generated from a personal archive of recorded manipulated objects that I have been collecting for the past 25 years. It was conceived as a memory palace, using the method of loci technique to recall yet another (third) room, situated in another urban space and place, and moment.

The room of my memory is located on the third floor of a vast and vacant warehouse in Queens in New York City, adjacent to the rail yards and multiple rail lines of Hunter's Point. Highly reverberant and acoustically idiosyncratic, its high ceilings and reflective concrete surfaces take in the sounds of the passing trains through open windows, amplifying them to a volume that is surprisingly, and nearly alarmingly loud. In June 2011, I spent a week in this room, listening and recording, and then composing and performing a sonic response to what I heard: a slowly shifting field of live-generated feedbacks, glissandi and drones, augmented by unpredictable acoustic entries generated by trains, birds and automobile engines, all resonating profoundly in the room. To this I added my own performative interventions on live-processed electronic accordion. Sounds moved from density and stillness, to moments of gap and rift, disappearances and misfirings.

Brussels and Hunters Point, Queens now exist at Invisible Places in a single physical space – and thus are neither compositionally nor acoustically isolated from each other. Their real-time (though synthetic) sonic interaction enable shifting and sometimes startling juxtapositions to take place throughout the duration of the work. Circumstance and being meet, one place after another.

My focus has been to articulate and build multiple and interdependent compositional structures and systems emphasizing tenuous states, relationships between object, site, gesture and meaning, and potential for entropy as a compositional tool. With sound, I investigate tensions between the real and the ephemeral, and slippages between phenomenological experience and memory into the poetic uncanny.

Format: 7-channel surround sound

Duration: 15'43"

Medium: processed field recordings, amplified objects, audio feedback, electroacoustic instruments

PENDLERDRØM (1997)

Barry Truax

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Electroacoustic Composer & Acoustic Communication Researcher, Simon Fraser University

Abstract

Pendlerdrøm (or “Commuterdream”) is a soundscape composition that recreates a commuter’s trip home from the Central Train Station in Copenhagen. At two points, one in the station and the other on the train, the commuter lapses into a daydream in which the sounds that were only half heard in the station return to reveal their musical qualities. It is hoped that the next day the commuter will hear the musicality of the station’s soundscape in a different manner as a result of the dream; the rest of us may discover the very same aspects the second time we hear the work.

Pendlerdrøm is available on the Cambridge Street Records CD *Islands*, and the SKRAEP double CD *Pendler*.

Kaleidoscope Music

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Abstract

Kaleidoscope Music was originally composed as the audio component to the audiovisual installation *Kaleidoscope Wallpaper*, a collaboration between me and my friend the Shanghai-based artist Chen Hangfeng. It was originally exhibited at the Today Art Museum in Beijing in a custom built hexagonal room. Hangfeng built custom kaleidoscopes and fitted them to two closed circuit security cameras positioned inside and outside of the gallery. Next to these I hung two microphones, and composed an algorithmic, real-time audio processing system that attempted to mirror the way a kaleidoscope functions, fracturing and reconfiguring the sounds of daily life into something unexpected and beautiful. No additional sounds are added to the original signal; harmonies are built from the existing frequencies of the input sound by use of a bank of narrow bandpass filters. Usually when I present this work, I incorporate either a live audio signal from the nearby environment or a field recording taken from the same site at an earlier time. For this presentation, I have used two field recordings I made while hiking around Hong Kong's Lamma Island in July 2012.

Interlude

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Abstract

Interlude is a multi-channel audio work created from recordings made in a tunnel underneath a busy road in Glasgow. The tunnel runs parallel to a river, and perpendicular to the road above, both of which present bounded, directional fields of flow. The tunnel itself invites a passage through – as one enters the darkness, the light from the other end offers an irresistible draw, and the path which the stone structure encloses has its own sense of directionality. However, the acoustic qualities of the tunnel belie these linear spatialities: the acoustic reflections are everywhere – a broad, multi-directional field of sonic feedback, rounding out the traffic sounds from above; exploding the linear passage of footsteps and voices; distancing and smoothing the flow of the river – now out of sight – into a rush of dampened white noise that hovers in the darkness.

Sonically, then, there is something of a momentary pause in the flow of the surroundings when in the depths of the tunnel, aided by the darkness that envelopes and expands the field of experience. Working within this “pause-space” the work draws upon the resonances, reflections and surface textures of the arched structure that houses this space, extending the pause into a focussed exploration. This exploration includes listening to the acoustic activations of the space as bodies pass through it; tracing the scuttling sounds of leaves and litter blown through the tunnel by gusts of wind; extracting sonic materials from the intricate details of this built environment; and actively playing the space, sounding out its resonances via instrumental means.

Taking up the invitation presented by the sonic qualities of this environment to wait a moment – suspending progressive motion, absorbing the potentiality of the darkness that lies beneath the curved ceiling – fuels a revealing of the many sonic layers that may be encountered here. In the shadows of the tunnel, this both creates knowledge of the place and feeds the imagination, consequently generating both a sense of emplacement and an offering, or opening up, of the possibility of a coinciding dream-space. Indeed, in dwelling here, the

wandering mind follows the trails of the music of this space – its potentiality, or immensity (Bachelard) forming, in this moment, “the movement of motionless man” (Bachelard, 1994).

The experience of grasping hold of the momentary lull felt as one walks through the tunnel, and lingering in its spatio-temporal world through dwelling and daydream, finds resonance in Yi-Fu Tuan’s notion of place as pause, elucidated in his suggestion that “each pause in movement makes it possible for location to be transformed into place” (Tuan, 1977). The potential of the acoustic qualities of an environment to draw such a pause-space in the flows and directionalities of urban space is an important aspect of our auditory life in the places we build and inhabit. In creating this work I was concerned with exploring how these attributes of pause/flow and both physical and imagined spaces can contribute to a sense of place.

Superfund (revised 2013–14)

Billy Gomberg

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Independent artist

Abstract

Superfund is a work I began in the winter and spring 2011, two years into working in the Gowanus neighborhood in Brooklyn NY. The origins of this piece predate and inspire my short album on Flaming Pines, Rivers Home: Gowanus Canal. The title of this work refers directly to the canal's Superfund designation by the EPA, which occurred while I worked there.

The work takes a wide, impressionistic view of the landscape, with field recordings taken as near as possible to the canal forming the canvas of the piece. Added to this are materials sourced from analog and hybrid synthesizers and prepared bass guitar.

The Gowanus is firstly an industrial space, a purpose-built landscape, surrounded by shifting neighbourhood characteristics: the edge of gentrification equidistant from mid 20th century public housing developments, abandoned buildings, active business operations, and the canal's clean up crew. As it's own psychogeography changed around me, what is to most a transitory space became to me more static and real as everything else seemed to move around it.

A bit closer to home

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Abstract

This piece explores the idea of sound romances¹ and aural memories that connect us to a specific time and place in our lives. Changing soundscapes can tell us a lot about the history of a place and how it has changed over time. The sounds may have changed due to industrial engineering and economic developments. As composers we can create virtual soundscapes that can document the sounds of the past and recreate it. We can use the medium of Electroacoustic music to express the importance of changing soundscapes through the creative use of field recordings and spoken word. It is interesting to see what sounds people remember from their past. Why do they remember certain sounds more than others? Is it because they are disturbing? Is it because certain sounds are associated with a particular feeling from a specific time and place?

This composition brings together elements of soundscape composition, spoken word and electroacoustic techniques within an 8-channel speaker setup.

1. Sound Romances: Any past or disappearing sound remembered nostalgically, particularly when idealized or otherwise given special importance. Whereas new sounds are often experienced as sound phobias, old or past sounds are often elevated to the category of sound romances in memory.

Spoken Word: Tiernan Martin.

The Sonic City

Camilla Hannan

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Abstract

Do those of us inhabiting cities ever stop to think about how the sounds they make inform the way we live? What is about the ordinary that affects our sense of place and understanding of who we are? Amongst the traffic buzz and air conditioner hum, is there beauty in the banal? In *The Sonic City*, Camilla Hannan speaks to artists and everyday people to discover their thoughts and impressions of the sounds of the city. What she reveals is a rich roar of the playful and sublime.

The radio feature *The Sonic City* had its first broadcast in March 2014 on ABC Radio National Australia in the *Sounds Like Radio* slot. The program uses material from the Australian sound festival *Liquid Architecture 2013 The Sonic City* including interviews and live recordings from Haco, Toshiya Tsonoda, Catherine Clover, Philip Brophy and Francisco Lopez.

The program was produced by Camilla Hannan and commissioned by ABC Radio National's Creative Audio Unit.

Straight Line

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Abstract

In the Information and Communication Technology era we are living in, it is interesting to focus on the last paradigm that has influenced the way cities have grown: the car. The social and economic boom of the late fifties radically changed the way western citizens experienced cities. Suburbs grew along the roads that were connecting urban nodes. Cities were changing: the importance of communicating the products that were sold inside the buildings facing the roads was more important than the buildings themselves. Urban sprawl is the result of those days. One of the most important issues that had to be solved in that historical and social context was how to explain the sense of the places the citizens were living in and to develop the tools to do that. In those years, revolutionary theories and seminal books were written by a new generation of urban theory researchers. The most important were MIT professor Kevin Lynch and his *The Image of the City* and architectural critic Reyner Banham and his *Theory and Design in the First Age Machine*. During the summer of 1968 Robert Venturi and Denise Scott Brown analyzed the commercial strip of Las Vegas without any prejudice and with a different perspective. They considered American urban sprawl and its relationship with a car driver's point of view. The results of their conjectures and researches was *Learning from Las Vegas*, one of the most influential books of those years. The year before, Lynch's student Michael Southworth started soundscape studies during his Master in City Planning at MIT, analyzing central Boston' sonic environment. But it was only in 1970 that Murray Schafer started developing the founding theory of soundscape studies.

Since the new ICT paradigm has not yet materially transformed the cities we are living in, we think it is still important to speculate on the sense of places influenced by cars. Our case-study is the straight road that connects Riva and Arco, two Italian towns in the Alps. We have

produced an audio-video survey, which is composed by two video outputs, the left and the right sides of the road, and by two mono audio tracks. Each track is the superposition of two layers. The first one is the noise of the road and of the car that is going through it. There is neither attack nor decay. It is an acoustic straight line: the sonic answer to the straight car-city. The second layer is a survey of the interior of the buildings that are facing the road. The private and semiprivate soundscape is monotonous, the music that comes out of bars and malls' speakers is always the same, people seem scared to talk. The video was distorted by a fish eye lens so that the strip becomes a loop. The car is stuck in a fragment of a fractal city.

Lingua Franca

Catherine Clover

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audiovisual artist / Swinburne University Melbourne (Writing) / RMIT University Melbourne
(Fine Art and Sound)

Abstract

One of the ways we position ourselves as superior to all other species is through our complex language use, yet current scientific research tells us that some animals and in particular very common birds that live in cities, have both the cognitive and biological capacity for complex language akin to our own. This field recording documents the voices of a group of seagulls and pigeons outside the State Library of Victoria in central Melbourne. A recording of a falcon plays sporadically from the roof of the library, and is intended to scare away both groups of birds who are commonly considered urban pests. This is a popular place for eating lunch and meeting after work. As they call and swoop, chatter and mutter, squabble and shove and scavenge for scraps, the voices of the birds mix readily with the sounds of human activity.

Nine Elms

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Abstract

A soundscape depicting regeneration in London with particular attention on the Docklands and Nine Elms sites. London's Docklands is a regeneration area that was declared in the early 80s. It now contains London's second financial centre. Nine Elms is a largely industrial area of South London which borders on the river Thames. It is the site of the new American Embassy (complete with moat) and thousands of units of luxury housing. The piece is edited together from binaural recordings of public soundwalks around the two sites. It seeks to use sound as a way to understand the changes to the social and built environment primarily in Nine Elms, but with Docklands acting as a reference point for a completed regeneration.

Urban regeneration is an ephemeral concept that finds its root in a biological term describing the regrowth of damaged tissue. This etymology acts to legitimise it as a quasi-natural process. However, urban regeneration is frequently motivated by a political understanding of a given space. A particular political conceit that has been used in relation to the Nine Elms site is that the development takes place in part of London that is at best undiscovered and at worst completely empty. This narrative allows no space for the wholesale food market, flea market, mail sorting office, nightclubs and transport infrastructure which do presently exist there. The motivation of this piece of work is to give them a voice.

The piece concludes with recordings of the Docklands / Canary Wharf business district in the morning rush hour. These sounds are offered in contrast to the recordings of Nine Elms, depicting the kind of space that many hope the regeneration will achieve. The repetitive, echoing footsteps of office workers offer a very different type of economic soundscape to the calls that ring out on the Nine Elms markets.

The piece also contains a narration, written in response to soundwalks through the two spaces.

Apartamento em Lisboa (narrador presente)

Diogo Alvim

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Abstract

The space heard in this piece is remote, but concrete. It is real, but it is also constructed. The listener might feel inside or outside, centred or peripheral, present or distant. The construction of this space is also the construction of a narrative, documental, both real and fictitious, where the narrator (the composer, the listener) walks along with the sound, but also creates perspective. *Apartment in Lisbon (narrator is present)* is an exploration of an aural architecture to find the resonances of the everyday processes.

The piece was composed from recordings made in a house in the centre of Lisbon in the summer of 2013.

The Invisible Generation

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Independent artist

Abstract

The sound installation consists of various newspapers of different dialects, which are illuminated from within. They signify the means of visually recording the not so transparent media. Contemporary media is overloaded with the visual noise of our lives but the noise we experience everyday is the one that toils inside of us. At a time in our culture where everything is so easily made visible and transparent we often find the mediums that we choose to express ourselves are the ones making us invisible. By choosing to use a multitude of languages spoken in Mumbai (India) I have tried to erase meaning making systems, which could be comprehended by some people but totally irrelevant to others. This socio-linguistic overlap is the noise of our culture – our acoustic ecology – the excess material left over after our cultural conditioning has churned it out as a surplus. All of the mechanisms for interrupting transmission and creating interference make noise and are as much a part of the installations content as the meaning of the messages conveyed. This zone of indistinction is not the negation of language but rather its field of emergence – not its unstructured opposite, but the event of its coming into being. The installation tries to highlight this unrest of our daily acoustic ecology through an immersive experience.

Noise, in its metaphysical guises, is often posted as the not-yet-meaningful or as that which lies beyond or below meaning; a whirlpool of chaos from which sense emerges. Nor can noise be distinguished as unwanted sound, since this posits it as a purely auditory phenomenon. To refer to noise as excess does not require it to come 'from the outside', a radical exteriority, nor does it come from a binarism between inside/outside. Rather, noise exists structurally or relationally; its presence relies on an assemblage of perceivers, generators, borders, vibrations, ideas, geographies, spaces and materials. Noise does in fact create a meaning, first, because the interruption of a message signifies the interdiction of the transmitted meaning, signifies censorship and rarity; and second, because the very absence of meaning in pure noise or in the meaningless repetition of a message, by unchanneling auditory sensations frees the listener's imagination.

Recordings

Dublin:

- Struck aluminium poles/railings
- Passing trams & traffic
- Supermarket fridges
- Water lapping & passing jet
- Hydrophone recording of pond life
- Tarmac ploughing sculpture
- Rain dripping in courtyard
- Coil mic recording of traffic signals & ticket vending machine

London:

- Joggers & cyclists on tow path
- Binaural mics inside beer bottles on Thames at St.Paul's
- Contact mic recording of steel cables & passing pedestrians on Millenium Bridge

Concrete Sonorities

Fergus Kelly

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Independent artist

Abstract

Concrete Sonorities (2013) was composed with field recordings made in London and Dublin in 2012, using a variety of recording techniques. Most recordings have been left untreated, except for some, which have been pitch-shifted to draw out latent harmonic content.

This composition explores the natural sound colour and dynamic of the locations as compositional elements, creating a dynamic and imaginative interplay between various aspects, a sense of incident and momentum, which moves it away from pure documentary, and creates a set of relationships that engage the listener in a narrative flow, a sonic experience of cinematic dimensions, a tactile trawl of shifting perspectives, moving between forensic scrutiny and widescreen depths.

The work is about creating a space in which to connect with the sonic environment in a considered and meaningful way. Hearing tends to be relegated to a poor relation to seeing in a visually overloaded world, yet it is something we are surrounded by all the time, and cannot shut off from, even in sleep. Unlike our eyes, we can't close our ears. My work encourages focused listening and a more active and engaged relationship with the sonic environment.

Once Upon a Time

Hildegard Westerkamp

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composer, radio artist and sound ecologist

Abstract

One day in the Fall of 2011 I wrote a fairy tale entitled *The Girl, the Witch, and the Magic Bird*. Ultimately it is about the power of the voice, the poisonous influence of the Muzak Corporation (among others) and the magic of listening and music making.

It seemed obvious that my two grandsons Caleb and Caius (10 and 7 at that time) should be the readers of this story. To my great delight they took up the challenge and surprised me with their hard work, endurance, and their lovely ways of speaking and reading. To read such a long story at their age and have it recorded by a very picky 'Oma' who wants to have every word and syllable announced as clearly as possible, is not an easy task. I was delighted by the creative energies that emerged in all of us during the process and the end result was a series of good recordings from which to choose for this piece.

The girl's voice is that of my daughter, the boys' mother, recorded when she was a little girl. Her voice is featured in an earlier piece of mine entitled *Moments of Laughter* (1988) and reappears here.

The recording of the loon was made by members of the World Soundscape Project at Simon Fraser University, Vancouver, Canada, in the early 1970s and is used here by permission.

Once Upon a Time was commissioned by the Western Front in Vancouver for a whole-night event in January 2012, entitled *Circle of Sleep*, the concept of which was conceived by music curator DB Boyko. On the night of the premiere event, the audience reclined comfortably on floor mats with blankets and pillows listening to this bedtime story, perhaps dozing off, relaxed and calmed by the end of it, ready to hear and dream of more sounds to come throughout the night.

Radial Transference

Hugo Paquete

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External Collaborator at CESEM – Centro de Estudos de Sociologia e Estética Musical

Abstract

Radial Transference pretends to understand the possible relationship between two distinct spaces. These spaces, recorded using a field recording technique, with transfers and contamination between them on an atomic scale, reflect conflict, causality and turbulence. Making reference to the spaces' characters and with an atomistic approach to the proliferation of frequencies that could resemble an electrical activity that crosses the entire space, *Radial Transference* articulates as a transitive reality in a multi-time scale.

The piece generates a compositional sound universe as an entropic dynamic locus of a new ontology. Hugo Paquete explores granular projections of sound in order to build small phrases that articulate and turn over the piece with rhythmic variations and noise. These variations are sometimes operated until a threshold signal that is processing the sound is lost and turns into another sound form that apparently does not associate with reality. Processes of multiple pitch variations, amplitudes, and frequencies of sound build the idea of atomistic electricity and the activity of small scales that relate geometrically and recreate frequencies that cover the nexus in entropic chaos.

Friction

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Abstract

Friction explores the sounds and structures that are produced when a secondary force is applied to an object in physical contact with another; overcoming the force of friction and creating motion, heat, and sound in the process. The work is focused on the buildup of this secondary force and the ultimate release of energy as the force of friction is exceeded. The sonic material in the work is based on real-world sounds produced during this physical process.

Year: 2005

Duration: 7'40"

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“The Police as Amplifiers”: Sounds of Policing the (Occupy Movement) Crisis

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California State University, Dominguez Hills, Los Angeles, California, United States

Abstract

In the Autumn of 2011, the world witnessed the rise and fall of the one of the largest global protests ever recorded with the Occupy Wall Street Movement – echoing as 750 + simultaneous, solidarity actions across 80 + countries. The recording and distribution of sounds and sights from the various Occupy encampments connected otherwise disparate protests across global cities, and led to a worldwide rethinking of urban space, economics, and planning. Less known are the ways in which the wide distribution of the sounds and visuals of Occupy also led to heavy state scrutiny and surveillance, wherein the same recordings and recording technologies that fomented Occupy protests were repurposed for state repression.

This audio works presentation offers rare sound recordings of police dispatches from October 2011, detailing the real-time, police eviction of one prominent Occupy encampment, Occupy Oakland, in the state of California in the United States. The presentation builds on the concept of “the police as amplifiers,” offered in *Policing the Crisis* (1978) by Stuart Hall, et al. The curator theorizes that listening to the sound of the police might serve to “amplify” otherwise silenced economic and political crises in urban space, and allow for a consideration of how such crises may be managed (or heard) differently.

Particular to the case study of the eviction of Occupy Oakland, this sonic presentation might be listened to “on repeat” as a way to understand approaches to policing of mass protest and mass crises in the contemporary moment. The majority of the large Occupy encampments globally were similarly evicted in the weeks following the eviction of Occupy Oakland in 2011, and led to inquiries and later reports that local, state, and federal justice agencies, including the FBI and the Department of Homeland Security in the United States, collectively coordinated the policing and repression of Occupy protests.

The presentation curator, Dr. Jeb Middlebrook, is a DJ and an Assistant Professor of Sociology at California State University, Dominguez Hills in Los Angeles. Jeb was a participant in

Occupy Los Angeles, and was part of a national network of Occupy organizers linking issues of racial and economic justice. His current book manuscript, *Prison Music: Containment, Escape, and the Sound of America*, explores the aesthetics and politics of incarceration in U.S. society from the nineteenth to the twenty-first century, through listening to the sound of prison in popular culture, policy, and protest.

Oil and Gas

Jeremiah Moore

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Jeremiah Moore Sound Design, Moment Audio, Earwax Productions

Abstract

Oil and Gas is a sonic journey through desert landscapes of fossil fuel production, composed of field recordings made in the shale gas fields of the San Juan and Green River Basins of Colorado and New Mexico. These lands are centers of fossil-fuel extraction for the present and the near future, and are positioned as strategic energy resource for energy security for the United States.

A wilderness filed with machines, vast areas of remote high desert territory are spider-webbed with access roads, pipelines, wellheads and harvesting systems. All this industrial infrastructure is what makes possible an energy-use profile unprecedented in the history of life on earth. We turn our ears toward this infrastructure, to better understand ourselves within the world.

This work is part of a series of sonic examinations of hidden works and underpinnings of the Industrial Anthropocene era.

Improvised vocals and percussion excerpt by Friends of The TANK: Max Bernstein, Mark McCain, Jeremiah Moore, Bruce Odland.

Medium: Edited Field Recordings

Duration: 10'07"

Xiake

Jianyu Fan

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Digital Music programs, Dartmouth College, New Hampshire, USA

Abstract

This fixed media piece is based on the Wu Xia culture in China, made known to the world through Kung Fu stories. In this piece, the composer incorporates sounds of traditional Chinese instruments and synthesized samples. The piece is made in pure data, and edited in logic pro. The spatial effects indicate the free and uninhibited movements of Xia Ke – a master of Kung Fu and representative of justice who rebelled against the imperial court. Wu Xia reflects the idea of individual heroism and the pursuit of freedom.

The piece and performance setup lends itself to performance in urban spaces – city parks, gardens, or similar. For Invisible Places Sounding Cities, the performance will be adapted to the specific site.

Sonic Taiji

Jianyu Fan

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Digital Music programs, Dartmouth College, New Hampshire, USA

Abstract

This piece is a studio version of a performance using a mobile app *SonicTaiji* created by the author. The app sonifies movements of the performer in 24 styles of Taiji in real-time. Each sound is closely related to its corresponding gestures and the meaning of each gesture. This piece can help Taiji performers better achieve meditation and learn Taiji performance using recording samples and various synthesis techniques such as phase vocoder, comb filter, convolution, high/low pass filter, reverb, etc.

The piece and performance setup lends itself to performance in urban spaces—city parks, gardens, or similar. For *Invisible Places Sounding Cities*, the performance will be adapted to the specific site.

Noise Meditations

Jordan Lacey

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RMIT University

Abstract

Jordan Lacey is a sound-artist, musician, sonic researcher and sessional lecturer based in SIAL Sound Studios at RMIT University, Melbourne, Australia. His research concentrates on the recomposition of everyday urban sounds with site-specific soundscape installations that transform the sonic environments of urban spaces. His installations and performances reintroduce synthesized site-specific sounds into the spaces from which the sounds were recorded, to create real-time soundscape compositions.

The stereophonic sound work *Noise Meditations* is composed with sound material created for two recent public urban soundscape installations completed by Jordan. The first, *Revoicing the Striated Soundscape*, was a City of Melbourne Public Art commissioned sound-work installed in a Melbourne laneway from June to November 2012. Four speakers encased inside readymade air-conditioning units networked to a computer system played eight soundscape compositions, which merged with the soundscapes of a laneway to create diverse listening experiences for those transitioning the space. The second, *Subterranean Voices*, was commissioned by the 2013 Liquid Architecture 14th National Festival of Sound Art. The work was a series of live performances in The Trench; a cavernous concrete cuboid situated beneath Melbourne's Federation Square hidden between platforms 12 and 13 of Flinders Street station. Over two days Jordan performed 12 iterations of a 20-minute soundscape composition that integrated the existing sonic site conditions of passing trains, platform announcements and gurgling pipes stretching along the innards of the Trench.

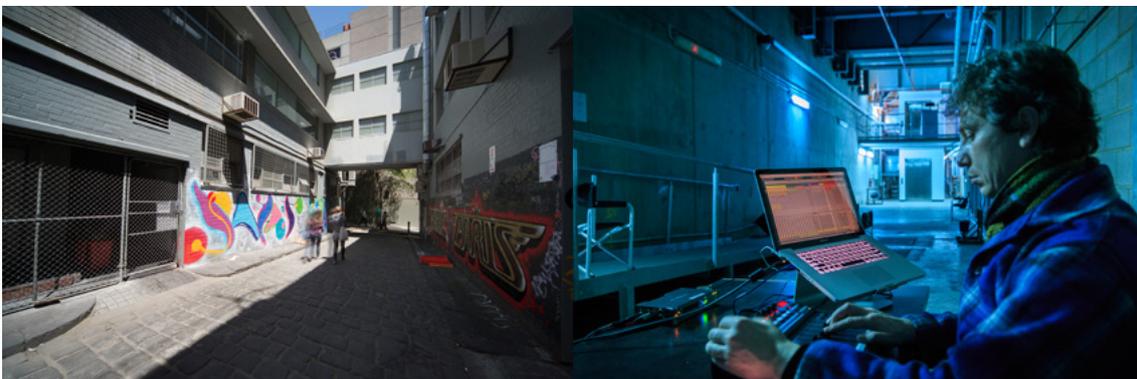
All sounds included in the work are resynthesized site-specific sounds that were recorded in the locations where the installations were eventually realized, and were amongst the synthesized sounds reintroduced into the sites. *Noise Meditations* emphasizes in particular the similar sonic characteristics of a stationary train and an operating air-conditioner, which is suggestive of the ubiquity of low-frequency broadband sounds that transverse urban environments. The piece explores the potential of sound-art to respond to low-frequency sounds, typically referred to as noisy or “lo-fi”, in urban spaces by recomposing these

ubiquitous sounds into diverse and immersive listening experiences. Also emphasized in the work is the transformation of sound signals, including train horns and PA announcements, which signify the rhythmic cycles of everyday social organisation; such transformations aim to evoke imaginative relationships with the urban by reconstructing sounds that typically signify banal repetitions in the social spaces of the everyday.

In *Noise Meditations* studio-synthesized urban sounds are recomposed as a work of urban fantasy in which the listener enters a sonic space simultaneously familiar and alien, encouraging a reassembling of relationships with oft-encountered sounds. The work suggests the meditative potential inherent in what are typically referred to as noises, while maintaining the capacity of urban noise to exhilarate the senses.

Noise Meditations played as part of the Melbourne Now exhibition at the National Gallery of Victoria in Melbourne, Australia from November 2013 to March 2014.

Format: 4-channel
Duration: 1024
www.hiddenounds.net



Left: Revoicing the Striated Soundscape © Carla Gottens. **Right:** Subterranean Voices © Ellen Dewar Photography.

Transient Lapse

Juan Cantizzani

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Weekend Proms (<http://weekendproms.tumblr.com>)

Pablo Sanz

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Sonic Arts Research Centre (SARC), Queen's University Belfast

Abstract

Transient Lapse is a site-specific sound installation created for a pedestrian and cyclist tunnel in The Hague. The work introduces a shifting aural topography based on the daily rhythms and the resonant architecture of the location.

The sound changes over the 24-hour cycle, interacting with the existing soundscape and the movements of passers-by. The result is an added aural layer which is perceived as not having physical origin and belong to the site. As an unmarked sound intervention in the threshold of perception, the work aims to induce a switch of focus, a momentary lapse in the urban transit experience. The piece invites to be discovered, to maybe stop and listen.

The project draws inspiration from the notion of 'Rhythmanalysis' proposed by Henri Lefebvre, on which he outlined a method for analyzing the rhythms of urban spaces and their effects on the inhabitants of those spaces. The spatial behaviour of the sound and the overall temporal structure are based on the cyclical rhythms of the site, accompanying, contrasting and enhancing them.

The sound is generated in real-time, controlled with a software tool written specially for the project. The piece is based on scored algorithmic processes linked to a clock. This compositional approach makes the sound to be similar every day/night at each of the 24-hours, with variations in spatial and timing aspects due to the algorithmic behaviour. The source audio materials consist of streams of computer-generated synthetic sound based on an analysis of the resonant characteristics of the tunnel and additional materials based on transformed recordings made through large structures on site. Each of the eight independent synchronized audio channels are spatialized through purpose-built loudspeakers disguised across the 90 meter length of the tunnel.

The experience of being there and the subtleties which are at the core of this work are not possible to be conveyed through any recording. The piece which accompanies this documentation of the intervention features a layered collage of excerpts taken from a set of durational stereo recordings made over a 24-hour period. All recordings were made at the same fixed positions inside the tunnel with the two microphones spaced around 30 meter.

Studio per un Paesaggio

Julian Scordato

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Digital Ensemble

Abstract

The composition *Studio per un Paesaggio* (four tablets and electronics, 2013) was born from a project realized in 2013 and promoted by the Municipality of Pordenone (Italy) and Digital Ensemble. This project – called “Il soundscape della città di Pordenone” – aimed to valorize the urban soundscape through a series of interdisciplinary initiatives that involved aspects ranging from acoustic ecology to sound art, starting from the field recordings and leading to a soundscape composition. The steps were retraced in the live performance by the action of four musicians – through their gestures defined in a score – who reproduced and processed sounds to be placed in a new listening space, gradually rebuilding the urban geography with real and imaginary landscapes.

De Zwaan

Kevin Logan

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PhD student with CRiSAP, University of the Arts London

Abstract

This recording made in 2011, crosses the Erasmus Bridge in Rotterdam known locally as De Zwaan. Documenting my physical intervention in the environment, my small digital recorder is held close to the canopy of my umbrella as the heavy rain creates a sound similar to the scratches on vinyl records, this is accompanied by the thundering beat of a pile driver from a nearby construction site.

The journey starts as I cross from the south bank of the Nieuwe Maas, ending with the distorted rumbles of overhead trams as the input peak indicator flashes and I take shelter from the weather under the bridge on the north side of the river.

Hearken the Sound

Liam Slevin

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Independent artist

www.liamslevin.com

Abstract

Hearken the Sound is a simple collage of field recordings taken from Detroit, Michigan. Detroit is home to an unprecedented noise pollution problem that began in 2011. Originating out of Zug Island, a highly secured industrialised island on the border of America and Canada. The 'Windsor Hum' is a persistent and invasive low-frequency (30-40Hz) humming noise which is only audible to certain people.

Just Too Many Words

Lidia Zielinska

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Academy of Music, Poznan (Poland)

Abstract

Just Too Many Words was born from the excess of words in the TV news and comments. How and to such extent it is worth anaesthetising yourself to keep away from the streams of words and at the same time not to miss anything important from the current moment?

None of the events during the day I was recording the materials for my piece, had any importance for this world's fate, there were an ordinary journalist food, a matter to fill in an air time, thus, an empty talking only. I was not under any historical pressure, so I could handle unceremonious with the recorded materials.

In this piece there is no place for a silence – from the 'ideological' (subject of the piece) but also technical reasons. The only moments of silence show that silence is also dirty, seems to be a second-hand product, which discloses an information noise pollution of each piece of environment. For me the only reasonable compositional procedure not to bore the audience was to build the whole piece from the planes of different textures, referring to different ways of speech perception.

Duration: 9'39"

Awarded at emsPrize 2001 contest for text-sound composition (Stockholm).

lidiazielinska.wordpress.com

La Città Addormentata

Ludwig Berger

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SeaM Weimar

Abstract

The soundscape piece *La Città Addormentata* works with subtly treated recordings of a September night in Venice. In the nighttime, the city falls almost into complete silence: The canals are calm and one feels the absence of the wind. As always, there are no cars and even near the Piazza San Marco there is hardly any sign of nightlife. During the day, the bustling of the crowds limits the listening radius to one's immediate surroundings while at night, even quiet sounds can be heard across large distances in every direction. What dominates the night soundscape are the machines of the tourism industry: generators, air conditioning, refrigerators, washing machines, ATMs etc. They become elements of a massive „city machine“, populated only by rats and a few insects. As in absolute silence, one can hear his own nervous system and blood circulation. The silence of the night reveals the hidden organism of the city.

Floating Sound

Mari Ohno

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Independent artist

Abstract

This work is a composition using the sound of the composer's bloodstream as a sound source. We release extremely subtle sounds from inside our bodies which are hard to perceive. Although the sound is made by the body, it cannot be heard because of the limited audible range that a human being can hear. This work is a composition using the sound of the composer's bloodstream as a sound source. The purpose of this work is to deconstruct and reconstruct the components of personal biological information via computing. These sounds were composed to express another reality beyond the boundary of the animate/inanimate.

Speaking Clock

Mari Ohno

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Independent artist

Abstract

This work is an electroacoustic composition created with the recordings of speaking clocks in various sites around the world. A speaking clock is a tool of sonification of “time”, a phenomenon people cannot hear. It has various expressions of time depending on the country or region. In this work, the music mixes various expressions of time, based on the concept of “the expression of time perception”. Through this work, I attempt to give listeners curious and unique feelings through the same sound experience depending on their cultural background.

To Begin Is To Follow On From

Maria Papadomanolaki

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CRiSAP, LCC, UAL

Abstract

To Begin Is To Follow On From is a piece inspired by my fifteen day residency at Tobačna, the old tobacco factory in Ljubljana in Slovenia. The work marks an uncanny sonic territory through an iterative exploration of the liminal space of the factory. Different strands of voices, sounds and miniature compositions transmit glimpses of the location as the listener follows a series of paths, doorways, dead ends, trains, balancing between the frictions of imaginary, personal, collective, political, discursive, historical, social and poetic narratives of the present, the past and the future, the possible and the intangible.

To Begin Is To Follow On From draws on material collected during soundwalks, workshops, interviews and in situ sonic and musical improvisations and is framed by the concept of dialogue as perception, of becoming rather than being in place. The piece was premiered on the 15th of January 2014 as part of “radioCona: REuse MESTO: REuseRADIO” and it was made possible with the support of CONA, CC Tobačna 001 / MGML.

Format: Stereo
Duration: 29'00"

Docklands Song

Melissa Deerson

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Independent artist

Abstract

Docklands Song is an audio piece created as part of an artwork/project called 'Field Trip', held in Melbourne, Australia in 2013. As part of an art residency at The Food Court, an old repurposed dining hall in Melbourne's slightly desolate city Docklands precinct, I organised a field trip in which artists and members of the public undertook a nature survey of the area.

Two hundred years ago, the locale was a brilliant blue billabong fringed with pink flowers. It then became the city's rubbish dump, and a working port. It was redeveloped around ten years ago, but people weren't drawn to the windswept, mostly treeless, exposed results. The aim of this project was to re-examine a place that is emphatically human-made (but not popular with humans themselves) and see what else there is to find.

Participants collected samples of soil, weeds, stones and rubbish, answered questions about what living things were present in the area, mapped their journeys, scattered birdseed and recorded the results, took themselves 'off-piste' to conduct their own investigations, drew pictures and ate trail mix. The results were collated and displayed in an exhibition which incorporated the results of the public event and reflected on how nature and commerce operate in urban areas.

This sound piece, *Docklands Song*, formed part of the resulting exhibition. The piece consists of audio collected from the Docklands area – sparrows, the faint sound of construction, the wind whistling through the treeless concrete spaces. This is overlaid with sounds created from objects and samples collected by field trip participants from the immediate surrounds – pouring sand, bits of metal clinking together, pebbles rolling in a jar, a small bell tinkling, a chip packet rustling. *Docklands Song* forms an ad-hoc, multilayered interpretative soundscape of an inhospitable space which nonetheless hosts a plethora of non-human beings and unsanctioned/unplanned objects.

Documentation of the project can be found at <http://www.melissadeerson.com/?p=1340>.

ЦДХ Sound Inventory

Eduardo Cassina

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METASITU -Future Tactics-

Liva Dudareva

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METASITU -Future Tactics-

Abstract

ЦДХ [Tse-de-ha] Space Inventory is an exploration around the memory of the of the urban experience. We recorded sounds that surround our daily lives.

Following an established route, in November 2013 we navigated the surroundings of ЦДХ (The Central House of Artists) and the adjacent Muzeon Park. The iconic enclave in central Moscow, Russia, houses among other things, a soviet-era sculpture park, a Chinese garden and a docked boat.

By walking through the space, we recorded the soundscape, but instead of capturing the audio indicators as they came, we filtered them: we named them. By doing so, we were adjusting them to our experience: what we heard was what we could name, and that is what was recorded in situ.

This resulted in an acoustic archive of words, an inventory of the soundscape, of a specific place and time. Yet the words, lexical preys, did not allow us to understand the minutia that make the soundscape special: how hard were the children laughing? how intense was the car sound? what was the man shouting? How did it feel when the helicopter flew over our heads? How hard was the wind blowing? Instead we have 'laughter, car, shout, helicopter, wind'. The sound deprived of its soul.

Half a year after the original recording, we revisited it, and transcribed it again, word by word. This second transcription distilled the original file even further, for the background sounds that may have given a hint or an indication of the quality of the sound, were gone. The resulting piece was cut and mounted into an acoustic collage, fragmented pieces of reality, much like our memory and sensory perceptions of that November day.

48Hz

Miguel Negrão

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SARC, Queens University Belfast

Abstract

48Hz is an immersive imaginary soundscape of Belfast. A composition that uses field recordings from *X Marks the Spot* as the ground material for a drone composition.

The composition attempts to unveil and present to the listener the inner world hidden in the drone of the telecommunication boxes.

Each drone, with a fundamental frequency close to 48Hz, is unique and presents different sonic characteristics. For this installation I have selected two of the boxes as the single material for the composition: Sunnyside Street and Lockview Road.

The field recordings were analyzed in order to determine the key frequencies from each drone. By applying narrow band-pass filters it was possible to subtract the ambient noise and isolate the drone.

The composition progresses from a more “objective” perspective towards a more “subjective” one. Firstly it introduces the original recordings. Then, each individual frequency composing the drone is presented through a partially random selection and accumulation algorithm.

X Marks the Spot by Matilde Meireles

X Marks the Spot is a web-archive, a slowly growing and playful map of Belfast assembled by tagging specific telecommunication boxes, only those emitting a drone (continuous hum).

The tagging process aims to engage people with the space around them, to understand how sound shapes our experience of the city.

By inviting other people to participate in the process, this activity is designed to spread throughout Belfast exploring alternative ways to relate with the urban environment and connect from A to B.

X Marks the Spot is also a curatorial project. Three artists were invited to explore different aspects and processes within the project. Miguel Negrão will show the first result, 48Hz.

Rift Patterns

Monty Adkins

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Centre for Research in New Music, University of Huddersfield

Abstract

Rift Patterns is all about the psychogeographical exploration of places and how they impact on our identity and feelings. Psychogeography has historically been associated with the exploration of our cities and the ‘drift’, and has been described by Joseph Hart as “a whole toy box full of playful, inventive strategies for exploring cities... just about anything that takes pedestrians off their predictable paths and jolts them into a new awareness of the urban landscape”. In *Rift Patterns* we wanted to continue our drift from the city, into the country and into our inner world of thoughts and relationships explored through Adkins’ audio and video by Jason Payne.

Year: 2014

Duration: 18’00”

Music: Monty Adkins

Video: Jason Payne

Moscow Street Network

Niklas Meier

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University of Leipzig (Institute for Musicology)

Abstract

The conceptual sound piece *Moscow Street Network* is based on a map of the Moscow road network (showing only the main roads, which are in a radial-concentric configuration). Using the “ASCII generator 2” (© Jonathan Mathews, 2005–2011) software, the image was first converted into a text file in which all segments of the picture were represented by 32 characters from the ASCII character set (M, &, @, B, W, Q, 0, E, b, 8, Z, 9, 6, A, I, U, 2, o, z, n, 1, S, t, C, X, 7, x, c, v, i, : and .). “M” was assigned to black areas, “.” was assigned to white ones. The other characters represent different shades of grey depending on how much surface they cover:

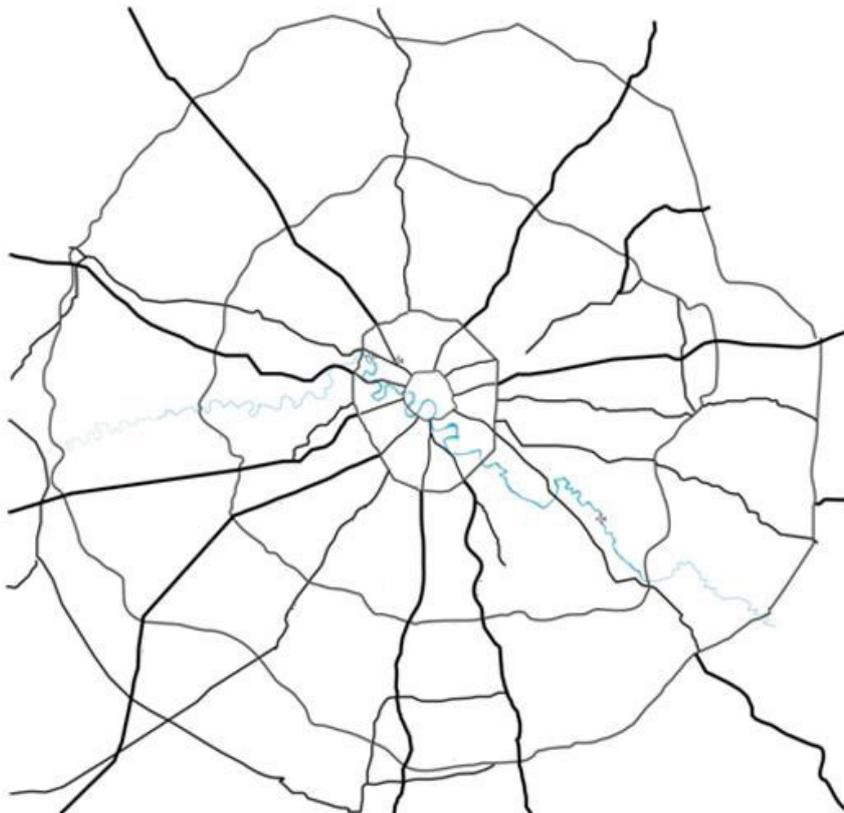


Figure 1. Original image. (Source: <http://www.flow-n.eu/2011/08/moscow%E2%80%99s-mobility-there-is-no-space-left-to-walk%E2%80%A6/>; slightly modified)

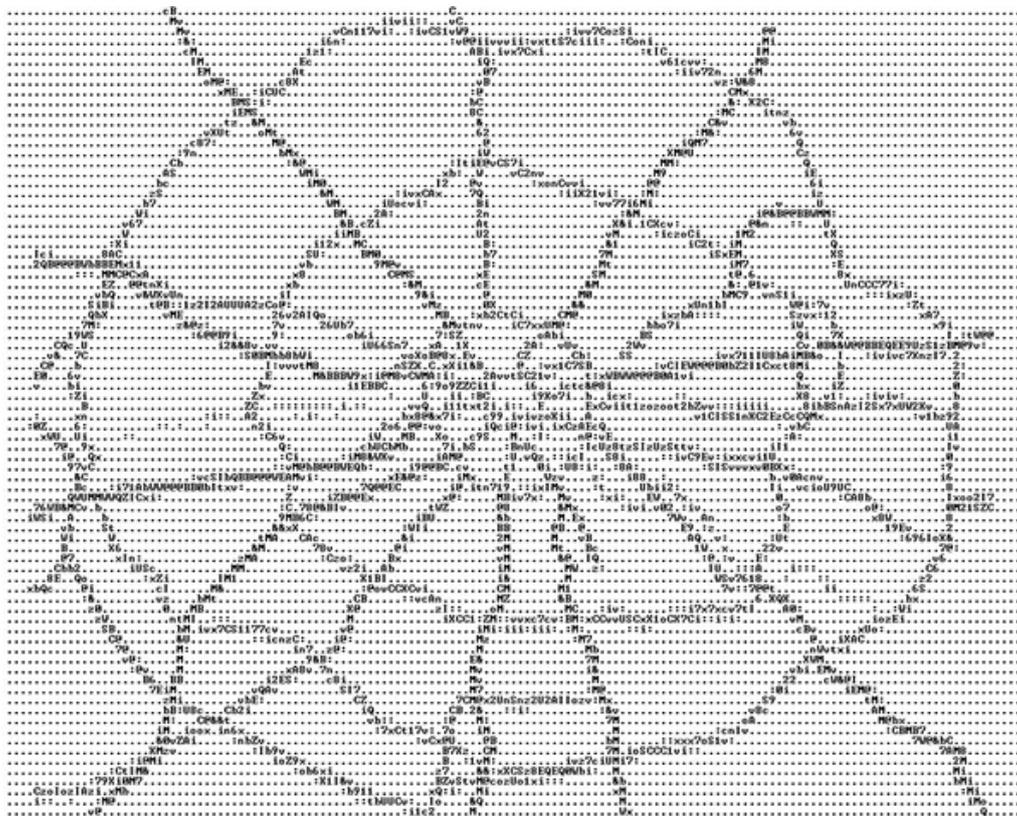


Figure 2. Representation of the image with 32 ASCII characters.

The text was then fed into a programme developed by the author with Max/MSP in September 2013, the “ASCII controlled polysynth”. This programme automatically captures the number of lines in an ASCII text and generates a pure tone for each line, to which an individual pitch is assigned using an exponential function (the lowest line has a frequency of around 30–40 Hz, the highest around 12–13 kHz, and the frequencies of those in between increase exponentially). To evoke an illusion of spatial sound perception, every other voice is emitted from the left channel, whereas the rest can be heard on the right one. The software reads all the lines in the text simultaneously from left to right and modulates the amplitudes of the sine waves depending on the characters in the lines that represent them. The value of the amplitude is defined by the surface area covered by the individual characters – “M” has the highest amplitude, “.” the lowest. Played at slow speed, the resulting sound, continuous and fluctuating, creates an auditory impression of the road network.

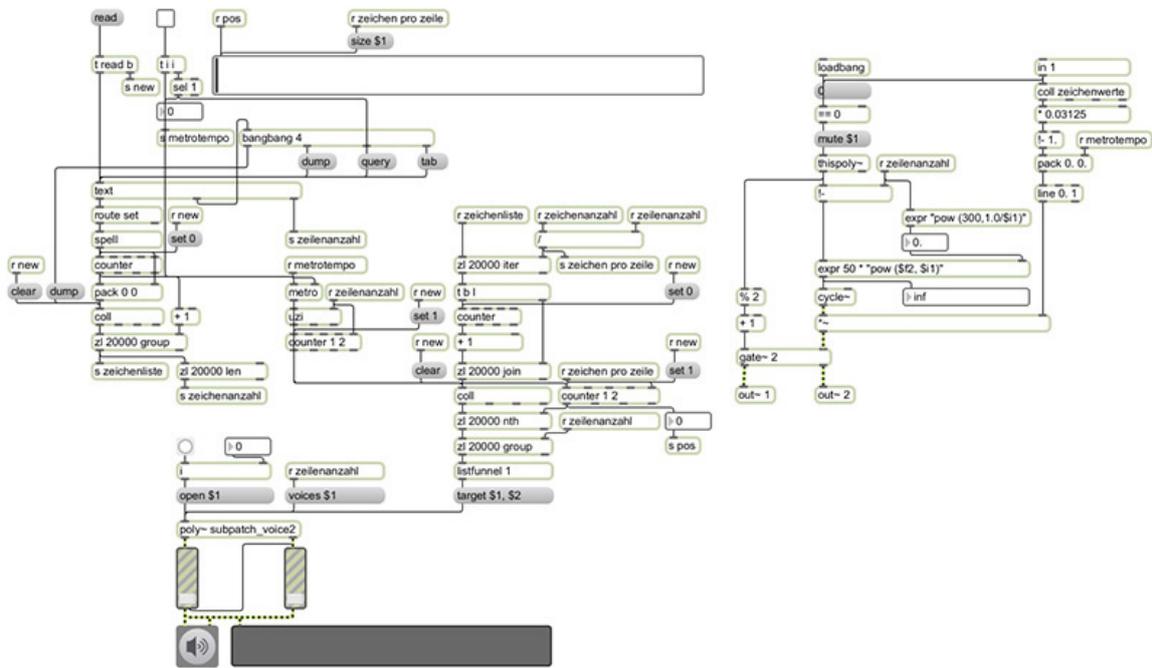


Figure 3. User interface of “ASCII controlled polysynth”.

Although the main roads of Moscow’s road network form the basis of the piece, it is not necessarily meant to allow the listener to hear the course of the streets. Rather, the aural appropriation of the structure of the street network, which actually follows technical, social, political and economic principles, reveals qualities that can almost be described as “musical”: it operates with single voices (originally the individual streets) that spread out, swell, move in parallel or counter to each other, cross each other, are led to a culminating point, shrink, vanish. Ideally, the piece will draw attention to the structural commonalities of artificial constructs of very different – in this case technical and aesthetic – provenances.

Sterfos

Orestis Karamanlis

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Bournemouth University

Abstract

The piece reflects my emotions about a small coastal village somewhere in the Aegean Sea. It encloses my memories for the place and its people, developing linearly by combining ambient recordings and spoken stories from the village with folk music and abstract elements. Here, I am primarily interested in the dramaturgical structure in the long scale. The main concern is to move away from a non-differential abstract soundworld and to retain a cultural identity by guiding the listener through a journey of experiences to catharsis, though without having any metaphysical allusions. The piece received the 2010 Giga Hertz Award for Electronic Music at ZKM | Institute for Music & Acoustics, Germany.

Limnee

Pablo Sanz

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Sonic Arts Research Centre (SARC), Queen's University Belfast

Abstract

Extraite des limbes des flaques, des mares et des étangs, se déploie une biodiversité fantasmagorique. Baissez-vous, un peu plus bas, un peu plus près de la surface, et buvez le bouillon par les oreilles.

Originally commissioned by Silence Radio for the edition *Hiver 2012: In the end*. Curated by Etienne Noiseau and Irvic d'Olivier (ACSR-Atelier de Création Sonore Radiophonique, Brussels).

Based on hydrophone and above water recordings made in ponds and subaquatic environments at multiple locations in Spain and Slovakia between 2007 and 2012.

Duration: 10'00"

[in]audible

Pablo Sanz

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Sonic Arts Research Centre (SARC), Queen's University Belfast

Abstract

unheard, out of earshot, indistinct, imperceptible, hushed, faint, low, infrasonic, muted, soft, muffled, murmured, quiet, whispered, muttered, mumbled, silent, soundless, still, noiseless, unclear, ultrasonic

[in]audible is a piece based on the exploration of hidden acoustic spaces. Departing from the notions of indirect listening and blind field recording, unconventional listening technologies are used to capture a variety of acoustic phenomena in the thresholds of perception. Magnetic fields, solid vibration, ultrasonic and underwater sound have been used as raw material in the composition, focusing on the spatiality, details and textural patterns of the recordings.

Originally created for FONair (UK) as a radio piece for headphones with a premiere broadcast in January 2013. New 8-channel version, Spring 2014. Source recordings made between 2008 and 2012 in Karlsruhe (Germany), Bratislava and Mala Fatra (Slovakia), Den Haag (The Netherlands), Catalonia and Madrid (Spain).

Duration: 31'15"

Offset

Pali Meursault

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sound artist, palimeursault.net

Abstract

Offset explores the soundscape of a printing workshop, it travels inside the industrial and mechanical energy of rotary presses. Entirely composed from field recordings of two printing facilities in Grenoble and Paris (France) in 2011 and 2012, it deliberately mixes the documentary approach of a working place with the experimentations of the electroacoustic practice. *Offset* is constituted of a set of variations about the textures, rhythms, cycles and patterns created by the machines.

After several works dealing with natural soundscapes [such as *Without the Wolves* (Entr'acte, 2011), which was composed from geophonic recordings of alpine environments] or urban public spaces [like *Midi-Minuit*, recorded and composed in Brussels (Silence Radio, 2010)], *Offset* was again the occasion to confront with industrial sources and the inherent ambiguity and complexity of such environments, of which the sounds are altogether violent and alienating, but can also be immediately and strangely musical. Listening and working on location, these industrial sounds had to be approached as both an acoustic and a social subject matter.

Once taken out of their social context, machine sounds and noises become equivocal: we can hear the actual printing devices, but with them some imaginary 'monsters' are playing a peculiar music, an unexpected by-product of the manufacturing process. Yet the musicality of these machine sounds is not only a matter of electroacoustic process, it also as something to do with a deeper cultural history, which has cultivated mechanical sound phantasies during the last hundred years or so. Thus the composition of *Offset* also had to be about taking into consideration distant and plural echoes of the Futurists, of industrial music, of Jean-Marc Vivenza or techno music, which could be heard within the machines themselves and which listening was not able to 'reduce' to a mechanical or acoustic fact.

Recorded and composed between 2011 and 2013, *Offset* has been published as a LP and digital release by doubtfulsounds and Universinternational. In 2013–2014 it has been nominated for Phonurgia Nova and the Quartz Musical Awards, and occasioned a complete re-arrangement as a quadriphonic composition designed for electroacoustic performance, which premiered at the Museum of modern art in Nantes, curated by #Cable at the end of 2013.

Format: Quadriphonic electroacoustic composition

Duration: 44'00"

Brooklyn Navy Yard

Patrick McGinley

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Independent artist

Bruce Tovsky

btovsky@gmail.com

Independent artist

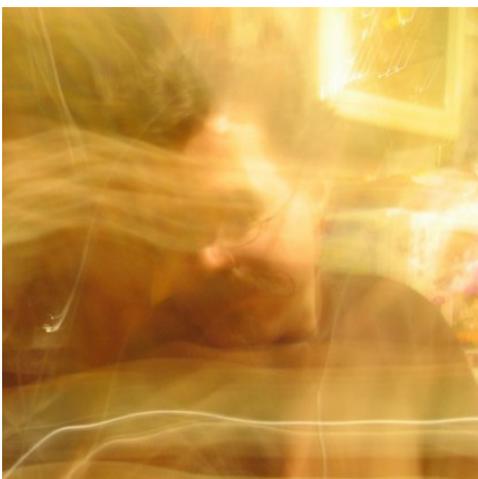
Abstract

The Brooklyn Navy Yard was an active U.S. Navy shipyard from 1806 until 1966. At its peak in WWII it employed over 70,000 people 24 hours a day and covered over 200 acres. When it was decommissioned in 1966 New York City took over its development, and slowly over the next few decades transformed it into a modern industrial park with more than 200 businesses and employing over 5,000 people. Brooklyn Grange Farms operates a 65,000 square foot commercial farm on top of Building 3; Steiner Studios runs one of the largest film production studios outside of Los Angeles; and GMD Shipyard Corp. runs the upgraded dry-docks. There are numerous art studios scattered throughout the Yard, and Building 30, a two-story red brick stable house dating to the 1860's, is a purpose-built haven of art studios, full of working artists from a wide range of disciplines.

The piece *Brooklyn Navy Yard* came together incredibly quickly. When multimedia artist Bruce Tovsky, who has a studio in Building 30, heard that Patrick McGinley, an Estonia-based sound artist friend, was passing through Brooklyn on a brief U.S. tour, he decided that they had to do something together at his studio. Patrick's work is very much an exploration of site-specific sound and sound as definition of space, and this was the perfect urban subject; a sprawling 160-year-old Navy Yard undergoing a transformation into a modern industrial village on the Brooklyn waterfront. Bruce, a life-long phonographer, visual artist and filmmaker, has done several pieces that explore the visual and sonic resonances of urban spaces. He had long wanted to do a piece in and about the Yard and this seemed to be the perfect opportunity for an interesting collaboration. Due to their tight schedules, Bruce and Patrick planned to spend one day gathering material in the Yard, and to use the evening and the next day to prepare what they had captured. Then they would give a live performance in

the studio that night. The day before the event, Bruce led Patrick through the Yard and he chose specific places to sonically document, using both standard microphones and large contact mics he placed on structural elements. Bruce set up his camera positions, sometimes including Patrick recording or listening, sometimes not. They had the freedom to roam as they pleased – the Navy Yard is very supportive of their many resident artists and graciously gave access. The night of the live performance, Patrick mixed sounds drawn from the previous day’s recordings with explorations of the studio itself for sound potential. He had positioned several contact mics on various objects in the studio space, and used bowing and other techniques to haunting effect: the groans and wails echoed the sounds created by the huge cranes used in the Yard’s dry-dock facilities. As Patrick was performing, Bruce projected his edit of the prior days footage on a large 6’ x 8’ screen. Bruce and his artist / composer wife Tracy Wuischpard have been curating shows at their studio 106BLDG30 for over a decade, and they had a full house on this night. As they usually do after an event, they had a salon-style discussion with the artists after the performance, and this evening’s was particularly rich and informative due to Patrick’s passion for his work. Bruce documents all of the events in the space, and uses a custom-made binaural head to capture the sound of the room. For this presentation of *Brooklyn Navy Yard* Bruce has combined the edited video piece with the live audio – presented in quad surround – to create this standalone work, an encapsulation of the effort to capture a slice of this historic, fascinating space.

Year: 2014
Duration: 33’00”
Sound: Patrick McGinley
Video: Bruce Tovsky



Left: Patrick McGinley. **Right:** Bruce Tovsky (photo by Tracy Wuischpard).

Three Cities

Pete Stollery

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University of Aberdeen

Abstract

Three Cities is part of the Three Cities Project, a multimedia research project undertaken by members of SERG (Sound Emporium Research Group) – Suk-Jun Kim, Pete Stollery and Ross Whyte – at the Department of Music, University of Aberdeen, Scotland. The project involves contribution, participation and experience from the three cities of Aberdeen, Bergen and St Petersburg with the main aim being for participants (composers, listeners, general public) to learn about and engage with audio culture from each city through engagement with sound recordings at the three locations.

Two central ideas drive the project. The first is Edward Casey’s phenomenon of “re-implication” within visual representations of place and his three distinctions of:

- place at - exact depiction;
- place of - representational transformation;
- place for - contemplating the ideal, the vision, the “poetic truth”.

The second is Suk-Jun Kim’s three “engagements with place” when creating soundscape composition:

- visiting, dwelling on and experiencing a place;
- composing with sounds recorded at the place;
- listening to the recreation/representation of the experience of the place.

Sounds were captured from visits made to the three cities but only Kim and Whyte visited Bergen. They had a different engagement with the sounds of Bergen from Stollery; similarly Stollery and Whyte visited St Petersburg without Kim. Future research, following the creation of works using the sounds recorded in the cities will investigate how these different “engagements” affect compositional approaches.

On listening to the sounds recorded in each of the three cities, it became apparent that most fell neatly into Bernie Krause’s three categorisations of sound:

- Biophonic (generated by animals); birds, mainly seagulls, but also sparrows and other woodland birds.

- Anthrophonic (generated through human agency); alarms from pedestrian crossings, traffic.
- Geophonic (generated by natural forces); water

I chose to use these sounds in clusters to maintain a certain integrity and the piece opens with stretched pedestrian crossing signals from each of the three cities followed by a section of minimally transformed field recordings of birds; then traffic sounds, which both articulate gesturally (cars) and also operate in a textural context (underground train).

This leads to the second section of the piece, after a pause, made up entirely from the sound of the Vesta passenger ferry, a soundmark of the city. The piece draws to a close with a coda made up of sounds from all three groups, from all three cities.

Three Cities was commissioned by the sound festival and first performed in Sheffield in February 2013

Omelia al Vento

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Vacuamœnia

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Abstract

Omelia al Vento (litterally ‘Homily in the wind’) was conceived in the wake of the Ass.Cult. Vacuamoenia project to aesthetically revalue - in particular from the point of view of the sound as a transmediatic sense - places that have been abandoned for various reasons in the Sicilian ruralscapes.

The idea of those years, developed by the Fascist regime, expressed a conviction that it was possible to build a city life “on board”, decentralizing the corporation of farmers and inserting it in a context in which it was sufficient a school, a military police station, a church and a few other services to fulfill the needs of life.

This decentralization had as purpose to resize the cultivations of the campaigns (from extensive to intensive), to facilitate the work and the rest of the peasants who were no longer forced, so to move daily from the countries to the lands, but the project soon failed because of its isolationism and dissolved completely during the years of economic italian miracle and urban intensification of the 60s.

It is in this regard that the Borghi (italian name of these villages) pose a question: if it is true that few services for a few people to a single category in the middle of nowhere necessarily lead to abandonment (and smell like constriction), is it possible that a different attitude, an infinite mole of information, services, need (more or less induced), places of aggregation and inside (overcrowding) and external (growth of cities) expansion is as such a value?

The answer is in Vacuamoenia work. The idea of using sounds of the Borghi through digital and acoustic technologies daughters of the city while it does not solve the problem in a social and in an anthropological way, on the other hand serve to create an intellectual

friction, a link between two extremes, which inevitably should be considered. The act of recording and the act of manipulation and formal construction insert “abandonment” sound material in a performance driven both by the wind and by the binary code, from wood to personal computers.

The work we do by using the medium of the composition of soundscapes , wants to be a re-built as citizens of the “life of an urban centralization when there is no more life”, an atmosphere of abandonment that serves as a reference for possible “positive” high quality atmospheres in our urban living.

Bell Tower of False Creek

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Simon Fraser University

Abstract

Bell Tower of False Creek is a multimedia research/creation project investigating the rich history and complex sociocultural dynamics in play in the area surrounding Burrard Bridge, which spans False Creek in Vancouver, BC, Canada. For Invisible Places 2014 I am presenting the first component of this project: an 11 minute stereo “soundwalk composition” exploring the acoustic profile of a particularly sonorous pot hole next to a metal connector on the surface of the bridge. A mighty klang rings out when the hole is activated by passing traffic, casting a wide radius that extends further than any other sound emanating from the bridge. This klang is called forth by the bureaucracy of municipal roadworks and the limits of its neglect. Thus at the heart of the piece lies an investigation of how the overlapping identities of the region can be mapped by largely invisible processes of city planning and maintenance.

The walk moves west to east along the seawall that passes under the bridge (with detours south along the paths beneath the bridge and north along the bridge’s surface to the site of the pot hole itself). The boundaries of the walk are set by the limits of the klang’s extension, treating this region as an acoustic community defined by this particular sound just as parishes of old were established by the acoustic profile of the village church bell. We pass through a public park, private marina, reserve lands of the Squamish nation, campgrounds for the homeless, and a public pier, all of which intersect in various ways. As it moves through these areas the piece invites listeners to meditate on the tensions between urban infrastructure, public space, private property and Native land claims revealed by the shifting dynamics of the klang as it interacts with the microcosmic details of these various acoustic environments, and as I interact with a variety of people using these spaces.

The piece also invites contemplation on the processes of representing acoustic environments through technologies of sound. Constructed from recordings made in the spring of 2013 while on assignment to expand the archives of World Soundscape Project at Simon Fraser University (on the occasion of the 40th anniversary of their first recordings in this area), the piece aims to contribute to the WSP’s ongoing longitudinal analysis of Vancouver’s

soundscapes while also challenging the norms and conventions the project has established for the acoustic presentation of recorded environments. The pot hole was filled in shortly after these recordings were made, so this composition ultimately stands as document of a sound that exists no more. But there have been other pot holes in the past, and there will be more again in time. And so this piece marks the beginning of a long-term project to chart the cycle of maintenance that sets these bells ringing, to consider the meaning of these sounds within the context of the ever shifting dynamics of this most fascinating part of Vancouver, and to engage critically with the legacy of the WSP.

Dronestrikes on Saturn

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Abstract

Dronestrikes on Saturn is the collaboration in between raxil4 and his Nameless Is Legion, an audio work that uses reverb laden drones with pedals, sine generators and a four track with loop tapes of some fine recordings or sonifications of the Saturn radio waves recorded near the poles of the planet via the Cassini spacecraft. It is a media ecology audio work offering an ethical composition and an aesthetical piece for preservation of the space, the urban space or the outer space, where these waves have been captured. In this case, preservation laws could develop a strong policy to facilitate the research for audioork in the conservation of sound as (eco)system.

Inner Noises

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Soundlings

Abstract

Inner Noises is an 8-channel composition exploring the hidden resonances produced by the urban life. The ever-present, surrounding noise of contemporary city life distills to tones oscillating within the architecture. Capturing this activity with surface and boundary microphones the composer tuned in to resonating body of the city. Urban sound spaces of different cities across the globe collide and fuse in to an immersive sonic environment, allowing the listener to hear from the inside.

Caged Birds (Augmentation)

Robin Parmar

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Independent artist

Doctoral student at De Montfort University, Leicester

Abstract

This piece derives from a single recording of the dawn chorus in my back garden. Various transformations, subtle and otherwise, have been made to the birdsong. The title is a play on John Cage, but also a reminder that a recording is a sound that is no longer at liberty.

Duration: 6'20"

Format: Four mono files for quad playback, each 44.1 KHz 16-bit WAV PCM

The stereo version of "Caged Birds (Augmentation)" was composed for "100x John: A Global Salute to John Cage in Sound and Image" in New York City (2012). It was subsequently played in Ireland at the Hilltown New Music Festival 2013 and in the UK at the Symposium on Acoustic Ecology, University of Kent (2013). This is the première of the four-channel mix, created specially for Invisible Places 2014.

Schizophonics

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Abstract

Schizophonics is a piece inspired by and composed with daily city sounds recorded in several parts of Porto. It presents a sort of a trip across the city, seen through the eyes of a foreigner visitor. The term “schizophonic”, introduced in the 1970’s by Raymond Murray Schafer, refers to the dissociation of a sound from its source, made possible through the use of telecommunications and media technologies, and the way it affects our sonic environment as well as our perception of it.

In this piece, the term receives a triple meaning. Besides being an acousmatic piece, in which the sound sources are not present any more, it explores the combination of different sounds from different locations in Porto, as well as the relation between the original sounds and their electronic counterpart.

Derivé

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Abstract

Dérive is a stereo acousmatic work, started at the studios of La Muse en Circuit and finished in the composer's own studio.

During my residency at La Muse en Circuit, I criss-crossed the city of Paris in search of sounds or sound environments. My itinerary was built from walks, all having as their point of departure the official centre of Paris, the point 48.8534°N 2.3488°E on the square in front of Notre-Dame Cathedral.

I do not wish to explain too much about this piece: instead, I prefer for the listener to be led through the work by their ear and imagination, much as I was led around the streets of Paris. The piece seeks to explore the connections between different places and acoustic environments. But *Dérive* is not only a documentary work: above all, it is quite poetic and mythological, a reading of the city at the present time, an exploration of the sounds, spaces, histories and cultures that shape Paris.

I walked over 100 kilometers in order to gather the materials for *Dérive*. I walked the full length of both banks of the Seine within the boundary of Boulevard Périphérique, recording the sounds of boats, gulls, the constant fluctuations of the river, its voice rushing and changing, reverberating in tunnels and under bridges, merging with the sounds of traffic in the open air. I recorded the tombs of the Panthéon, the streets of Montmartre, the ambience and beautifully melancholic songs of Sacré-Coeur, Notre Dame and its surrounding areas; the creaking floorboards of the house Gustave Moreau, the city sounds from the top of the Eiffel Tower, the tunnels of the Metro, dozens of street performers, office workers playing ping pong during lunch breaks, children playing in Place des Vosges and...

At the conclusion of this work, it seems to me that Paris is a city of flow and friction, of movement and interruption. But perhaps more than this, it is a place of saturation and juxtaposition. I could walk 100 kilometers more, following the flow and haltering rhythms of the city, in silent reverie.

Dérive was commissioned by La Muse En Circuit as the prize in Concours Luc Ferrari.

New York City Glyptic

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Muhlenberg College and 3Leaves

Abstract

When I began making audio recordings of New York City, all I heard was traffic. Slowly, I began to realize that the city pulsates with many different kinds of sounds. Individually, each sound is its own object with a shape and texture, but collectively they form a concrete whole: this is the sound of the city with its fierce resonances, attacks, tones, rhythms, and timbres. I have come to understand this sound as a constantly shifting form with many evolving facets and shapes. It is a dense form with many strata. As a sculptor it is my inclination to reveal these strata and expose the inner edges and planes of sound that create this elusive shape.

I walk around New York. Sometimes I sit in the park. I often find myself in museums. I ride the subway and bus, sit in coffee shops and wander through bookstores and galleries. I have an Olympus LS-10 recorder in my bag, Telinga EM-23 microphones, and some home-made binaural microphones. I capture sound sketches with these tools.

Later, in my studio, I listen to my collected sounds. The specifics of the recorded spaces often return to me, immediately. As I listen I pick up my sculptor's tools and break off pieces of sound – sometimes revealing an unexpected shape, but often I am captured by a detail of the detritus.

I have worked with studio materials for many years—metal, wood, paper, clay, plaster. I have often been drawn to the insubstantial and ephemeral – light and shadow – qualities to be manipulated in revealing the shape and form of a material. Now, I add the concept of sound to this vocabulary. Surprisingly I find that my ultimate subject is not just form, but the qualities of space, itself. Space exists outside the certainty of form. I like to experience it as this intangible that is apprehended, but not really known.

New York City is unknowable, ever-changing with infinite sides and angles. New York City Glyptic is not an attempt to know this city, but an attempt to be within it, to give it my attention, and to experience its grandness, mystery, beauty and its accompanying pain, fear, and anguish.

Cicada Brood II: Ultimate Music

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Abstract

June 1st, 2013, my editor-wife and I drive three and a half hours out of Baltimore seeking the sounds of Brood II, a 17-year cicada bloom that has emerged in Northern Virginia, Delaware and New York, but not in Central Maryland. With new recording gear, I set out to find these ancient creatures infamous for their primal drone and dying squeals.

The smartphone GPS shows the route and with my right ear out the passenger-side window, I tell Eugenie where I sense the best sounds might be. We end up at Mason Neck State Park next to Pohick Bay, its surface dotted with belching speedboats, water-skiers, people fishing and others in anchored boats partying with loud music—a raucous flotilla bobbing next to a rare sonic event taking place just on shore.

The clash of this man-made noise and nature’s noise is one of the most intense sensory immersions that I have experienced and aurally recorded. The complex sounds of the Brood II cicadas, along with crickets, woodpeckers, banjo frogs, lapping water and wind and tree sussurrations create what I call “ultimate music.” This natural composition juxtaposed with human acoustic and olfactory exhaust wafts through the marshlands and woods into my ears and nose to create a synesthetic apprehension of my immediate environment that can never be replicated.

I listen for those moments that contrast the far-off drone of thousands of cicadas with the close-up buzz-grind of the individual males urgently seeking their mates. At first I try to avoid motor sounds and voices, but soon give up knowing that regardless of what I record and hear, there will be human-made sounds in the recording. In the end, those sounds become the moog synthesizer in the landscape orchestra.

For the next five hours with headphones on, I continue to record while slowly walking through the park, listening for anomalies and nuances of Brood II in relation to other natural and un-natural sounds. Though Mason Neck is 30 miles from D.C., the ubiquity of powerboats and periodic planes in the sound recording makes it clear that the boundaries of urban and natural places have become blurred. Where does the edge of the city end and nature begin?

Recorded June 2013

Duration: 9’00”

snowSongs

Vivienne Spiteri

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Independent artist

Abstract

The Inuit have many words for snow. Do the different snows also have different voices? Curious, I went to Nunavut to find out, to hear and listen for myself. With recordings made in Arviat and in Igloolik, I composed the acousmatic piece *snowSongs*, which is in seven continuous parts: in the beginning / two clumps of earth / snowSongs / sister sun brother moon / shaman / qalunaat / swanSong.

The piece traces the sounds of snow as experienced through the ancient inuit life cycle lived out on the land, the complex inuit mythology, and up to the present environmental and sonic deterioration of the north. These are sounds intimately linked to place, and that identify a place slowly eroding into invisibility.

Sounding Cities Program

11–12 July

Our proposal was to increase awareness of the importance of our local and global soundscapes and our role in their experience and design. As listeners, we are also responsible for the shape and beauty of our own soundscape. Therefore, we must open our ears.

Through workshops, performances, concerts, soundwalks and sound installations we intended to transform Viseu into an acoustically conscious city. For this time, it was a special place of intersection between art, science and life.

Installations

SOUND INSTALLATION **MESAS**

Pedro Rebelo e Ricardo Jacinto

Local: Rua Direita

MESAS is an urban intervention that promotes the relationship with everyday sound through indispensable pieces of furniture for the domestic, the professional and the playful in our lives – the table. Different uses and contexts determine the many variations in form; from dining, to coffee tables, kitchen, garden, meeting, bar, side or game tables. This project, by artists Pedro Rebelo and Ricardo Jacinto was conceived for Rua Direita in Viseu and consists of a sequence of tables suspended throughout the street, which reveal experiences and memories through sound.

The materiality, context and utility of each table articulate sonorities that include the manipulation of objects on their tops or the conversations happening around them, as well their impact on the soundscapes of the places in which they are situated.

The project makes audible these particular experiences through a set of sound installations associated with places such as the jeweller's, the school, or the tailor's.

SOUND INSTALLATION **RESPIRO**

@c (Pedro Tudela, Miguel Carvalhais)

Local: Temporary exhibition room of the Grão Vasco Museum

Installation. Cymbals, stands, transducers, speakers, audio DVD, computer, software, light.

“Respiro” (Breath) is developed from the mapping of networks of urban relations, of residues and reverberative effects. Its modular structure recalls the apparent urban self-similarity, that conceals an accumulation of individual micro-variations articulated in a circuit of confrontations, dialogues and tensions from where a complex and dynamic composition emerges.

SOUND INSTALLATION **THESE STREETS HAVE A VOICE****Luís Antero**

Local: Casa Cena, Rua do Arco

Starting from the sound archive of the streets Arco and Arrabalde, as well as the main square and surrounding area of Pavia River in the city of Viseu, Luís Antero creates a sound installation composed by field recordings made in these areas of the city. In his recordings, he searched for the sound dynamics of everyday life, the perpetual motion of sounds, but also the sounds of memory connected to these locations through the oral testimony of those who work here, or simply dwell. This sound installation reflects the social and urban identity of these ancient streets.

AUDIOVISUAL INSTALLATION **THE WORK QUARTET, 2011–2014****Mikhail Karikis**

Local: Museum of Cathedral's Treasury (Museu do Tesouro da Sé)

The Work Quartet brings together four major audio-visual projects by the artist Mikhail Karikis filmed in locations that range from an English coal mine, to a shell-fishery in a remote volcanic island in the North Pacific, to an impersonal office in London City and an imposing geothermal power station in Valle del Diavolo in Tuscany. Each film engages with a different community that is connected to a site of production or former manufacturing, and explores the role sound plays in creating a sense of collectivity and a professional identity while at the same time resonating each community's socio-political, cultural and psychological circumstances generated by the effects of post-industrialisation, automation, unemployment and censorship at the workplace. Created in collaboration with three generations of communities, Karikis's *Work Quartet* asserts people's connection with the site of work and their search for dignity through a profession, while evoking different possible, desired or imagined futures.

SOUND INSTALLATION **echo meditation****hands on sound**

Local: small cloister of Grão Vasco Museum

The installation tries to give back life to the small yard of the cloister of Grão Vasco Museum. The sounds are put out by small speakers that will play back power impulses to delay and reverb within the space. The sounds interact with the spatial acoustics in the almost square-shaped space and will evoke a meditating atmosphere through the slow alteration of the pattern.

SOUND INSTALLATION **Listening Room****Miguel Carvalhais & Vítor Joaquim**

Local: Sala Incubadora, Rua do Comércio 112

The Listening Room showcased a program of piers selected from the open call of Invisible Places / Sounding Cities. During nine days it presented more than 50 audio and audiovisual works, in a continuous program, in a space designed to provide a unique listening experience.

Concerts

CONCERT **LÓPEZ IMMERSIVE SOUND****Francisco López**

Local: Big cloister of Grão Vasco Museum

Schedule: 18 July – 18h30

Francisco López's sound performances are something beyond a "normal" music concert. An intense and rich sonic immersive experience in the dark, with a surround multi-channel sound system and blindfolds provided for the audience. Virtual worlds of sound created out of a myriad of original sources collected all over the world -from rainforests and deserts to factories and buildings from multiple locations in the five continents- and mutated and evolved during years of studio work through the master compositional skills of López's universe.

The space is reconfigured with a multi-channel surround system around the audience, which is placed in seats arranged in concentric circles facing the outside array of speakers. The performer operates from the center of the space (not on stage), in order to be able to control live the sound as is heard by the audience.

CONCERT **THE SPRINGBOARD****Eric Leonardson**

Local: Misericórdia Church

Schedule: 20 July – 18h30

The Springboard is a do-it-yourself instrument made from readily available materials: An amplified soundboard makes the vibrations of coil springs and a variety of other small and nonprecious objects audible. Thanks to a simple piezo contact microphone, the Springboard's

humble constitution belies the richness of its sounds, a signature of the author's activities in live and recorded works across many art disciplines. When played with cello bows and homemade friction mallets, Eric Leonardson produces extraordinary sounds that belie the humble origin of these materials.

CONCERT **CONCERTFOR LAYING PEOPLE**

Luís Antero

Local: Margem do Rio Pavia

Schedule: 13 July – 18h00

From the sound archive of the Ruas do Arco e Arrabalde and incursions by the weekly market and by Largo Major Leite Monteiro, in Viseu, Luís Antero created a single and unique concert at Jardim da Ribeira, where the audience could lie down and enjoy the green space. The public had the opportunity to comfortably watch a concert late afternoon, completely filled with the sights and sounds of these ancient arteries of the city, where it were also used instruments as braguesa and electric guitar. It was an invitation to travel through the sounds that mark everyday life in this part of town. Laying down with open ears and with the eyes closed.

PERFORMANCE **102 YEARS OUT OF SYNCH**

Mikhail Karikis

Local: Big Cloister of Grão Vasco Museum

Schedule: 12 July – 21h30

102 Years Out of Synchron is a new audio-visual performance by Mikhail Karikis exploring the striking connections between the invention of sustainable energy production, the first Italian feature film, and the sonic imaginary of Hell. The work takes place at the Italian geothermal site of Larderello at Vale del Diavolo in Tuscany, where the first and still one of the largest electricity power plants in the world is based. Local legend claims that in the 14th Century Dante visited the site and drew inspiration from its arresting geology for his famous epic poem *Inferno*. Countless visual representations of Hell were inspired by the *Inferno* and unknowingly referenced the site of Larderello, including the homonymous first Italian feature film made in 1911 by Giuseppe de Liguoro. Both in the paintings of Hell and the first Italian feature however, the rich sonorities of Vale del Diavolo remained mute.

In his performance, Mikhail Karikis retraces Dante's steps in an attempt to hear what the poet might have heard. The artist visits the site to record its volatile geothermal sounds and

the rumbling industrial noises that mark the contemporary local soundscape. Combining newly filmed footage and fragments of the 1911 silent film, environmental sound recordings, narration and extended vocals, the performance 102 Years Out of Synch mines the strata of legend, industrial archaeology, subterranean resonance and the aural imaginary of Hell.

Workshops

Listening Education is one of the main focus of Acoustic Ecology, initiated by Murray Schafer in the 70s. For Schafer, to educate children to listen is one of the main ways to combat the sonic problems that societies face today. After all, we are all responsible for our acoustic environment, simultaneously “composers and performers” of this huge global concert.

It was with this idea in mind that we created 3 workshops for all ages:

EAR CLEANING WORKSHOP **Silences that Sound**

Ana Bento & Bruno Pinto

Audience: 3–6 years

Following the line of thought of Murray Schafer, the proposal in “Silences that Sound” is to open children’s ears to the experimentation with variations of timbre, amplitude, melody, texture and rhythm of the various silences that surround us and are not muted. Improvisation and creativity are unavoidable practices in this experiment.

EAR CLEANING WORKSHOP **How We Listen to the World**

Joana Estevão

Audience 7–12 years

The workshop consisted of a variety of exercises in interior and exterior spaces. Promoted interactive engagement among participants in order to increase the capacity of listening, learning how humans use the acoustics to sense the environment they inhabit and the importance of preserving the acoustic space.

EAR CLEANING WORKSHOP **Sonic Details of the City****Luís Antero**

Audience: > 12 years

Workshop of initiation into field recording, providing participants with the theoretical and practical foundations of this universe. Development of the recording technique, from 4 different and complementary stages: Learning, Playing, Recording and Editing.

SOUNDWALK **Radio Terramoto****Maile Colbert & Rui Costa**

“Radio Terramoto” is a radio transmission soundwalk research and art project based on the idea of listening to sound from a past historical event, in this case the Great Lisbon Earthquake on All Saints Day, 1755. This is an audience immersive event in which the original procession made up of the creators and audience followed a path from the Convento do Carmo down to the river in Lisbon, Portugal. For the Invisible Places: Sounding Cities Symposium, we will transpose the original sound from the Lisboa path to follow a similar path in Viseu (an area hardly effected by the earthquake and its following distasters), from the Sé to the Rio Pavia. Thus we bring in a transposition of not just time, but of geography as well.

The sound design is based on research on the earthquake, using documents of both first-hand experiences and the first seismic and “earthquake” proof architecture that came after what may be the largest earthquake recorded in history, which destroyed a quarter of the city, from 10,000 to 100,000 lived, and beget consequential tsunamis and fires. The creators walk with the audience bearing a transmitter, the audience carry radios and cell phones tuned into the specific frequency of the transmission.

The original “Radio Terramoto” soundwalk in Lisbon included hand-held sculptural octahedra created using a geometric framing system designed by Jake Dotson, assembled as a singular form approximating a Pombaline cage, the first modern earthquake resistant architecture. The radio transmitter, and other key electrical devices were suspended in these 1 foot3 (30 cm3) octahedra made of brightly colored sticks of wood held together with friction and tension. The large cage broke apart into the individual octahedra to aid in the transportation of equipment and in providing a visual wayfinding aide for the participants.

The project and research looks into the question, what can listening to the past reveal about the now, both in artistic practice and scientific research? The sound weaves between the present and the past, and it is from this experience that we are interested in researching.

The project and research looks into the question, what can listening to the past reveal about the now, both in artistic practice and scientific research?

INTERACTIVE EXPERIENCE IN SITU **Parallel Circles**

Audiotopie

Local: Streets of Viseu

Parallel circles offers a parallel audio reality in real time that responds to the listener's movements through the city. This interactive composition of forms and sounds works in harmony with the listener's surroundings and the structure of each site. This project reimagines the city, enriching it with a creative, audible, sensory experience—a city that thrives on mobile satellite technology!

The project involves the placement of geometric shapes in open spaces such as parks, woods, and parking lots—spaces that are significant to the area. These shapes are generated using a programme we have developed and may be accessed through an iPhone application that is available free from the App Store. They will be generated by a series of geolocated points to form circles, triangles, squares, rectangles, straight lines, and a combination of these shapes that will blend in with the aesthetic organization of the area in which they are situated, reflecting its geometry, dialoguing with it, or offering a new formal proposition that contrasts with the existing one.

This project addresses environmental questions around ambient sound, atmosphere, tone, and the act of listening to city sounds in general. It has a certain utopic element, allowing the listener to reconfigure the city with a new audio reality, modifying his or her movements to create the sound texture of his or her journey. Defying urban geometry and producing a new order of sound, these geometric shapes offer a new way to experience the city!

SOUNDWALK **Field Frequency Flux**

Brane Zorman & Irena Pivka / radio CONA

Local: Parque Aquilino Ribeiro and Radio VFM94.6FM

Field Frequency Flux is site specific radio art composition, transmitted on local FM radio frequency- Radio VFM94.6FM with live in-situ micro local FM interventions. Performance experience is based on walking and in the same time in-situ listening to FM radio broadcast and surroundings sounds.

Field Frequency Flux presents a park as a space where to withdraw from the city's hustle and bustle, overfilled with information, communication and other stimuli that pull us away from listening. In the park, one enters the silence and emptiness of a night. It is equipped with a radio receiver that translates and catches remote electromagnetic sound contents. During the walk, the intercepted messages merge with the sounds of the sleeping nature outside the urban area, which brings an individual toward an organic, earthly sound that contains a syntax very different from everyday language. In this intersection space, full of distant electromagnetic contents and atmospheric sounds of nature, a space for fantasy and for working with memories emerges, which brings about an original and intense experience.

Field Frequency Flux is based on everyday activity of walking and everyday sounds, which we often ignore because of an increased noise pollution and our daily routines. Through these unpretentious actions, a spectator is transformed into a 'composer' and 'visual artist' who reads and composes sound and space images.

SOUNDWALK **Good Vibrations Acoustic Cartography Tour**

Johann Diedrick & Christie Leece

Local: Streets of Viseu

Good Vibrations is a mobile listening kit that allows users to tap into of the least audible sounds of a city. With the use of three different types of microphone: a contact mic, a hydrophone and a probe mic, the user can tune in to subtle acoustic vibrations in the environment and explore the city's cracks and surfaces. A field guide for urban listening directs users to acoustic "points of interest."

The mobile listening kits are custom-designed, featuring hand-made audio amplifier circuits inside hand-made digitally fabricated boxes. The microphones are also each hand-made. In addition to the mobile listening kits, an iPhone app was created to allow users to record their sounds with the kit and upload them to a remote server. These sounds are saved and displayed on a map for an interactive listening experience.

SOUNDWALK **sound_WALK_studio**

François Tariq Sardi

Local: Streets of Viseu

A device.

The sound_WALK_studio is a real-time sound composition device for two walkers, a city, an iPhone and a microphone.

While walking through an unknown territory with a participant (both with headphones plugged into the iphone), the artist listens, samples, loops and edits the surrounding sounds, creating during the walk a unique composition.

A game of influences.

The purpose of the proposition is to create a disruption of one's sense of self and place by submerging the participant into multiple layers of sounds extracted in real-time from the surrounding elements - fragmentation and repetition - where there is much more going on than what appears to be. The device therefore aims at uncovering and activating hidden worlds, questioning how perceptions and discreet mythologies - low intensity interactions - are affecting and recombining the way the city is experienced.

The device modifies the sense of place and time. Where am I, when am I? are questions rooted in a practice involving, through the recombination and alteration of immediate sounds, a renewal of the attention to a familiar environment suddenly gone strange.

A local point of infinity.

By applying a pressure on a boarder - a contact point - where the relationship with the environment is active, what happens to this relationship? What kind of narratives and images are produced by the transformation of this relationship?

Now I am standing in a place, I know this place, or at least I think I know this place. But where is this place standing? What kind of long lasting connections have been established here? When I stand in this place where else might I be? What is it that lingers on from past and future interactions, events, memories? Everything keeps moving and changing, everything has already changed, leaving faint traces of things to be. What residual part of these fragmented elements can we feel around us? From where do we stand? How do we acknowledge the interweaved network of forms that influence us? How do we take the quantum leap into other realms of existence? And where am I really standing right now if I can't recognize my presence to the world? If I am standing upside down?

SITE-SPECIFIC SOUND PROJECT *Being Here / Estar aqui*

Julie Faubert

Local: Tipografia Minerva

What does it really mean to be present in a place? *Being Here / Estar aqui* is a site-specific sound project created in the very particular space of Tipografia Minerva da Beira em Viseu. Many days of recordings and actions in the traditional printing works will lead to the creation of a singular and collective listening situation deeply embedded in the material, human,

sound, spatial and affective experience of place. This project explores the ambiguous relation between fiction and reality (is reality a question of time? a question of space?), drawing a porous line on the border between what is and what could be.

PERFORMANCE **Keep an Ear to the Ground**

Unlikely Places (Diogo Alvim, Eduardo Patrício & Rui Chaves)

Local: Listening Room

Schedule: 20 July, 16h30

Keep an ear to the ground is an expanded performance that presents a set of strategies to experience place and sound through mapping/tagging, listening, recording and reminiscing. It aims to establish a shared reading of place and everyday life through recording and listening. The recordings, paired with visual interventions in the city, take place before the symposium, leading to a dialogue-presentation that extends the individual experiences of sound/place to a shared context.

Showcases

Local: Listening Room

Adriana Sá

Adriana Sa is transdisciplinary artist, performer musician/composer. Designing and building the instruments is part of her creative process. Using digital and analogue, and often architecturally-scaled instruments with sensor technologies, Adriana has explored music as connected to light, movement, architecture, weather and social context. Currently, she explores how a moving image can be a reactive stage scene without distracting attention from the music.

Sampladélicos

Musician Sílvio Rosado and visualist Tiago Pereira create an audiovisual performance with recordings of musical practices and sound environments of a specific place. The project first builds a living archive of a local musical/sound identity that can be consulted and functions as memory. In the second phase, this archive/memory is deconstructed in a format that allows the community to look and listen to itself, to dance to its memories or to follow a story of images and sounds.

FILM *Off this Parish*

David Prior

It is said that Anthony's blessed bells had the power to work miracles, to cleanse the air of demons and evil spirits, protecting animals and children from weather and fire.

Off This Parish follows St. Anthony as he travels from a church tower out to the threshold at which its bells can be heard. The film is both a sonic portrait of Sul – the Parish in the Gralheira mountains of Portugal where it is set – and a meditation on the changing role of bells in a rural community.

The film begins with the idea of a Parish as territory defined by sound, a community whose borders are drawn by the earshot of a bell. As we travel from the epicenter of the community to its outer limits, we encounter bells used as a call to prayer, bells as time-keepers and alarms and also bells as pre-Christian protectors, casting the talismans inscribed in their metal across the phonosphere, purifying the air.

Off This Parish was filmed on location in the parish of Sul during a residency hosted by Binaural/Nodar. It features the voice of Luis Costa who was born in the region and is now one of the founders of the Binaural/Nodar.

Off This Parish was made possible with support from the Arts Council England.

DOCUMENTARY SCREENING *Lisboa em Si*

Ivan Goite, with Pedro Castanheira

Local: Listening Room

On June 21, 2013 Lisbon Portugal, on the southwestern edge of Europe, hosted a unique concert that gathered thousands of people to experience new but familiar sounds in the form of a seven minute musical composition that used horns from 22 ships, 6 fire department vehicles, 2 trains, 106 church bells from 19 churches, and 6 electric tram bells. The project involved about 300 volunteers, including 100 musicians who performed live from an original score, as well as radio signals coordinated and scattered all over the historical riverside area of the city.

Photos

Invisible Places





Masterclass by Francisco Lopez.



Sounding Cities



Concert for Laying People – Performance by Luís Antero.



The Work Quartet – Installation by Mikhail Karikis.



Respiro – Installation by @c.



Echo Meditation – Installation by hands on sound.



Echo Meditation – Installation by hands on sound.



Pedro Rebelo & Ricardo Jacinto.



MESAS – Installation by Pedro Rebelo & Ricardo Jacinto.

Financial Support



Production

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